Joint Legislative Audit and Review Commission

The Virginia General Assembly

EQUITY OF THE CURRENT PROVISIONS FOR ALLOCATING HIGHWAY AND TRANSPORTATION FUNDS IN VIRGINIA

A report in a series dealing with highway and transportation issues in Virginia.

REPORT OF THE
JOINT LEGISLATIVE
AUDIT AND REVIEW COMMISSION ON

Equity of the Current Provisions for Allocating Highway and Transportation Funds in Virginia

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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PREFACE

The 1982 Appropriations Act directed the Joint Legislative Audit and Review Commission to conduct a study of the reasonableness, appropriateness, and equity of the current statutory provisions for allocating highway construction funds. The interim analysis, dealing solely with construction allocations, was reported to the General Assembly in January 1983.

Subsequent to the interim report, the General Assembly directed that the study be expanded to include other major programs of the Highway Maintenance and Construction Fund. This report includes a review of (1) county maintenance spending, (2) urban street payments, (3) public transportation assistance, and (4) funding for Arlington and Henrico counties. In addition, the analysis of construction allocations has been brought up-to-date.

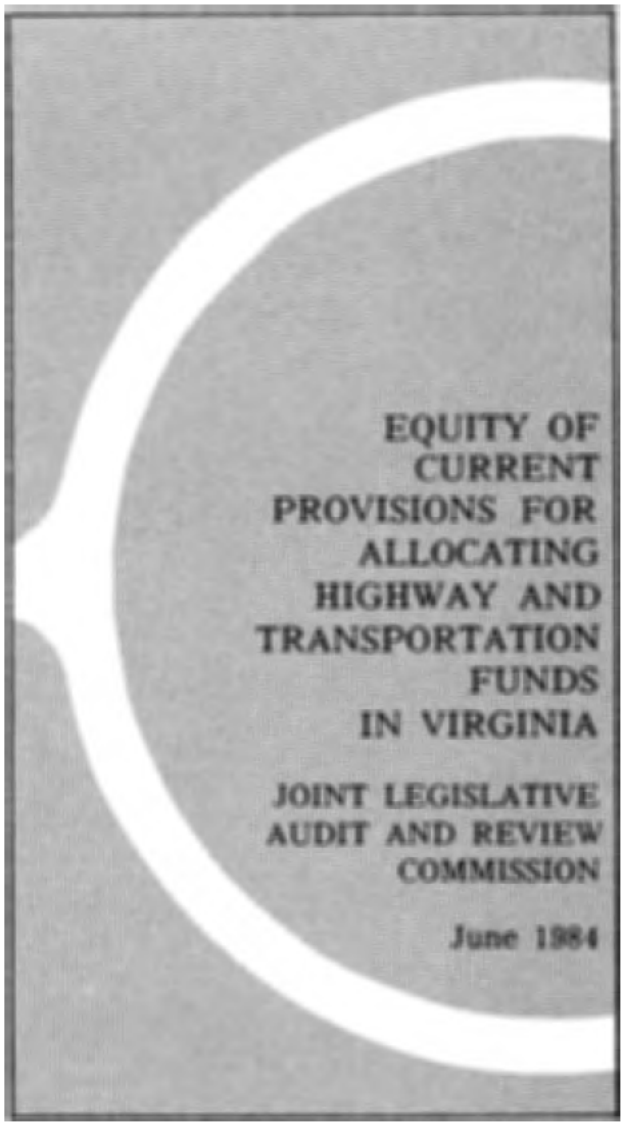
The recommendations contained in this report are all based on an empirical analysis of the current allocation provisions. The amounts proposed for allocation are shown in various tables throughout this report. They are based on budgetary estimates prepared by the Department of Highways and Transportation for FY 1984, and assume the original revenue estimates. More recent estimates of Highway Maintenance and Construction Fund revenues indicate that actual revenues are likely to be higher than the amounts previously estimated. Therefore, the tables showing the comparision of current and proposed allocations should be viewed as tools for evaluating the relative impact of any new distribution proposal compared to actual 1984 allocations. The effect that the proposed changes to allocation statutes would have (including revised revenue estimates) is shown on page 135 for each major program contained within the Highway Fund.

At the request of the Commission, legislation was drafted to implement the recommendations of this report. That legislation was incorporated as part of SJR 20, which was adopted by the General Assembly during the 1984 Session. SJR 20 calls for a joint subcommittee to review the JLARC proposals and to report by October 1984 on its findings and recommendations. JLARC staff will assist the subcommittee in its work.

On behalf of the Commission staff, I wish to acknowledge the assistance provided by employees of Roanoke, Fairfax, and Arlington Counties, and the Cities of Norfolk, Hampton, and Roanoke in hosting a series of regional workshops for this study. I also wish to acknowledge the cooperation and assistance provided by the employees of the Department of Highways and Transportation.

Ray D. Pethtel
Director

June 11, 1984



The 1982 General Assembly directed JLARC to conduct a study of the reasonableness, appropriateness, and equity of highway construction allocations. The findings and recommendations of that study were reported in January 1983. At that time, the General Assembly directed that the JLARC study be expanded to include the other major programs funded from the Highway Maintenance and Construction Fund. This study is the final JLARC report on highway and transportation allocations as directed by the 1983 Appropriations Act.

The report includes an update of the January 1983 interim study on highway construction allocations. In addition, it includes the findings and recommendations for four other transportation funding programs: urban street payments, county maintenance budgeting, public transportation assistance, and funding for Arlington and Henrico counties. The recommended changes to the allocation processes are intended to reflect the General Assembly's policy that the distribution of funds to the localities be fair and equitable.

Highway Fund Revenues and Allocations (pp. 1-8)

Virginia finances its highway system from a special Highway Maintenance and Construction Fund (HMCF). The fund is the receiving point for all revenues intended to support State transportation programs. Sources for the fund include various State taxes and user fees, federal aid, and toll collections. All of Virginia's transportation programs, including highway maintenance and construction, are funded from the HMCF.

In the past, the motor fuels tax was a stable and reliable source of revenue. As

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fuel consumption increased, so did the State's income from this tax. But increases in fuel costs and in vehicle fuel efficiency have slowed the steady growth previously seen for the tax. Other sources, such as the sales and use tax, have also been depressed as a result of economic recessions in the past.

For FY 1984, however, HMCF revenue collections are above expectations. If present trends continue, the State may have additional funds for highway purposes throughout the six-year period of the current improvement program. The increases in revenues will have a significant impact on allocations to the various programs and localities.

Major changes in the methods for allocating funds will also result in changes to the allocations. The reallocation of funds will be a "zero sum game". That is, the options and alternatives presented in this report will not result in an increase in funds for the HMCF. Instead, the alternatives would redistribute the existing funds by changing the process used to allocate them.

Highway Construction Allocations (pp. 9-60)

In 1977, the General Assembly undertook a major review and revision of the way in which highway construction funds were allocated in Virginia. This was the first major revision since 1962, and recognized the rapidly changing transportation environment. The outcome of the revision was a greatly simplified and more rational system for allocating highway funds. Shortly after these revisions were made, however, the highway construction environment underwent additional major changes. The interstate system was brought near completion, and highway revenues grew at a much slower pace than had been the case just a few years before.

With the completion of major goals and a changed funding environment, a reassessment of the methods and procedures for allocating highway funds became necessary. To this end, the General Assembly requested that JLARC conduct a study of the current highway construction allocation process. In many ways, the JLARC highway allocation studies are a continuation of the efforts begun by the General Assembly in 1977.

The interim report mandate for the study suggested that any new system for allocating highway construction funds should be based in part on an empirical analysis of construction needs in the localities, and the various characteristics of the localities that appear to generate those needs. The interim report findings were based on such an empirical analysis of needs and local characteristics. In this final report, the construction allocation findings have been summarized and, where appropriate, have been revised to reflect new data or additional analysis.

Study Approach. For the purposes of this study, the equity of construction allocations was addressed in terms of highway construction needs. That is, JLARC postulated that an equitable distribution of construction funds occurs when the relative proportion of funds allocated to a locality is equivalent to the relative proportion of construction needs in the locality. If needs in the counties, cities, and towns could be measured on an annual basis, allocations could be made directly on the basis of those identified needs.

Because of the difficulty in measuring needs on an annual basis, however, it is necessary to use surrogates for need to calculate annual allocations. If such allocations are to be equitable, the surrogates should be the best possible estimators or predictors of need. Much of the analysis of construction allocations is an evaluation of such surrogates of need. This evaluation involved measuring the relationships between highway construction needs and various characteristics of each locality, such as population, land area, and vehicle travel.

The JLARC approach to the analysis was in two parts. In the first step various statistical techniques were used to determine which local characteristics had the strongest relationships to highway constuction needs. In the second step, those best characteristics were used to develop several models of allocations formulas. The actual allocations for each locality were then calculated to show the impact of the options.

System Allocations and Special Funds. The General Assembly has historically divided and set aside funds for many types of government programs to meet specific purposes it has identified. Similarly, funding for highway construction in the past has been divided and proportions provided to the administrative highway systems and special programs. The distribution of funds to various programs occurs before the statutory formulas are used to allocate funds within each system.

Interstate System Finding. The *Code of Virginia* authorizes DHT to match federal funds for the interstate system from district primary allocations to the maximum extent it deems appropriate. While the current process for allocating federal funds to the construction districts appears appropriate, the use of primary system funds in each district to match the interstate federal aid adversely affects several districts' primary systems.

Recommendation (1). The General Assembly may wish to amend the Code of Virginia to require that funds necessary to match federal interstate aid be set aside from the total funds available for construction activities. Funds for the match should not be deducted from a district's primary allocation. The advan-

tage of this change is that the necessary match would be met by spreading the burden over all construction funds, reducing the severe impact on a few areas.

Funding for Unpaved Roads. In 1979, the General Assembly established the unpaved roads fund. This fund was intended to focus efforts on paving the 6,000 miles of dirt roads carrying 50 or more vehicles per day remaining in the Commonwealth. The JLARC analysis of unpaved roads indicates that a larger portion of highway funds might be allocated to the unpaved roads fund if allocations are to be made on the basis of construction need. However, the General Assembly may wish to reassess its priorities and reexamine the current funding standard of 50 vehicles per day (vpd) before revising the rate for the unpaved road funds.

Recommendation (2). The General Assembly may wish to amend the Code of Virginia to increase the percentage of funds for unpaved roads from 3.75 percent, not to exceed 7.6 percent. This recommendation would continue the General Assembly's earlier decision to place a priority on paving non-surface treated secondary roads and would base the allocation on constuction need, at the 50 vpd funding standard.

Because of questions about the cost effectiveness of the 50 vpd paving standard, the General Assembly may wish to direct the Department of Highways and Transportation to assess the engineering justification for, and the cost effectiveness of, paving unpaved roads with traffic volumes as low as 50 vpd. Pending the results of that study, funding priority should be placed on unpaved roads with traffic volumes in excess of 100 vpd. Based on DHT's assessment, the General Assembly may wish to reevaluate its current priorities for unpaved roads and revise the funding standards or the paving priority accordingly.

Bridge Replacement Funds. Under the current allocation requirements, funds for bridges are included in the regular allocations. Thus, funds used for bridges must be taken from the allocation which would be available for other construction. Bridge costs have hampered the development of needed bridge projects because these high-cost projects can severely reduce the allocation which remains. Local officials are reluctant to commit to bridge projects for this reason. In addition, public interest in bridge work is relatively low. As a result, few are programmed. This is especially true in the secondary system because of the relatively small amounts available to individual counties.

Recommendation (3). In order to ensure the use of available federal aid, the General Assembly may wish to amend the Code of Virginia to provide for funding special bridge needs outside of the system allocation process. This could be accomplished in a manner similar to the distribution of funds for interstate construction or unpaved roads. The special bridge fund should include both the available federal aid and required State match. In FY 1984, such a fund would have amounted to $17.2 million. Allocations from this fund should be made on the basis of greatest need as determined from DHT's current bridge inspection program and the volume of traffic using the facilities. The funds for bridges should not be deducted from a locality's regular system allocations.

Regular System Allocations. After all of the special programs have been funded, the remaining construction funds are available for the regular allocations to the primary, secondary, and urban systems. Under the current provisions of law, the systems receive allocations in the proportions of 50 percent for primary, 25 percent for secondary, and 25 percent for urban. These proportions were assumed to represent the relative needs on the various systems.

Based on the comparison of current allocations to the proportions of need, current statutory percentages for each of the systems may be inappropriate. If the proportions are to be based on need, the most reasonable distribution would be to provide one third of the funds to each system.

Recommendation (4). The General Assembly may wish to amend Section 33.1-23.1B of the Code of Virginia to adjust the proportion of funds provided to each system to one-third.

Secondary System Allocations. The secondary system is the largest of the State administrative highway systems, with 67.1

percent of the total lane miles. It includes all the public roads in the counties, and all public and community roads leading to and from public schools, streets, bridges, and wharves in incorporated towns with populations less than 3,500 people. Certain other roads, such as those connecting public schools to primary and secondary highways, are also classified as secondary roads as provided by Section 33.1-67 and 33.1-68, *Code of Virginia.*

When the 1977 General Assembly revised the laws which allocate highway funds, it enacted the provision which requires that no county receive a secondary allocation less than it received in FY 1977. The effect of the provision, though entirely unintended, has been to allocate funds only on the basis of the allocation for construction in FY 1977. Because of the method used to allocate those funds in 1977, the current allocations are inequitable. In addition, the current statutory formula is inadequate for allocating funds because the factors are not independent measures.

Recommendation (5). Because the construction allocations for FY 1977 were not based on any statewide, consistent criteria and appear to be inequitable, the General Assembly may wish to amend Section 33.1-23.4 of the Code of Virginia to end the use of FY 1977 allocations as an allocation requirement.

Recommendation (6). The General Assembly may wish to amend the current statutory formula for allocating secondary system funds to include factors which have been shown to be independent measures. The alternative formulas presented by JLARC include only the objective factors which meet this criterion.

Because the current statutory allocations are inequitable, many alternative formulas were tested. Three options are presented as proposed replacements. Option S-1 allocates funds on the basis of population and area. Option S-2 makes allocation on the basis of vehicle registration and area. Option 3 substitutes vehicle miles of travel for vehicle registration.

Urban System Allocations. Major highways and roads in cities and towns over 3,500 in population constitute the urban highway system. Under provisions of Section 33.1-41 of the *Code of Virginia,* roads are designated as part of the urban system by the State Highway and Transportation Commission. With 8,714 miles, the urban system is the second largest of the State systems.

Distribution of urban funds in the past has been based on the population in the municipalities. DHT's urban division has tried to ensure that a city or town's proportion of funds eventually equals its proportion of the State's population. But equity has been measured in terms of 10-year cycles. That is, a city might have to wait 10 years for its allocations to be in line with its percentage of Statewide population. This contrasts sharply with the statutory process used for the secondary system, where equity can be judged on an annual basis.

The JLARC interm report on highway allocations proposed three possible formulas for allocating urban construction funds. The formulas were based on the regression analysis of urban highway needs and various urban factors.

Additional analysis shows that the population factor can be used to allocate funds equitably. Since this is the factor currently used by DHT in its 10-year cycle, it can also be used on an annual basis for allocating urban funds. To ensure that the funds allocated are effectively used for projects, the allocations should be made only to those cities and towns which have approved urban projects. The allocations made should not exceed the cost of the approved projects in each jursidiction.

Recommendation (7). The General Assembly may wish to amend the Code of Virginia to establish a statutory formula for allocating urban system funds based on the proportion of population in the jurisdictions eligible for urban funding. Annual allocations should be made only to those cities and towns with approved urban projects.

Primary System Allocations. The primary system includes the arterial highways and the extentions of arterial highways within cities and towns. The primary system is defined by Section 33-1.25 of the *Code of Virginia* as the State Highway System that supplements and complements the federal interstate system. The primary system also forms a complete network of

through highways that serves both intrastate and regional traffic flow. As of December 1981, 7,901 miles of primary roads were open to traffic.

Construction allocations are made to the highway districts based on formulas set out in Section 33.1-23.2 of the *Code of Virginia*

The distribution factors used in the current statutory requirements for allocating primary funds are highly intercorrelated and are not the best predictors of primary needs. In addition, the planning district boundaries were found to be a preferred geographical basis on which to distribute the primary system funds.

Recommendation (8). The General Assembly may wish to amend the Code of Virginia to revise the current statutory formula for allocating primary system funds to include independent factors which are weighted in proportion to their relationship to construction needs.

Recommendation (9). The General Assembly may wish to amend the Code of Virginia to change the geographical basis of aggregating primary allocations from DHT's eight districts to the planning district boundaries. These boundaries should be used only for the purpose of allocating funds. The districts should continue to administer any projects in their areas. In order to facilitate the programming of projects, the funds might be aggregated at the district level, and allocated to projects as needed. Any transfer of allocations from a planning district would create a balance which would have to be funded at a later date. The General Assembly may wish to specify a limit on the time that such balances may exist.

The primary system models were developed from factors that correlated highly with primary system needs. The models were developed using the 22 planning districts as a base. All options are based on the planning district geographical unit. Option P-1 includes measures of population and primary system lane miles. Option P-2 also includes lane miles as a factor, but replaces population with vehicle registration.

Allocations for the 1990's. JLARC's review of highway construction allocations was based on an empirical analysis of factors that can serve as surrogates for highway construction needs. By identifying the factors which most nearly approximate need, allocation formulas can be developed to distribute funds on the basis of need. Reassessment of the allocation formulas will be necessary on a periodic basis. Such an effort can be made more useful and less difficult through careful preparation and planning. The reassessment of transportation needs should include the factors identified by JLARC during its review and should include additional factors that are evident based on the transportation environment at that time.

Recommendation (10). The General Assembly may wish to amend the Code of Virginia to mandate the collection of data for the evaluation of highway fund equity. Because it is essential to such evaluations, the collection of data on vehicle miles of travel for all systems should be specifically included in such a mandate.

Recommendation (11). The Secretary of Transportation and Public Safety should ensure that a reassessment of highway construction allocations is made on a periodic basis as a part of the statewide transportation planning process. The analysis should be based on the prioritization of needs among systems and localities, and transportation goals should be more clearly established for the future. An improved methodology for identifying special needs and involving local governments should be developed.

County Maintenance Allocations (pp. 61-82)

The General Assembly has recognized that adequate maintenance is essential to preserving Virginia's highway system and ensuring the safety of the traveling public. In 1977, the General Assembly assigned highway maintenance first priority in transportation funding by directing that the Highway and Transportation Commission allocate all "reasonable and necessary" funds for maintenance before allocating funds for other programs.

How funds are allocated is dependent on DHT's budgeting process. Therefore it is critical in assessing the reasonableness and equity of maintenance funding to look at DHT's process for distributing those funds.

Highway Maintenance Budgeting. The highway maintenance budget is developed by DHT's maintenance division. The funds budgeted for expenditure in each county constitute the maintenance allocations. Current and future allocations may be inappropriate because of problems in the process used to budget maintenance expenditures. JLARC staff have identified two problems: (1) the current process is grounded on the planned costs for previous years rather than actual experience; and (2) maintenance management system standards used in budgeting may be inadequate.

Recommendation (12). DHT should prepare its biennial maintenance budget on the basis of a realistic assessment of the ordinary and replacement maintenance program to be accomplished, and the actual expenditures anticipated in achieving the proposed program. DHT should revise its six-year program estimates on the basis of actual costs for the 1983 base year. Maintenance projections should be reduced by $30.8 million in FY 1985, $32.6 million in FY 1986, $34.1 million in FY 1987, $35.7 million in FY 1988, $37.3 million in FY 1989, and $39.0 million in FY 1990.

Because the budget for the 1984-1986 biennium was also based on an artificially high budget for FY 1983,. the General Assembly could reduce the maintenance appropriation for the second year of the 1984-1986 biennium by $32.6 million without any reduction of the maintenance work accomplished by the department.

Recommendation (13). DHT should review the MMS standards periodically and update the standards based on work priorities, workload assumptions, and quality considerations.

Adequacy of Maintenance Funding. To further assess the appropriateness of maintenance budgeting, JLARC staff surveyed the views of DHT resident engineers and reviewed DHT's process for maintenance replacement budgeting. The key findings of these efforts were: (1) most resident engineers believed that sufficient ordinary maintenance funds have been provided, (2) there is a difference between central office staff and resident engineers about the need for maintenance replacement funds, and (3) the maintenance replacement budgeting process appears to have placed arbitrary restrictions on the assessment of needs and is not based on systematic knowledge of pavement condition. While the survey was a subjective assessment and is inconclusive, it raises questions about the department's ability to consistently and accurately identify replacement maintenance needs.

Pavement Management System. A pavement management system (PMS) is used to collect and analyze data on highway pavement condition. The information provided by the PMS is used to index pavement condition and monitor changes over time. Policy can then be established regarding the level of pavement deterioration which will trigger spending for maintenance.

The 1982 and 1983 Appropriations Acts require that DHT's maintenance program for the 1984-86 budget "be based on an up-to--date pavement system which provides data on pavement and bridge conditions on all highway systems." DHT is currently developing a pavement management system, but it is not complete, and department staff now project that it will be several years before the system will be used in budgeting for all highway systems. DHT may not have placed adequate priority on this project, and therefore will not be able to comply with the Appropriations Act requirements for the use of PMS.

Recommendation (14). The General Assembly may wish to require that DHT take all necessary steps to ensure that the pavement management system now under development is used in budgeting on all highway systems for the 1986-88 biennium. In order to monitor the process, the department could be required to periodically report its progress to the House Roads and Internal Navigation Committee, and the Senate Transportation Committee.

There are two important areas where DHT needs to improve or expand upon the scope of its present PMS work. The first area is the validation of pavement distress ratings, and the determination of critical distress ratings. The second area is the use of PMS in budgeting for ordinary maintenance surface repair work as well as maintenance replacement.

Recommendation (15). The department should put a high priority on integrating the pavement management system into the budgeting process as required by the Appropriation Acts. The system should be used to help determine funding needs for maintenance replacement. The threshold rating for resurfacing consideration should be set based on a study of the optimal distress ratings below which pavements should be replaced, rather than on predetermined surfacing cycles. The pavement management system should also be used to project future biennial budget replacement needs, to assess the consequences of deferred replacement maintenance, and to assess the cost-effectiveness of various types of replacement activities (such as a comparison of surface treatment and plant mix).

Recommendation (16). DHT should explore the use of pavement condition measures of the pavement management system as one factor in allocating ordinary maintenance surface repair funds.

Snow Removal Budgeting. Snow and ice control is an expensive element in DHT's ordinary maintenance program in the counties. In five of the six fiscal years from FY 1978 to FY 1983, snow removal activities cost the State of Virginia more than $21 million. In FY 1982, the cost was a record $27.9 million. Present budgeting of snow removal as part of the ordinary maintenance program is a DHT practice, not a legislative requirement.

The budgeting of snow removal as part of ordinary maintenance has made rational work planning by field units very difficult. It can also force some field units to choose between their budget constraints and what they view as a reasonable and necessary maintenance program, and it can give other field units extra funds.

Recommendation (17). The General Assembly may wish to provide in Section 33.1-23 of the Code of Virginia that snow removal should be funded as a separate maintenance item, and that unexpended snow removal funds at the end of a fiscal year should be reappropriated in the following fiscal year. The General Assembly then may wish to provide authority to the State Highway and Transportation Commission to transfer funds from the construction program if the funds in the snow removal fund in any given year are less than snow removal costs.

If the General Assembly provides for the budgeting of snow removal as a separate maintenance item, then DHT should establish the necessary controls to ensure that only reasonable and necessary snow removal activities are charged to the snow removal fund.

Urban Street Payments (pp. 83-106)

The General Assembly recognized in 1932 that the creation of a statewide motor fuel tax would make it difficult for cities and towns to perform highway construction and maintenance without assistance from the State. Legislation was enacted in that year requiring the State Highway Commissioner to make payments to cities and towns with a population in excess of 3,500 for the maintenance and construction of their roads and streets.

Currently, 74 cities and incorporated towns receive payments to maintain, improve, construct, and reconstruct the approved roadways. Payments are made quarterly, based on the approved lane mileage of primary extensions and "other" streets. These payments, like county maintenance, are made prior to any other allocations. In fiscal year 1984 the payments are expected to approach $69.9 million.

Study Approach. In order to assess the reasonableness, appropriateness, and equity of the distribution of urban assistance payments, JLARC staff made a comparison of the actual payments to municipalities with the estimated maintenance costs on a sample of urban road segments. The research effort focused primarily on the payment rates and the designation of qualifying streets and roads, because they govern the actual payments to cities and towns.

A key element in the methodology was the use of DHT standards and unit costs in estimating the cost for maintenance on the sample segments. This approach was specifically designed to provide for an estimate of costs which would be equivalent to the maintenance costs incurred by DHT on behalf of counties. Thus, the resulting

options for urban payments improve equity among cities and towns, but also between the urban jurisdictions and the counties. The JLARC analysis focused on maintenance because urban construction and reconstruction needs are addressed in the analysis of urban construction allocations.

Equity of Current Statutory Provisions. The current statutory requirements for allocating urban street payments were the result of legislation passed by the 1979 General Assembly. Clearly, the provisions adopted that year were an improvement over the methods previously used to distribute the urban payments. But several aspects of the current statutory provisions still appear to be inappropriate, and in some instances inequitable. In addition, interpretation and implementation of these provisions by DHT has been inconsistent and may have contributed to the inequities in payments. JLARC staff have identified four specific problems with the current statutory provisions: (1) the current payment classes are not related to differences in the costs for highway maintenance; (2) the current payment rates do not equitably reflect actual costs as compared with the counties; (3) the methods for adjusting rates annually have been used inconsistently; and (4) current urban pavement standards are unreasonable in some instances.

Payment Classes. In order to assess the adequacy of the current payment classes, the cost estimates prepared by DHT resident engineers were aggregated by the two classes. The segment costs were tested for variation of costs between the classes and within the classes. While the variation of costs within the classes was quite large, there was no statistically significant difference between the two classes. This has a serious adverse impact on the equity of payments. A preferable system for classifying roads and establishing rates would be one that accounts for the use of the street and the traffic it carries. The four functional classifications accomplish this objective.

Recommendation (18). The General Assembly should amend Sections 33.1-41, 33.1-43, and 33.1-80 of the Code of Virginia to establish the functional classifications of roads defined by the FHWA as the basis for making urban street payments. The principal and minor arterial systems should be grouped into one payment category, and the collector and local streets grouped into a second category. As an alternative, collector and local streets might remain separate because of the differences in mileage.

Payment Rates. The current payment rates vary by construction district. The original base rates established in 1979 were $3,850 per lane mile for primary extensions and $2,200 per lane mile for other streets. Because of required adjustments to the rates since 1979, the districts all have different rates now. Because these payments are based on the two administrative classes, the amounts are inequitable. The previous base rates were not established as a result of an objective analysis of urban street maintenance costs. Since 1979 the adjustments have compounded the inequities in the base rates.

Recommendation (19). Payment rates should be established for the functional categories of streets and roads on the same basis as for State maintenance on county roads. Rates could be based on the estimates for ordinary and replacement maintenance prepared for JLARC by DHT resident engineers.

Recommendation (20). The General Assembly should amend Sections 33.1-41, 33.1-43, and 33.1-80 of the Code of Virginia to eliminate the use of different payment rates in the eight DHT construction districts. A single rate for each funding class should be used statewide.

Methods of Adjusting Rates. The definition of maintenance experience dictates to some extent the adjustment factor. The index method requires adjusting payments in each district on the basis of inflation. The "total maintenance cost" method requires accounting for the level of expenditues in DHT. Inconsistent use of these methods, and the nature of the maintenance activities included within each method, have adversely affected payment equity. In addition, DHT has used an inappropriate base rate to adjust payments annually. Finally, the use of maintenance replacement expenditures has caused problems with the annual adjustment.

The effect of creating new base rates each year for each district and defining maintenance experience in two different ways is an inequitable distribution of urban

street payments. The use of maintenance replacement expenditures has also affected equity. There is a 40 percent difference between the district rates for primary extensions and a 26 percent difference in the rates for other streets. Clearly such differences do not exist in the county maintenance program. In fact, one maintenance division official indicated that a 40 percent difference between districts was totally unreasonable. The urban division, however, has indicated that this variation between districts can be expected to continue from year to year under the current process for adjusting rates.

Recommendation (21). For urban street payments to be reasonable and equitable among municipalities, a clear and reasonable definition of maintenance experience is necessary. The definition should be tied to the level of maintenance funding DHT provides, as well as activities that occur in cities and towns.

Recommendation (22). The General Assembly may wish to amend Sections 33.1-41, 33.1-43, and 33.180 of the Code of Virginia establish a method for annually adjusting payments to cities and towns. DHT should establish a unit cost index with a 1983 base which would indicate changes in maintenance allocations due to inflation each year. Adjustments should be made to the base rates established for urban street payments. Each adjustment thereafter should also be made to the base rates.

Urban Pavement Standards. Not all roads in cities and towns are eligible for urban street payments. One of the requirements for eligibility is a pavement width of 30 feet and a right-of-way width of 50 feet. The purpose of this requirement is to ensure sufficient pavement for two travel lanes and one parking lane. While this standard appears generally appropriate, its application to industrial access roads appears somewhat less reasonable.

JLARC staff visited several cities and towns that had received industrial access funds for at least one project. No vehicles were observed parked on access roads with 30-foot pavement widths. In several instances "No Parking" signs were clearly posted along the road.

Clearly, in some cases, the need to build city and town industrial access roads at the higher urban standard is unnecessary. Funding roads at 30-feet increases the construction and maintenance costs for industrial access roads in cities and towns. In addition, funds allocated to construct a 30-foot wide pavement decrease the amount available for other projects.

Recommendation (23). The General Assembly may wish to amend Section 33.1-221 (b) of the Code of Virginia to allow the Highway and Transportation Commission to grant variances in the pavement width requirements for industrial access roads located in cities and towns that qualify for urban street payments. The Commission should take into consideration the need for parking on industrial access roads.

Options for Funding Urban Assistance. Because the current system of classifying streets and roads in municipalities is inappropriate, and the current rates are unreasonable, several options for making urban assistance payments are presented as proposed replacements. Two separate combinations of the functional classifications are presented. The first uses a two-class system which combines principal and minor arterials in one class, and collectors and locals in another. The second option keeps the collectors and locals as separate payments categories.

Arlington and Henrico County Allocations (pp. 107-112)

The local roads and streets for two counties remain outside of the State secondary highway system. Arlington and Henrico counties chose in 1932, when the secondary system was established, to remain independent. The two counties receive payments directly from the Department of Highways and Transportation and have complete responsibility for constructing and maintaining their secondary roads. The two counties combined will receive $14.2 million in FY 1984.

The current procedures for allocating funds to Arlington and Henrico are confusing and complex as a result of the many pieces of legislation enacted over the last 50 years. The current percentages were based on factors which have little relation-

ship to current transportation needs. In addition, an analysis conducted by JLARC staff indicates that the current process may not provide appropriate levels of funding to the two counties.

Recommendation (24). The General Assembly may wish to repeal Section 33.1-23.5 of the Code of Virginia, substituting a new process for allocating funds to Arlington and Henrico which provides: (1) an amount for maintenance and administration on a per-lane-mile basis at the rate of $6,254 per lane mile for Arlington, and $3,130 per lane mile for Henrico in FY 1984, with the rates adjusted annually to account for increases or decreases in maintenance costs due to inflation for the secondary system; and (2) an amount for construction as allocated by formula for the secondary system. The total allocations should be made to the counties as a lump sum on a quarterly basis as is the current practice.

Public Transportation Assistance (pp. 113-130)

There are currently 19 public transportation systems operating in Virginia. The largest of these systems is the Washington Metropolitan Area Transit Authority, which provides bus and rail services in Northern Virginia. The other large systems provide bus services in Richmond, Tidewater, the Peninsula, Roanoke, and Lynchburg. The remaining 13 systems serve smaller cities, towns, and rural areas. In all, 2.8 million Virginians, or about half of the State's population, are served by the public transportation systems. The State assistance program for public transit began in the early 1970's, when there was a failure of the private transit operators.

Funding Policies and Changing Transit Needs. When the State first involved itself in providing assistance to public transportation in the early 1970's, the purpose of the aid was to provide adequate capital equipment funding, an area which had suffered from years of neglect. With the State effort, and with the federal aid programs directing funding to capital projects, the transit systems in Virginia were largely recapitalized by 1982. As a result, the need for capital funding has been significantly reduced, but operating costs and projected operating deficits continue to increase.

Despite this trend of changing needs, the State assistance program remained unchanged until 1983, when the General Assembly took a first step by permitting the use of State funds for certain specific maintenance and operating costs. Further steps, such as additional State operating assistance for vehicle maintenance, would offer the benefit of helping to protect the State's substantial investment in capital equipment and would reduce future capital costs. State operating assistance, if allocated in certain ways, could also be used as an incentive to achieve statewide objectives with regard to the availability, quality, and efficiency of service.

Recommendation (25). The General Assembly may wish to reconsider its general prohibition on the use of State assistance for operating costs. However, assistance for capital acquisition, ridesharing administrative support, and experimental transit programs should be funded prior to the allocation of operating assistance. The distribution of operating assistance should be on the basis of one or more factors which promote the statewide objectives endorsed by the General Assembly, and in no case should State operating assistance to a transit system exceed the actual operating expenditures.

Inadequacies in the Current Process. A change to include operating assistance as a part of the State's public transportation program will necessitate some other changes in the assistance program. There are three specific problems which should be addressed. First, the transit system operating data is wholly inadequate for the purposes of allocating funds. Second, transit system performance, or operating efficiency, is not currently measured and cannot be considered in funding. A consultant's report on a performance evaluation system, completed January 1984, does not include recommendations on how the performance evaluations are to be used for allocating transit resources. Finally, because the current process is informal and largely arbitrary, allocations are unpredictable, making financial planning by the transit operators more difficult than it need be.

Recommendation (26). The public transportation division should develop

uniform financial and operating data for all transit systems. The division should develop specific methodologies for the collection of such data by the transit operators. In addition, the division should regularly and systematically verify the data with annual financial audits and periodic field reviews. To the extent possible, the data should include, but not be limited to, the measures necessary to implement a performance evaluation program.

Recommendation (27). The General Assembly may wish to amend Section 33.1-391E of the Code of Virginia to require the Directorate of Public Transportation to collect and report data which may be required for the allocation of public transportation assistance.

Recommendation (28). The public transportation division should implement a performance evaluation system as soon as possible. The results of performance evaluations should be used to improve the technical assistance provided to the transit operators by DHT. In addition, the General Assembly may wish to adopt the use of performance measures as a part of the public transportation allocation process.

Recommendation (29). The General Assembly may wish to amend Section 33.1-23.1 of the Code of Virginia to establish a public transportation allocation. The amount of the allocation should be specified by statute to be not less than three percent nor more than five percent of revenues from State sources, with the exact amount of each year's allocation to be set by the General Assembly in the Appropriations Act based on the needs of the transit systems, the availability of funds, and other highway maintenance and construction needs.

Public Transit Funding Options. The basic public transportation funding program proposed by JLARC staff has four major components. These are (1) capital grants, (2) experimental transit grants, (3) ridesharing administrative support, and (4) operating assistance. Capital needs, experimental projects, and ridesharing programs are funded as first priorities. The operating assistance is allocated by formula.

The use of a formula for operating assistance has several important benefits. First, the use of a formula would result in more stable and predictable funding for the transit systems. Second, the formula would relate the funding of operations to statewide relative measures of operations, thereby providing an equal level of funding to all systems.

Recommendation (30). In order to promote certain incentives, the General Assembly may wish to adopt a formula for the purpose of allocating public transportation operating assistance.

JLARC staff have developed several alternative methods for allocating the funds. Option PT-1 allocates on the basis of passenger trips, so it accounts only for the operational output of the systems. Options PT-2 and PT-3 produce significantly different allocations from PT-1 because both include efficiency indicators. This results in some shift of funding to the smaller systems, which operate at a lower cost per trip and per hour operated.

A Program for Allocating Highway and Transportation Funds (pp. 131-136)

The options and alternatives presented in this report are all based on objective analyses of equity and are technically correct. There may be many differing opinions about their political acceptability. JLARC staff have attempted to provide a sufficient range of alternatives to support the discussion of the issues, and to provide a base from which the General Assembly can develop its own alternatives and proposals.

An important part of the legislative consideration of these alternatives is the need to bring the various options, recommendations and proposals together into a single, complete program for allocating funds. Any complete proposal for transportation allocations will include the 12 essential elements which have been outlined in the text of this report.

At the request of the Commission, legislation which implements the recommendations of this report was drafted for the 1984 session of the General Assembly. The legislation is based on the selection of one option for each of the 12 essential elements outlined in the report. Senate Joint Resolution 20 requests a joint subcommittee of the

Senate Committees on Finance and Transportation and the House Committees on Appropriations, Finance, and Roads and Internal Navigation to review the findings of the report and the specific legislative proposals. The 18 proposed bills and one proposed resolution are printed as a part of Senate Joint Resolution 20. These proposals implement the full range of staff recommendations requiring legislative action.

The proposed legislative changes to the current provisions for allocating highway and transportation funds would have both immediate and long-range effects on the funding of transportation programs. The first and most direct result would be a more equitable distribution of transportation resources in the Commonwealth. Adoption of the complete proposal would ensure that funding is based on need. Cities and counties would share equitably in funds available for highways and public transportation. Also as a consequence of adopting the JLARC staff proposals, funding for some programs would increase and others would decrease.

The long-term impact of the proposal would also involve increases in funding for urban street payments, public transportation, and Arlington and Henrico counties and elimination of excessive amounts in the DHT maintenance budget. Changes from the six-year program for these funding categories are shown in detail in the final chapter of the report.

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I. INTRODUCTION

The 1982 General Assembly directed JLARC to conduct a study of the reasonableness, appropriateness, and equity of highway construction allocations. The findings and recommendations of that study were reported in January 1983. At that time, the General Assembly directed that the JLARC study be expanded to include the other major programs funded from the Highway Maintenance and Construction Fund. This study is the final JLARC report on highway and transportation allocations as directed by the 1983 Appropriations Act, Item 641:

> The Joint Legislative Audit and Review Commission is directed to continue and expand its study of the reasonableness, appropriateness, and equity of the current statutory provisions for allocating highway construction funds to include (1) State assistance for mass transit; (2) maintenance assistance payments to the cities and towns of the Commonwealth; (3) provisions for expending highway system maintenance funds in counties; and (4) financial assistance to counties for highway purposes. A final report shall be provided to the Governor and General Assembly prior to the 1984 Session.

The report includes an update of the January 1983 interim study on highway construction allocations. In addition, it includes the findings and recommendations for four other transportation funding programs: county maintenance budgeting, urban assistance payments, funding for Arlington and Henrico, and public transportation assistance. The recommended changes to the allocation processes are intended to reflect the General Assembly's policy that the distribution of funds to the localities be fair and equitable.

The Highway Maintenance and Construction Fund

Virginia finances its highway system from a special Highway Maintenance and Construction Fund (HMCF). The fund is the receiving point for all revenues intended to support State transportation programs. Sources for the fund include various State taxes and user fees, federal aid, and toll collections. All of Virginia's transportation programs, including highway maintenance and construction, are funded from the HMCF.

Revenues. Estimated highway fund revenues for FY 1984 are shown in Figure 1. The single largest source of revenue is the motor fuels tax. In FY 1984 it is projected by the Division of Motor Vehicles (DMV) to produce $312.5 million, or 31 percent of all revenues.

A significant portion of the fund also comes from federal sources. Interstate and other federal aid is estimated to total $311.7 million for FY 1984, or about 30 percent of all revenues. The other major revenue sources include the oil company excise tax, the motor vehicle sales and use tax, and motor vehicle license fees.

In the past, the motor fuels tax was a stable and reliable source of revenue. As fuel consumption increased, so did the State's income from this tax. But increases in fuel costs and in vehicle fuel efficiency have reduced the steady growth previously seen for the tax. Other sources, such as the sales and use tax, have also been depressed in past years as a result of economic recessions. For the first half of FY 1984 these revenue sources have shown a strong recovery, however, and have generated revenue above expectations. Over the next five years, some increase in highway fund revenues is expected.

Allocations. Highway fund allocations for FY 1984 are shown in Figure 2. The largest allocation each fiscal year has typically been for the highway construction program. For FY 1984, construction is almost half of the total fund to be allocated. County maintenance has also drawn a substantial allocation, constituting one fourth of the total. Much smaller allocations are made for urban assistance payments, public transportation assistance, and funding for Arlington and Henrico counties.

The effect of somewhat slower growth in the HMCF on highway program allocations in the 1980's could be significant. In addition, any major changes in the methods for allocating funds may still constitute a "zero sum game." That is, the options and alternatives presented in this report would not result in an increase in funds for the HMCF. Instead, the alternatives would redistribute existing funds by changing the process used to allocate them. To some extent, the effects of the proposed changes or actual maintenance and construction activity can be offset by adjusting some maintenance and administrative allocations which have been overestimated. These budgeted amounts have not been spent in the past several years and adjustments would not reduce the amount of work actually accomplished. Normal revenue growth may also make some of the proposed changes possible without reductions in other programs. But the General Assembly can make separate decisions on the level of funding it desires for each of the transportation programs totally apart from the issues of equity in the allocation/ statutes.

The Transportation Allocations Process

The allocation of funds for highway and transportation programs in Virginia is not accomplished through a single, all-inclusive process. Instead, many different statutory requirements and provisions of the annual Appropriations Act designate how transportation programs are to be funded.

Figure 1

Estimate of Highway Fund Revenues FY 1984

TOTAL $1,031,036,800

Excise Tax - 9%
$86,907,000

Other Sources - 6%
$65,841,600

Federal Aid Interstate - 20%
$207,924,000

Motor Vehicle
Licenses - 10%
$106,482,000

Sales and
Use Tax - 8%
$77,051,000

Other User
Revenues - 7%
$70,472,000

Fuel Tax - 31%
$312,550,000

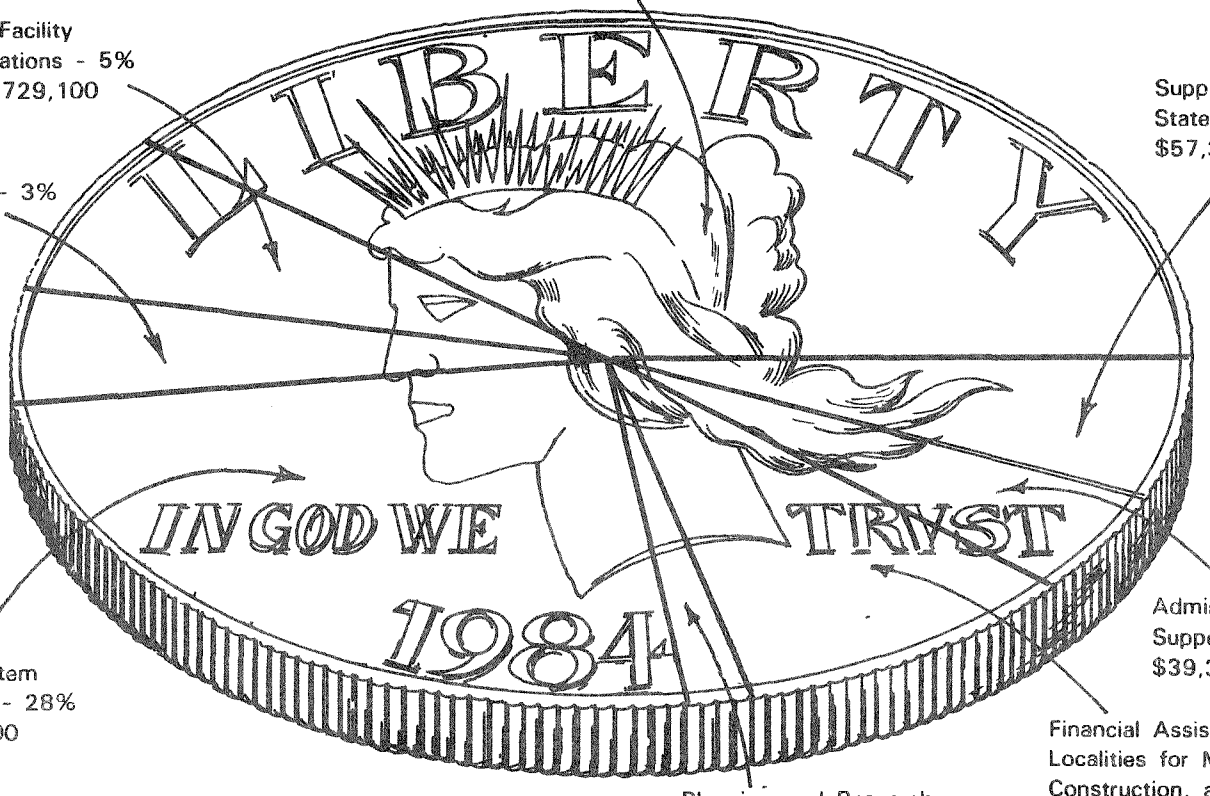
Other Federal Aid - 10%
$103,809,200

Source: Department of Highways and Transportation

Figure 2

Highway Fund Allocations FY 1984

TOTAL $1,031,036,800



Highway System Acquisition and Construction - 44%
$455,084,200

Toll Facility Operations - 5%
$51,729,100

State Aid for Public Transit - 3%
$35,246,335

Support to Other State Agencies - 6%
$57,331,500

Highway System Maintenance - 28%
$289,428,300

Administrative and Support Services - 4%
$39,339,065

Financial Assistance to Localities for Maintenance, Construction, and Other - 8%
$84,950,600

Planning and Research, Regulation, Capital Budget and Land Management - 2%
$17,927,700

Source: Department of Highways and Transportation

The General Assembly designated State highway maintenance as the first priority in transportation funding in 1977 when it required the Highway and Transportation Commission to allocate all "reasonable and necessary" funds for highway maintenance before making allocations for any other purpose. Thus, county maintenance must be funded by law before the construction allocations are made. Funds for Arlington and Henrico, urban assistance payments, and public transportation funds are also allocated before construction.

There are a variety of processes by which the transportation funds are allocated within the programs. For county maintenance, ordinary maintenance allocations are determined by the highway department through the use of a maintenance management system which includes several work standards. Maintenance replacement allocations are based on past experience, with some increases to provide for inflation and to meet some critical needs. For urban street payments, allocations are made to cities and towns based on the amount of lane mileage in two classes of roads. Funds for Arlington and Henrico are allocated by a complicated formula which was developed in 1932. Public transportation funds are budgeted by DHT, but may be revised by the General Assembly as a part of the appropriations process. Finally, the construction allocations are made using several formulas, which are based on measures of population, area, travel, and system mileage.

The primary finding of this study is that some improvement is necessary in all of these processes. For county maintenance, several key elements of the DHT budgeting process could be improved to better ensure equitable funding for ordinary and replacement maintenance, and to ensure that only valid needs are funded. In addition, it is critical for all other programs that maintenance allocations be limited to "reasonable" amounts as well as "necessary" amounts. Urban street payments are not currently based on a sound system of payment categories and rates. The procedures for Arlington and Henrico are overly complex and may not provide equitable funding for the two counties. The formulas used to allocate construction funds are technically inadequate and do not distribute funds on the basis of need. And finally, public transportation assistance may not meet the future needs of the transit systems in Virginia. These findings and alternative solutions to them were the product of an objective analysis of the processes and the resulting allocations.

JLARC Study Approach

Due to the complexities and significant differences of the major transportation programs, no single study approach was appropriate. As a result, JLARC staff reviewed the reasonableness, appropriateness, and equity of funding within each major program separately. The study methodologies were specifically designed to fit the particular program being reviewed.

A key element of the study approach, however, was the similar treatment of counties and cities. In the construction allocation

analysis, city and county needs were both considered in identifying the appropriate distribution level of funding for the highway systems. For the evaluation of equity in maintenance allocation, the urban street payments analysis was based on DHT standards and unit costs in counties. In this way, the alternatives for urban street payments are more closely related to the county maintenance program. Similarly, the evaluation of funding for Arlington and Henrico counties was based on the maintenance and construction programs for the counties in the regular secondary system. All of these approaches were designed to ensure that all options achieve equity across counties and cities as well as within any program.

Because the transportation allocations have a major impact on local governments and on local and regional organizations, proposed methodologies for the study were presented to local governments and other interested organizations at eight public workshops, and through a continuing advisory network. A key feature of the entire research process, then, was the involvement of local governments, planning district commissions, transit operators, and many other groups.

Methodologies. The method used in the assessment of construction funding was a regression analysis which examined the relationship between specific factors, such as the population or the area of a locality, and the construction needs which have been identified for that locality. Those factors which showed the greatest relationship to construction needs in the State were used in formulas to present funding options for construction. These options equitably distribute funds among localities on the basis of relative need for construction dollars.

To assess county maintenance funding, JLARC examined planned and actual work quantities and expenditure data for six fiscal years, from FY 1978 to FY 1983, for some major maintenance activities. The DHT maintenance budget and the long-term projection for maintenance costs were reviewed. The nature of potential changes to the DHT budgeting process, and their advantages and disadvantages, were discussed with DHT personnel. Federal Highway Administration officials involved with pavement management system development and highway administrators in other states were contacted to explore the innovations which other highway departments might be working on. In addition, the reasonableness of the current DHT budgeting process for snow removal was examined.

The most complex methodology was used to assess urban assistance payments. Based on DHT standards, resident engineers were provided with a framework for calculating expected maintenance costs on sampled road segments in cities and towns. An analysis of variance was performed to determine whether there were statistically different costs between the various road classifications. New base rates, or estimates of the maintenance costs per lane mile, were calculated for the various classifications.

For the evaluation of funding for Arlington and Henrico, the JLARC methodology had two major parts. In the first part, JLARC staff

estimated the maintenance budgets for the two counties based on DHT standards and unit costs. The second part involved allocating construction funds from each of the secondary system options developed for the construction allocation analysis.

The major method used to assess public transportation funding was a review of two basic groups of factors for use in a public transit allocation formula: (1) operating factors, which are measures of transit operations, and (2) demographic factors, which are measures of the jurisdictions served by the transit system. The analysis looked at the incentives or disincentives to service availability and efficiency which the use of the factors in a formula would provide, and the report shows the funds which the various transit systems would be allocated under the different formulas used.

Allocation Workshops. Allocation workshops were held in the summer of 1982 in Roanoke County, Fairfax County, Norfolk and Richmond, and again in the spring of 1983 in Hampton, Roanoke, Richmond, and Arlington. JLARC staff presented the proposed methods for the study and addressed the questions and comments of the workshop participants. More than 200 people attended the eight workshops. Representatives from many local governments participated, as did regional planning commissions, public transit operators and interest groups. The purpose of the workshop was to provide for the exchange of ideas between JLARC staff and local officials, and as a result, some revisions were made to the methodologies used in the study. A secondary purpose of the workshops was to identify individuals interested in participating in an advisory network.

Advisory Network. The advisory network was chaired by JLARC's Chief Methodologist, and was composed of 98 members representing local governments, planning district commissions, transit systems, ridesharing agencies, chambers of commerce, and professional associations. The network was a formal mechanism which ensured that local concerns about the study methods and findings were communicated to the study team. The network also provided a format for obtaining comments and suggestions from individuals and organizations that had expressed an interest in the study.

Report Organization

This report is organized into seven chapters. The first chapter presents an overview of the Highway Maintenance and Construction Fund and the JLARC study approach. Chapter II is an update of the construction analysis originally reported in the January 1983 interim report. The third chapter focuses on the findings and recommendations for the DHT maintenance budgeting process and some proposed improvements. Chapter IV deals with the urban assistance payments. Chapter V presents the analysis on funding of Arlington and Henrico. In the sixth chapter, the findings and recommendations for public transportation allocations are presented.

Chapter VII is a summary of the elements necessary for a complete proposal to improve the equity of transportation allocations and shows the impact that such a proposal might have on transportation program funding. Also included in the final chapter is a proposed allocation program based on legislation introduced in SJR 20.

For purposes of analysis, all comparative allocation figures used in the body of the report show the effect of statutory changes on actual 1984 allocations. The program figures shown in the final chapter, however, illustrate the effect of adopting the various changes recommended in SJR 20, including various budget changes recommended in the current six-year highway program.

II. HIGHWAY CONSTRUCTION ALLOCATIONS

In 1977, the General Assembly undertook a major review and revision of the way in which highway construction funds were allocated in Virginia. This was the first major revision since 1962, and recognized the rapidly changing transportation environment. The outcome of the revision was a greatly simplified and more rational system for allocating highway funds. Shortly after these revisions were made, however, the highway construction environment underwent additional major changes. The interstate system was brought near completion, and highway revenues grew at a much slower pace than had been the case just a few years before.

With completion of major goals and a changed funding environment, a reassessment of the methods and procedures for allocating highway funds became necessary. To this end, the General Assembly requested that JLARC conduct a study of the current highway construction allocation process. In many ways, the JLARC highway allocation studies are a continuation of the efforts begun by the General Assembly in 1977.

The interim report mandate for the study suggested that any new system for allocating highway construction funds should be based in part on an empirical analysis of construction needs in the localities, and the various characteristics of the localities that appear to generate those needs. The interim report findings were based on such an empirical analysis of needs and local characteristics. In this final report, the construction allocation findings have been summarized and, where appropriate, have been revised to reflect new data or additional analysis.

The analysis showed that changes in the current methods for allocating funds are needed. The proportions presently provided to the administrative highway systems do not reflect the relative needs identified on those systems, and should be revised. Declining funds for construction and the requirement for secondary allocations to be based on the amounts allocated in FY 1977 have resulted in inequitable allocations to many counties. This requirement, which once acted as a "hold harmless" provision, now contributes to an increasingly inequitable distribution of funds. In addition, the statutory formulas for both the secondary and primary systems are technically inadequate. Revisions to the formulas will be necessary to ensure an equitable distribution of funds. The General Assembly may also wish to consider establishing, for the first time, a statutory formula for urban system allocations.

The Current Construction Allocations Process

The highway allocations process consists of several discrete steps (Figure 3). Before any funds are designated for construction, allocations must first be made for highway maintenance, administration of DHT, and other specified transportation activities. The remaining funds are allocated for highway construction in the manner described below.

Funds for three major categories are reserved for specific purposes before any construction allocations are made. These are (1) interstate federal aid, (2) unpaved road funds, and (3) miscellaneous categories. In addition, there are several categories of funds, such as coal haul roads and Appalachian roads, which are included in the construction budget but are not a part of the allocations. These funds are primarily federal pass-throughs and the required State matching funds for special programs.

System allocations are the distribution of the remaining construction funds to the State administrative highway systems. Section 33.1-23.1 of the *Code of Virginia* specifies this allocation of funds: 50 percent for the primary system and interstate match, 25 percent for the secondary system, and 25 percent for urban streets and highways. Within each system, funds are further apportioned by law to the construction districts or localities. Primary system funds are allocated to the eight DHT construction districts so that each district's share of funds is proportionate to its share of the State's area, population, and primary road mileage weighted 40 percent; vehicle registration weighted 40 percent; and lane mile need weighted 20 percent.

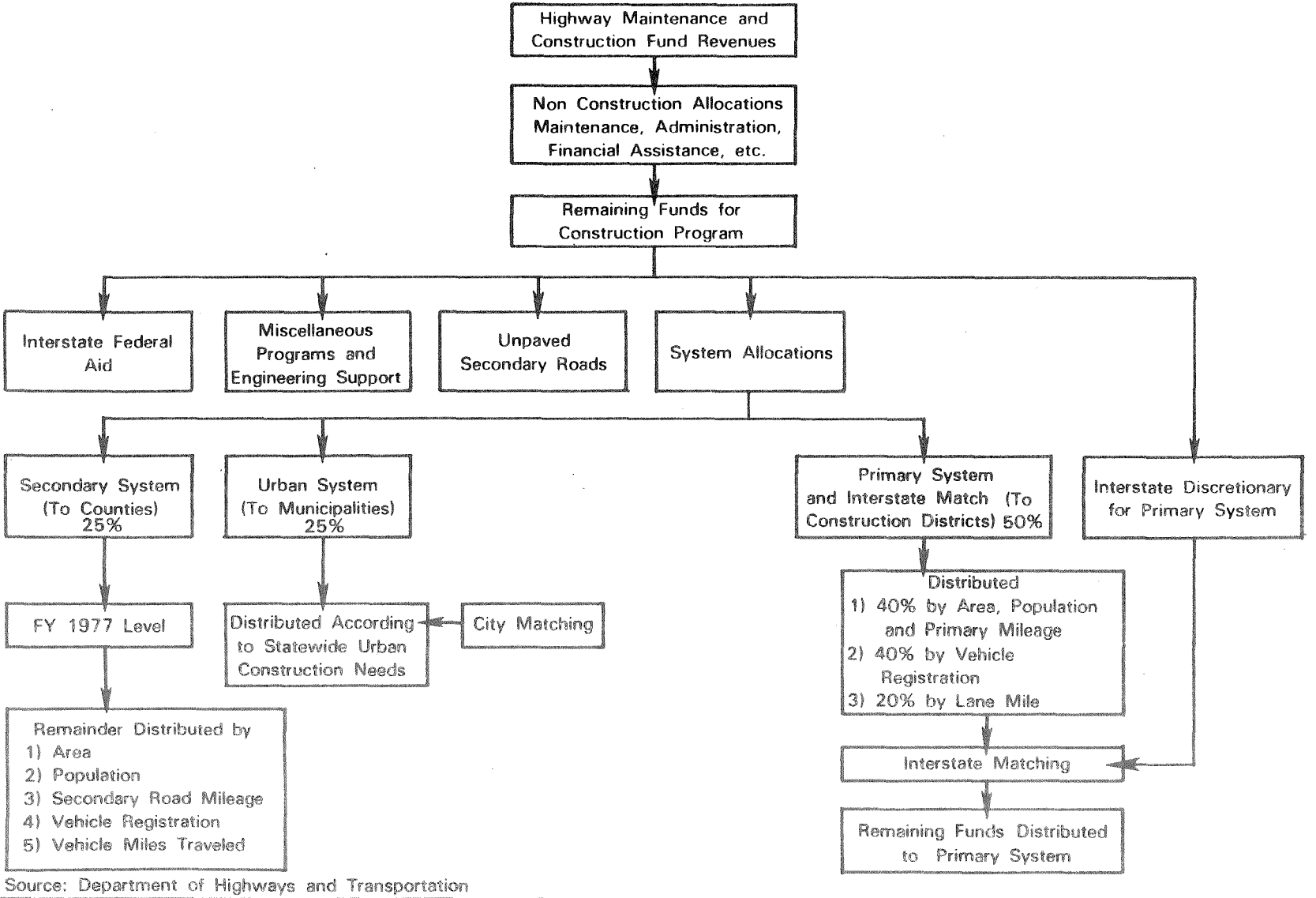
Twenty-five percent of the funds available for construction are allocated to the secondary system. The regular secondary system has an amount set aside equal to that allocated to the secondary system in FY 1977, and these funds are distributed among the 93 counties and one city in the system in the same amounts as each received for that fiscal year. Any remaining secondary funds are allocated among the localities in the State secondary system on the basis of area, population, secondary road mileage, vehicle registration, and vehicle miles traveled, each weighted equally.

Urban system funds are allocated among cities and towns with a population of 3,500 or more on the basis of "statewide urban construction needs." DHT has implemented this requirement by using the population in each city and town as the basis for distribution. In contrast to the primary and secondary systems, there is currently no statutory formula for allocation of urban system funds to individual municipalities.

The final step in the process is to allocate funds to individual construction projects. The process for making project allocations is different for each system. The statute requires that public

Figure 3

Current Process for Allocating Highway Construction Funds



Source: Department of Highways and Transportation

hearings be held before the Highway and Transportation Commission approves the final allocations. The boards of supervisors play an important role in allocating secondary funds, and cities are also active in prioritizing projects in the urban system. The Highway and Transportation Commission is often more active in allocating funds for primary projects.

STUDY APPROACH AND METHODS

For the purposes of this study, the equity of construction allocations was addressed in terms of highway construction needs. That is, JLARC postulated that an equitable distribution of construction funds occurs when the relative proportion of funds allocated to a locality is equivalent to the relative proportion of construction needs in the locality. If needs in the counties, cities, and towns could be measured on an annual basis, allocations could be made directly on the basis of those identified needs.

Because of the difficulty and cost in measuring needs on an annual basis, however, it is appropriate to use surrogates for need to calculate annual allocations. If such allocations are to be equitable, the surrogates should be the best possible estimators or predictors of need. Much of the analysis of construction allocations is an evaluation of such surrogates for need. This evaluation involved measuring the relationships between highway construction needs and various characteristics of each locality, such as population, land area, and travel.

The JLARC approach to the analysis was in two parts. In the first step various statistical techniques were used to determine which local characteristics had the strongest relationships to highway construction needs. In the second step, those best characteristics were used to develop several models of allocation formulas. The actual allocations for each locality where then calculated to show the impact of the options.

Estimation of Highway Construction Needs

An essential part of the research was the identification of highway construction needs in each locality in the State. A reliable measure of needs was the basis for evaluating the various factors which must be used as surrogates for need in the allocations formulas. After extensive review of existing information on highway construction needs, it was determined that the only comprehensive measure available was the inventory of present and future needs developed by DHT as part of its statewide transportation planning process. Needs were measured as the total dollar cost of constructing various improvements in each locality. The total cost was the result of summing the costs of individual projects designed to meet specific present and future deficiencies on the State's highways through the year 2005.

Before it could be used, extensive validation of this data was necessary. As a first step, local governments and other interested parties were informed of the JLARC staff's intent to use the statewide needs data for the analysis. The criteria used by DHT to identify needs and the inventory of needs found were available for review at the four allocations workshops. Because individual projects were not identified, however, many local officials expressed concern that the information might not be accurate and that such project listings would be necessary for localities to adequately review the needs.

Based on the concerns of local officials, JLARC requested that the DHT planning division assemble a tally of the specific projects which had been identified as needs. Within a month of the first workshop, those project lists were sent to every locality in the State. JLARC staff made a number of technical adjustments to this data. Local officials were then requested to make any necessary factual or technical corrections to the project lists, and to add a separate list of projects which they felt were needs, but were not on the DHT list.

The responses of the localities were reviewed and tabulated. Two separate measures of need were developed as a result (Table 1). The first was based on the original DHT project lists with those corrections made by localities and confirmed by the department. This first list of needs is consistent with the DHT highway needs assessment (Appendix A). The second listing of needs includes additional projects identified by localities. An analysis of factors was made using both measures of need to determine whether using one list or the other resulted in significant differences.

Table 1

HIGHWAY CONSTRUCTION NEEDS
(In 1982 Dollars)

System	DHT List of Present and Future Needs	Locality List of Present and Future Needs
Interstate	$ 1,651,771,484	$ 1,778,743,484
Primary	4,333,136,172	4,783,396,722
Secondary*	5,776,102,000	5,871,485,520
Urban	4,539,397,333	4,796,503,033
Total	$16,300,406,989	$17,230,128,759

*Includes amount for unpaved roads at $1,259,063,000.

Source: DHT needs list and local governments.

The two lists were not significantly different. A statistical analysis verified that they were highly intercorrelated. In addition, in the analysis of factors, both lists were highly related to

many of the local characteristics which might be expected to generate the need for highway construction. This high correlation between the factors and needs was a strong indicator that the needs lists were valid estimates of the needed improvements in the highway network. Since using either list yielded similar results, the DHT list was used for purposes of this study.

Allocation Factors

The annual allocation of construction funds cannot be based directly on measures of relative need because of the high costs associated with an annual review of statewide needs. As an alternative, surrogates of need must be used in the distribution formulas. In fact, the current system of allocating funds employs such surrogates as population, vehicle miles of travel, and area.

JLARC staff collected data for and tested 23 factors for the interim report. Each was thought to be some measure of a local jurisdiction's "need" for highway construction. The factors used in the analysis were collected from original data sources, which included the Department of Highways and Transportation, the Division of Motor Vehicles, the Virginia Employment Commission, the Tayloe Murphy Institute, and the U.S. Census Bureau.

The factors that were tested are various measures of travel demand, the size of the highway network, or some special characteristic which would affect the need for highway construction (Table 2). Many of the factors are similar in what they measure, though there are often differences which may be significant. The usefulness of any given factor is dependent on how accurately it can be measured, the availability of the factor for annual allocations, and the objectivity of what is being measured. All of the factors used in this analysis were objective measures--they were not dependent on the judgement of the individual collecting the data. The 23 factors are either already available on an annual basis, or can be calculated or modified easily.

For the final report, the factors were updated to 1983 data. In addition, the area factor was revised to exclude federal and State land on which public highways are not constructed. The area deleted included military reservations, federal and State parks, and the Dismal Swamp. The correlations and regressions were completed using this new data.

Analysis of Statistical Relationships

The selection of factors to be used in the allocation formulas involved "testing" each of the factors for its relationship to highway needs. A second step was to measure the relationships between the factors. Both steps used correlation analysis. The purpose of the analysis was to identify which factors were most closely related to highway needs, and which factors were independent measures. The factors which were found to be related to need and independent of each other could then be used to develop allocations models.

Table 2

LOCAL CHARACTERISTICS USED IN THE ANALYSIS OF NEED

Demand Factors

Population	Registered vehicles
Population density	Primary vehicle miles traveled
Population growth	Secondary vehicle miles traveled
Employment	Unpaved road vehicle miles traveled
	Vehicles per primary lane mile
	Vehicles per secondary lane mile
	Vehicles per urban lane mile

System Size Factors

Primary centerline mileage	Primary lane mileage
Secondary centerline mileage	Secondary lane mileage
Urban centerline mileage	Urban lane mileage
Unpaved road centerline mileage	Area
Unpaved centerline mileage on roads with 50 vehicles per day	

Special Factors

Primary accident rates	Lane mile construction cost
Secondary accident rates	

Source: JLARC analysis of factors.

Correlation Analysis. The relationships between highway needs and the factors were measured using correlation analysis. Correlation is a standard statistical technique which measures the relationship between two variables or characteristics. The technique calculates a statistic called the product moment correlation coefficient, generally designated with the letter "r". The correlation coefficient can range from 0 to +1.0 for a positive relationship, or from 0 to -1.0 for a negative relationship. When r is near 0 there is no relationship between the two variables. A high correlation -- that is, when r is near +1.0 or -1.0 -- means that as the values of one set of data change, the values of the other set change in a mathematically consistent way.

Relationships with Need. When the correlation analysis was applied to the relationships between needs and each of the 23 factors, a number of strong relationships were found (Table 3). The relationships were measured both for the needs identified in the DHT statewide needs assessment and for the local government list of needs. The same factors were found to be related to both measures of need. While the strength of the relationships varied slightly, in all cases the corre-

lation coefficients were in the same range. Table 3 is a summary of the statistical relationships of the revised factors with needs for the secondary, urban, and primary systems. As expected, the revision of the factors to 1983 data did not result in any significant changes in the correlation coefficients. This is the result of using stable factors which do not fluctuate widely from year to year.

Table 3

RELATIONSHIPS OF NEEDS TO FACTORS

In order to determine what factors were appropriate for use in allocations formulas, each of the factors listed below was evaluated for its relationship to needs. This relationship is expressed as a correlation coefficient (r), which is shown for each of the State's highway systems. Where r approaches ±1, the relationship is strong.

Factor	Primary Needs	Secondary Needs	Urban Needs
Population Change	.626	.868	.491
Population Density	.206	.833	.231
Population	.613	.929	.864
Employment	.547	.920	.580
Vehicle Registration	.601	.930	.872
Area (Revised)	.207	.299	.857
Centerline Mileage	.440	.787	.905
Lane Mileage	.543	.778	.902
Vehicles/Lane Mile	.417	.652	.055
Cost/Lane Mile	.142	.247	-.365
Vehicle Miles of Travel	.742	.924	--
Accident Rates	.529	.597	--
Total Unpaved Mileage	--	.192	--
Unpaved Mileage 50 v.p.d.	--	.254	--
Travel on Unpaved Roads	--	.538	--

Source: JLARC analysis of factors (revised).

Intercorrelation of Factors. One of the important assumptions with regard to the use of linear equations is that the factors in the formula are independent of each other. That is, the factors should not be related to one another, or should not be measures of the same phenomenon. Multicollinearity is the term applied to the situation in which two or more of the factors in a linear formula are related to each other. This means that the factors convey essentially the same information.

Because such intercorrelated factors are measuring the same thing and conveying essentially the same information, their use in the

same formula is unnecessary and in most cases unacceptable. The use of intercorrelated factors in models results in biased standard errors of the coefficients, and therefore renders the coefficients used for factor weights inaccurate. This occurs because it is impossible to measure the independent influence of the factors on the dependent variable, which in this study is the construction needs. Because of the problems associated with using related factors in the same formula, an analysis of intercorrelations was conducted using the multicollinearity diagnostic available in the Statistical Analysis System (SAS) computer package. Factors found to be related to each other were not used in the same models.

An example of three factors illustrates how the factors can be related. Population, employment, and registered vehicles were found to be highly intercorrelated. All that this means is that counties and cities with larger populations also have a greater number of people employed and a larger number of registered vehicles. In many ways, when one of these three factors is measured, the other two are also indirectly measured.

Analysis of Allocation Models

Once the individual factors had been evaluated, the combination of factors to be used as models were developed and tested. This was the second step in the development of new allocation formulas. The method used to "test" the models was multiple regression. The purpose of the analysis was to (1) determine which models best estimated construction needs, and (2) calculate the weight that should be given each factor in the formulas.

Regression Analysis. Multiple regression is a statistical technique which can be used to analyze the relationship between a dependent variable and one or more independent, or predictive, variables. The general form of multiple regression is:

$$Y = A + B_1 X_1 + B_2 X_2 + ... + B_k X_k, \text{ where:}$$

Y represents the dependent variable (needs),

A is the equation constant or Y intercept (not applicable for this analysis),

B_1 through B_k are the regression coefficients (weights), and

X_1 through X_k are the observed values of the independent variables (factors, such as population, registered vehicles).

In the JLARC analysis, construction needs were the dependent variable (Y), the objective factors were the independent variables (X), and the weights to be given each factor were based on the standardized regression coefficients (B).

Measuring the Strength and Accuracy of the Model. A number of statistics are generated as a part of the multiple regression analysis. One of the most important is the coefficient of multiple determination, designated as R^2. This statistic is very similar to the correlation coefficients discussed earlier in that it measures the strength of the relationship between needs and the combination of factors. R^2 can range from 0 to 1. The statistic is essentially the percentage of the variance in the dependent variable which is explained by the independent variables. So, if a model has an R^2 of .92, then it means that the combination of factors has accounted for 92 percent of the differences in highway needs across all localities. The purpose of this analysis was to find the combination of factors which resulted in the highest R^2.

The standard error of the estimate was used to measure the dispersion, or scatter, of the actual needs in each locality against the predicted needs which resulted from the model. The number which was calculated is not a proportion, but an absolute value measured in the same units as the needs. Thus, the standard error indicates how far off an average estimate of needs would be from the actual amount of needs identified.

For this final report, a complete analysis of residuals was also conducted. A residual is the difference between the actual value of needs for a locality and the value of needs estimated from the formula. The residuals analysis was used to identify localities which did not "fit" the model. These observations, called "outliers," were trimmed from the analysis. Two statistics were used to determine if an observation should be deleted: (1) studentized residuals, and (2) Cook's D. When the value of these statistics was equal to or greater than 2, the observation was trimmed. Trimming was required only for the primary system analysis, where three observations were deleted.

When the final regression analysis was conducted without the outliers, the weights for the factors were found to better reflect the true contribution of the factors to highway needs. The adjusted R^2 was also a better estimate of the proportion of variance explained by the model.

Calculation of Factor Weights. Of special importance to the development of the models were the standardized regression coefficients. These statistics are produced as a part of the multiple regression. The coefficients represent the relative importance of each independent factor in estimating the needs for each locality. Therefore, they were used to calculate the weights to be applied in the formula.

The weights for the factors were calculated by summing the standardized regression coefficients for the factors, and then determining what percentage each was of the total. For example, in one secondary formula, the combination of population and area was found to be a good estimator of needs. To translate the model into an allocation formula, the standardized regression coefficients for the two factors were converted to percentages, and then rounded. Table 4 shows

the calculations of the weights and the resulting formula weights for the model. The formula which results from this analysis would allocate funds on the basis of 80 percent for population and 20 percent for area. The same process was used for each of the proposed formulas in the secondary, primary, and urban systems.

Table 4

CALCULATION OF WEIGHTS FOR A SECONDARY SYSTEM MODEL

Factor	Standardized Regression Coefficient	Percentage	Rounded Percentage (Weight) for Forumla
Population	0.908003	81.4%	80%
Area	0.206799	18.6%	20%
Total	1.114802	100.0%	100%

Source: JLARC multiple regression analysis.

SYSTEM ALLOCATIONS AND SPECIAL FUNDS

The General Assembly has historically divided and set aside funds for many types of government programs to meet specific purposes it has identified. Similarly, funding for highway construction in the past has been divided and proportions provided to the administrative highway systems and special programs. This distribution of funds to various programs occurs before the statutory formulas are used to allocate funds within each system.

By separating the funds for the different highway systems, the General Assembly has ensured that the different types of needs have been funded simultaneously, and that the attempt to meet the needs on one system has not interfered with meeting the needs on the others. The proportions provided by law have been based in the past on specific legislative priorities and on estimates made by knowledgable persons about the relative needs of the systems and special construction categories. But an empirical analysis has not been used to quantify the actual needs in each of the funding categories. The JLARC review of system allocations indicates that it would be appropriate to adjust the proportions provided to the administrative systems if allocations are to be closely related to specifically identified construction needs.

Some of the special funding categories, such as interstate highways and unpaved roads, also could be restructured. The review found no cause to discontinue the long-established policy of the General Assembly to designate certain types of needs as priorities. But

the General Assembly may wish to re-examine those priorities. Interstate construction and paving of non-surface treated roads could continue to be funded from special amounts set aside for those purposes. In addition, the General Asembly may wish to establish a special bridge fund to ensure that Virginia does not lose available federal funds for bridge replacement and rehabilitation.

Interstate System Funding

The interstate highway system was created by the Federal Aid Highway Act of 1956 and is authorized in Section 33.1-48 of the *Code of Virginia*. By December 1981, Virginia had constructed 994 miles of interstate highways, or more than 90 percent of 1,069 miles of authorized interstate. While the current process for allocating funds to the construction districts appears appropriate, the use of primary system funds in each district to match the interstate federal aid adversely affects several districts' primary system allocations.

The Highway and Transportation Commission has established the policy allocating interstate funds to the eight DHT construction districts. That policy states that:

> Federal Funds for the Interstate System shall be allocated to highway districts in the ratio that the estimated cost of completing the system in each district bears to the cost of completing the Interstate System in the entire State. State money required to match Federal Interstate funds shall be taken from the amount apportioned to the districts for Primary System Construction.

The *Code of Virginia* authorizes DHT to match federal funds for the interstate system from district primary allocations to the maximum extent it deems appropriate. The State must provide ten percent of the funding for interstate construction.

Based on the federal aid provided to each district, DHT determines the amount needed for the required State match. This amount is then deducted from the district's primary system allocation. This process reduces the funding available for the primary system construction program in the affected districts.

Analysis of prior years' allocations and apportionment percentages indicated that DHT has consistently used the method prescribed by policy and statute. While the current method of allocating federal funds to the districts appears reasonable and appropriate, the use of primary funds to match interstate aid has severely impacted several district primary systems.

Three districts will experience especially severe impacts on primary system funds. The Richmond, Suffolk, and Fredericksburg districts will have significantly reduced funds available for primary

construction in FY 1988. If the trend continues, the Suffolk district will have to use 81.9 percent of its primary system allocation for interstate match. The Richmond district will lose 56 percent of its primary allocations to interstate match by FY 1988.

The General Assembly has already recognized this problem, as evidenced by its establishment of the interstate discretionary fund which provided additional funds for primary construction in FY 1983. But this measure was only temporary. The General Assembly may wish to consider a more permanent and equitable solution for matching interstate aid in the future.

Recommendation (1). The General Assembly may wish to amend the *Code of Virginia* to require that funds necessary to match federal interstate aid be set aside from the total funds available for construction activities. Funds for the match should not be deducted from a district's primary allocation. The advantage of this change is that the necessary match would be met by spreading the burden over all construction funds, reducing the severe impact on a few areas.

Funding for Unpaved Roads

In 1979, the General Assembly established the unpaved roads fund. This fund was intended to focus efforts on paving the 6,000 miles of dirt roads carrying 50 or more vehicles per day remaining in the Commonwealth. By providing for these funds before all other allocations are made, the General Assembly established unpaved roads as a high priority in the construction program.

By statute, 3.75 percent of all construction funds available, excluding interstate federal aid and other funds taken off the top, is set aside for the fund. Allocations to the counties in the secondary system are based on the ratio of unpaved mileage in each county carrying 50 or more vehicles per day to the State total of such unpaved mileage. In addition, the 1982 General Assembly appropriated funds from HB 532 (which created an oil franchise tax and increased other highway user fees) for unpaved roads, bringing the total for FY 1984 to $9.4 million.

In order to assess the equity of the allocations made to the unpaved roads fund, a comparison of several factors and measures of need was made. The comparison shows that some readjustment of the proportion of funds provided for unpaved roads may be appropriate if the allocation is to be proportionate to construction needs, and that some reassessment of the priorities for unpaved roads may be in order.

In both the DHT statewide assessment needs list and the locality-based needs list, unpaved road construction needs could be separately identified. These needs totaled $1.23 billion, or approximately 7.6 percent of the total needs identified. Therefore, a larger portion of highway funds might be allocated to the unpaved roads fund if allocations are to be made on the basis of construction need. If

1984 allocations had been based on the proportion of construction needs for unpaved roads with 50 vehicles per day, the fund would have received $13.5 million.

Unpaved roads with 50 vehicles per day make up 9.1 percent of the total mileage in the State highway system. However, it is also a fact that travel on these roads is less than one percent of the total annual travel. Given this disparity, the General Assembly may want to reconsider the priority given to unpaved roads with traffic volumes as low as 50 vehicles per day (vpd).

The current required level of traffic is extremely low when considered in light of the traffic volumes required to keep flexible pavements from cracking and breaking. Flexible pavements such as surface treatment require a minimum level of flexing from the weight of vehicles or they break up and deteriorate prematurely. DHT has indicated to JLARC that volumes of not less than 100 vpd are required to provide the necessary flexing.

The 50 vpd standard is also much lower than the guidelines in use in other states. In North Carolina for example, the guideline for paving unpaved roads is 100 vehicles per day, while Kentucky and Texas have typically recommended minimums of 100 or more vehicles per day. West Virginia does not have a policy on traffic requirements, but the executive director of operations said that a standard of 100 vpd was about as low as he would recommend from an economic and engineering standpoint.

Recommendation (2). The General Assembly may wish to amend Section 33.1-23.1:1 of the *Code of Virginia* to increase the percentage of funds for unpaved roads from 3.75 percent, not to exceed 7.6 percent. This recommendation would continue the General Assembly's earlier decision to place a priority on paving non-surface treated secondary roads and would base the allocation on construction need, at the 50 vpd funding standard. Table 5 shows the allocations to counties at 7.6 percent of funds available.

Because of questions about the cost effectiveness of the 50 vpd paving standard, the General Assembly may wish to direct the Department of Highways and Transportation to assess the engineering justification for, and the cost effectiveness of, paving unpaved roads with traffic volumes as low as 50 vpd. Pending the results of that study, funding priority should be placed on unpaved roads with traffic volumes in excess of 100 vpd. Based on DHT's assessment, the General Assembly may wish to reevaluate its current priorities for unpaved roads and revise the funding standards or the paving priority accordingly.

Bridge Replacement Funds

The construction allocation process has as its major goal the equitable distribution of funds among localities. Underlying this goal

Table 5

UNPAVED ROAD ALLOCATIONS FOR FY 1984 BASED ON 50 VPD

County	Current FY 1984 Allocation	FY 1984 Allocation JLARC Staff Proposal
ACCOMACK	$ 3,666	$ 5,260
ALBEMARLE	232,650	333,835
ALLEGHANY	13,818	19,828
AMELIA	57,246	82,144
AMHERST	107,160	153,766
APPOMATTOX	59,314	85,111
AUGUSTA	332,290	476,810
BATH	26,884	38,576
BEDFORD	283,222	406,401
BLAND	72,850	104,534
BOTETOURT	157,544	226,063
BRUNSWICK	76,704	110,064
BUCHANAN	318,096	456,443
BUCKINGHAM	189,316	271,654
CAMPBELL	27,448	39,386
CAROLINE	16,638	23,874
CARROLL	317,062	454,959
CHARLES CITY	8,554	12,274
CHARLOTTE	91,368	131,106
CHESTERFIELD	10,340	14,837
CLARKE	44,086	63,260
CRAIG	17,672	25,358
CULPEPER	194,204	278,668
CUMBERLAND	112,424	161,320
DICKENSON	245,246	351,909
DINWIDDIE	48,034	68,925
ESSEX	21,620	31,023
FAIRFAX	27,542	39,521
FAUQUIER	263,858	378,616
FLOYD	139,778	200,571
FLUVANNA	47,846	68,655
FRANKLIN	114,492	164,287
FREDERICK	148,708	213,384
GILES	92,026	132,050
GLOUCESTER	36,942	53,009

Table 5

UNPAVED ROAD ALLOCATIONS FOR 50 VPD (Continued)

County	Current FY 1984 Allocation	FY 1984 Allocation JLARC Staff Proposal
GOOCHLAND	39,386	56,516
GRAYSON	255,304	366,341
GREENE	28,858	41,409
GREENSVILLE	12,596	18,074
HALIFAX	135,172	193,961
HANOVER	79,806	114,515
HENRY	14,758	21,177
HIGHLAND	29,328	42,083
ISLE OF WIGHT	34,310	49,232
JAMES CITY	1,880	2,698
KING & QUEEN	41,830	60,023
KING GEORGE	25,850	37,093
KING WILLIAM	31,584	45,321
LANCASTER	9,494	13,623
LEE	142,504	204,482
LOUDOUN	435,784	625,316
LOUISA	118,252	169,682
LUNENBURG	109,604	157,273
MADISON	112,706	161,724
MATHEWS	10,810	15,512
MECKLENBURG	156,416	224,445
MIDDLESEX	18,236	26,167
MONTGOMERY	198,528	284,872
NELSON	71,816	103,050
NEW KENT	26,978	38,711
NORTHAMPTON	0	0
NORTHUMBERLAND	1,128	1,619
NOTTOWAY	13,066	18,749
ORANGE	101,990	146,348
PAGE	111,672	160,241
PATRICK	186,308	267,337
PITTSYLVANIA	209,996	301,328
POWHATAN	45,872	65,823
PRINCE EDWARD	61,476	88,213
PRINCE GEORGE	8,554	12,274

Table 5

UNPAVED ROAD ALLOCATIONS FOR 50 VPD (Continued)

County	Current FY 1984 Allocation	FY 1984 Allocation JLARC Staff Proposal
PRINCE WILLIAM	116,842	167,659
PULASKI	131,600	188,836
RAPPAHANNOCK	96,538	138,524
RICHMOND	4,794	6,879
ROANOKE	12,878	18,479
ROCKBRIDGE	139,402	200,031
ROCKINGHAM	252,014	361,620
RUSSELL	232,274	333,295
SCOTT	198,058	284,198
SHENANDOAH	235,376	337,746
SMYTH	80,464	115,460
SOUTHAMPTON	35,156	50,446
SPOTSYLVANIA	76,704	110,064
STAFFORD	28,858	41,409
SUFFOLK	26,038	37,362
SURRY	10,340	14,837
SUSSEX	30,644	43,972
TAZEWELL	168,166	241,305
WARREN	103,306	148,236
WASHINGTON	167,320	240,091
WESTMORELAND	34,498	49,502
WISE	125,678	180,338
WYTHE	253,518	363,779
YORK	1,034	1,434
TOTALS	$9,400,000	$13,488,265

Source: JLARC Unpaved Roads Analysis.

is the need to fully utilize the resources available to the State. In the past, the allocation processes for the various systems have performed reasonably well in meeting this underlying goal. However, current statutory allocation processes may result in a loss to the State of at least $1.5 million in federal bridge funding. This will occur despite the fact that numerous bridges are in need of replacement.

There are two basic causes for this situation. The first is the high cost of bridge work generally, and the lack of public interest in that type of expenditure. The second is the configuration of the federal bridge program in relation to the State's allocation system.

Bridge projects are costly in terms of both engineering and construction. There are additional costs associated with meeting various environmental standards for design and construction. An average two-lane bridge on a secondary road, for example, costs $250,000.

Under current allocation requirements, funds for bridges are included in the regular allocations. Thus, funds used for bridges must be taken from the allocation which would be available for other construction. Bridge costs have hampered the development of needed bridge projects because these high-cost projects can severely reduce the allocation which remains. Local officials are reluctant to commit to bridge projects for this reason. In addition, public interest in bridge work is relatively low. As a result, few are programmed. This is especially true in the secondary system because of the relatively small amounts available to individual counties.

The second reason for the inability to program needed bridge projects is the lack of congruence between the federal bridge program and Virginia's administrative systems for highways. The federal programs direct funds toward the bridges that are in most need of repair or replacement, while Virginia's allocation system requires the funds to be spent in the administrative systems. This makes allocating to specific bridges more difficult.

Recommendation (3). In order to ensure the use of available federal aid, the General Assembly may wish to amend the *Code of Virginia* to provide for funding special bridge needs outside of the system allocation process. This could be accomplished in a manner similar to the distribution of funds for interstate construction or unpaved roads. The special bridge fund should include both the available federal aid and required State match. In FY 1984, such a fund would have amounted to $17.2 million. Allocations from this fund should be made on the basis of greatest need as determined from DHT's current bridge inspection program and the volume of traffic using the facilities. The funds for bridges should not be deducted from a locality's regular system allocations.

Summary of Special Funds

The impact of the three recommendations to set aside interstate, unpaved, and bridge funds can be seen in a comparison with the current distribution of funds (Table 6). Requiring that the State match for interstate federal aid be set aside off the top of construction funds would not increase the amount allocated for interstate construction. The option for unpaved roads would increase these funds to be more in line with needs. Establishing a special bridge fund would not increase bridge allocations, since they are already available from the federal government, but would ensure that these funds are expended on necessary projects in a more timely fashion. In addition, JLARC staff recommend no changes in the funding for Appalachian federal aid, revenue sharing, coal severance, access roads, or the five percent match on urban construction projects, all of which are shown in Table 6 as the other miscellaneous programs.

Table 6

COMPARISON OF SPECIAL CATEGORY FUNDING FOR FY 1984

	Current FY 1984 Amounts	Amounts for FY 1984 Based on JLARC Staff Proposal
Interstate Federal Aid	$207,900,000	$207,900,000
Interstate Match	28,377,000	28,377,000
Bridge Replacement	17,210,000	17,210,000
Other Miscellaneous	24,120,200	24,120,000
Unpaved Road Fund (50 vpd)	9,400,000	13,488,267

Source: JLARC analysis and FY 1984 appropriations.

Regular System Allocations

After all of the special programs have been funded, the remaining construction funds are available for the regular allocations to the primary, secondary, and urban systems. Under the current provisions of law, the systems are to receive allocations in the proportions of 50 percent for primary, 25 percent for secondary, and 25 percent for urban. These proportions were assumed to reflect relative needs on the various systems.

In order to evaluate the appropriateness of the current system percentages, a comparison of system needs and relevant factors was made. In the computation of needs, only those needs which would be met from regular system allocations were included. Unpaved road and interstate needs were excluded. For the computation of system mileage and vehicle miles of travel, unpaved roads and interstates were again excluded. Table 7 provides a comparison of the factors examined. Current allocations are shown for the purpose of comparison.

Table 7

COMPARISON OF SELECTED FACTORS FOR THE STATE HIGHWAY SYSTEMS

	Current Statutory Percentage	Current Effective Percentage	Percentage of Need	Percentage of Lane Miles	Percentage of Vehicle Miles of Travel
Primary	50	44.2	32.7	17.2	47.4
Secondary	25	26.0	33.8	67.1	20.7
Urban	25	29.8	33.5	15.7	31.9
TOTAL	100	100.0	100.0	100.0	100.0

Source: Department of Highways and Transportation.

The comparison shows that approximately two-thirds of the mileage on the highway network is in the secondary system. In the comparison of travel, nearly half is on the primary system, almost 32 percent is on the urban system, and only 21 percent is on the secondary system. But, while travel is greatest on the primary system, it has a low percentage of lane miles to construct.

Based on the comparison of current proportions and the proportions of need, current statutory percentages for each of the systems may be inappropriate. If the proportions were to be based on need for construction dollars, the most reasonable distribution would be to provide one third of the funds to each system.

This distribution would be applied to the total construction funds available. The impact of changing these proportions on FY 1984 funding is shown in Table 8.

Table 8

PROPOSED READJUSTMENT OF SYSTEM ALLOCATIONS*

	Current FY 1984 Amounts	Amounts for FY 1984 Based on JLARC Staff Proposal
Funding Available for Allocations	$185,287,000	$185,287,000
Primary Allocation**	81,967,000	61,762,333
Secondary Allocation	51,660,000	61,762,333
Urban Allocation	51,660,000	61,762,333

*Includes funds for bridge replacement ($17,210,000).
**Excludes $28,377,000 required for interstate matching.

Source: Analysis of systems needs.

Recommendation (4). The General Assembly may wish to amend Section 33.1-23.1B of the *Code of Virginia* to adjust the proportion of funds provided to each system to one-third.

SECONDARY SYSTEM ALLOCATIONS

The secondary system is the largest of the State administrative highway systems, with 67.1 percent of the total lane miles. It includes all the public roads in the counties, and all public and

community roads leading to and from public schools, streets, bridges, and wharves in incorporated towns with populations less than 3,500 people. Certain other roads, such as those connecting public schools to primary and secondary highways, are also classified as secondary roads as provided by Section 33.1-67 and 33.1-68, *Code of Virginia*. All counties except Arlington and Henrico and portions of the City of Suffolk are included in the secondary system.

JLARC's review of secondary allocations focused on the reasonableness, appropriateness, and equity of the current process for allocating funds to the 93 counties in the system, and alternatives for distributing secondary system funds. It is clear from the analysis that the current provisions for allocating funds are not equitable (according to construction needs), primarily as a result of the provision requiring that the allocation for each county not be less than the allocation for FY 1977.

The Current Secondary Allocations Process

The methods and formulas for allocating regular secondary funds are set out in Section 33.1-23.4 of the *Code of Virginia*. The process has three basic parts: (1) deduction of special category funds, (2) allocation of amounts equal to FY 1977 amounts, and (3) allocation of remaining funds by a five-factor formula.

Before allocations are made to the counties, several special categories are funded as required by law. A sum not to exceed $2.5 million is set aside for the special road and bridge fund. The Highway and Transportation Commission may allocate these funds to counties based on its determination of need. The funds are to be used for secondary road or bridge construction or replacement.

A second special provision of the law requires that a portion of the highway revenues attributable to the 1964 and 1966 Acts of the General Assembly be provided to Arlington and Henrico counties. Henrico County's share of federal aid secondary funds is also calculated and deducted from the total available for allocation.

Section 33.1-23.4B requires that:

> ...an amount equal to that allocated to the secondary system for construction in fiscal year 1976-77 shall be set aside and distributed among the counties in the system in the same amounts as each county received for that fiscal year....

In the event that the funds available are less than the amount allocated in FY 1977, each county's allocation is reduced in proportion to the shortfall.

The funds remaining after special categories and the FY 1977 allocations have been funded are allocated on the basis of a five-

factor formula. Each county receives a share equal to its proportion of the statewide total of population, area, registered vehicles, secondary road mileage, and vehicle miles traveled on the secondary system. Each of these factors is weighted equally.

Equity of Secondary Allocations

When the 1977 General Assembly revised the laws which allocate highway funds, it enacted the provision which requires that no county receive less than it received in FY 1977. The purpose of this provision was to ensure that the major changes made in the law would not drastically reduce the funds available to some counties. It was assumed that the portion of funds allocated on the basis of the five-factor formula would continue to increase each year. This would have provided growing counties increased funding to meet growing demands on the secondary system.

Growth in highway revenues has slowed and maintenance allocations have increased in recent years, however, and the portion of funds allocated by the formula has decreased. Between FY 1978 and FY 1982 the funds allocated by the formula decreased from $21.1 million to $0 (Table 9). For FY 1983, only $1.8 million was allocated, and this amount was available only as a result of the additional revenues generated by HB 532. In FY 1984 no funds were allocated by the formula.

Table 9

FUNDS ALLOCATED BY FIVE-FACTOR FORMULA
(In Millions)

Fiscal Year	Total Secondary Funds Allocated	Funds Allocated by Formula
1978	$72.5	$21.1
1979	67.5	16.2
1980	64.9	4.2
1981	63.9	3.3
1982	38.2	0
1983	53.1	1.8
1984	51.7	0

Source: Department of Highways and Transportation.

The effect of the provision, though entirely unintended, has been to allocate funds only on the basis of the allocation for construction in FY 1977. Because of the method used to allocate those funds in 1977, the current allocations are inequitable.

In addition, the formula itself is inadequate. The current statutory formula is composed of five factors, with each given equal weight: (1) population, (2) registered vehicles, (3) area, (4) secondary mileage, and (5) vehicle miles traveled. These five factors and their associated weights (20 percent each) form a linear function or equation. The sole use of linear equations to allocate secondary funds to counties would be an improvement over the current combined use of this formula and the FY 1977 allocation provision. But the current statutory formula is not adequate for this purpose because the factors are not independent measures.

Recommendation (5). Because the construction allocations for FY 1977 were not based on any statewide, consistent criteria and appear to be inequitable, the General Assembly may wish to amend Section 33.1-23.4 of the *Code of Virginia* to end the use of FY 1977 allocations as an allocation requirement.

Recommendation (6). The General Assembly may wish to amend the current statutory formula for allocating secondary system funds to include factors which have been shown to be independent measures. The alternative formulas presented by JLARC include only the objective factors which meet this criterion.

Secondary System Options

Because the current statutory allocations are inequitable, many alternative formulas were tested. Three options are presented here as proposed replacements. Each of the options includes one demand-related factor and one system size factor. Demand factors such as population and vehicle miles of travel are very good indicators of local traffic. Because the secondary system is a local network, these measures received the strongest weights in the models.

The weights applied to the formulas were calculated as a part of the multiple regression analysis. Following the explanation of each option is a table showing the current FY 1984 allocations and the allocations which would have been made if the option had been applied. The allocations for the option are based on a total secondary system allocation of $58.28 million, which represents one-third of the total funds allocated for FY 1984 and excludes funds for the secondary road Special Road and Bridge Fund, and federal aid secondary assistance to Henrico County. Under the JLARC proposal, the secondary system allocation would be increased from one-quarter to one-third of available construction funds. The comparisons shown for the JLARC options include the funds for bridge replacement.

Option S-1 allocates funds on the basis of population and area. Option S-2 makes allocations on the basis of vehicle registration and area. Option S-3 substitutes vehicle miles of travel for vehicle registration, and revises the weights for area.

Option S-1: Population-80%; Area (Revised)--20%

The first option for the secondary system is based on the combination of population weighted 80 percent and area weighted 20 percent. This formula results in an R^2 of .90 in the regression analysis. The weights used in each formula were rounded to make the calculations simpler.

Because population is weighted 80 percent, the formula is demand oriented. This is consistent with the nature of the needs on the secondary system, which are related mostly to local travel. The population factor is one of the strongest measures of local demand.

A lesser importance is given to the area factor. This factor is related to the need to construct the basic system network, and will result in increased allocations for those counties with the largest systems. The area factor was revised for this final report to exclude military reservation and parks, where the State is not responsible for constructing roads.

Table 10 shows the allocations for each county in the secondary system based on this option. Current FY 1984 allocations are shown for comparison.

Table 10

OPTION S-1
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
ACCOMACK	$ 699,564	$ 632,788
ALBEMARLE	$ 893,246	$ 1,139,237
ALLEGHANY	$ 223,797	$ 368,258
AMELIA	$ 336,551	$ 242,330
AMHERST	$ 436,831	$ 617,359
APPOMATTOX	$ 292,291	$ 291,684
AUGUSTA	$ 1,292,197	$ 1,175,350
BATH	$ 311,506	$ 245,716
BEDFORD	$ 674,861	$ 809,427
BLAND	$ 215,583	$ 216,831
BOTETOURT	$ 555,279	$ 558,020
BRUNSWICK	$ 556,562	$ 426,841
BUCHANAN	$ 556,080	$ 771,197
BUCKINGHAM	$ 467,792	$ 368,346
CAMPBELL	$ 762,639	$ 836,662
CAROLINE	$ 299,734	$ 418,262
CARROLL	$ 725,086	$ 602,655
CHARLES CITY	$ 150,245	$ 162,244
CHARLOTTE	$ 364,166	$ 342,551
CHESTERFIELD	$ 1,504,824	$ 2,537,418
CLARKE	$ 190,417	$ 214,929
CRAIG	$ 169,341	$ 163,252
CULPEPER	$ 445,374	$ 372,844
CUMBERLAND	$ 263,661	$ 206,459
DICKENSON	$ 339,737	$ 426,692
DINWIDDIE	$ 568,636	$ 568,636
ESSEX	$ 197,135	$ 222,233
FAIRFAX	$ 3,689,598	$ 9,603,970
FAUQUIER	$ 687,864	$ 687,864
FLOYD	$ 471,163	$ 310,776
FLUVANNA	$ 269,908	$ 256,483
FRANKLIN	$ 762,008	$ 720,556
FREDERICK	$ 579,282	$ 579,282
GILES	$ 312,722	$ 399,454
GLOUCESTER	$ 297,446	$ 409,268

Table 10

OPTION S-1 (Continued)
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
GOOCHLAND	$ 259,287	$ 277,836
GRAYSON	$ 319,300	$ 389,901
GREENE	$ 164,693	$ 163,925
GREENSVILLE	$ 215,028	$ 272,618
HALIFAX	$ 871,123	$ 746,164
HANOVER	$ 735,998	$ 890,945
HENRY	$ 1,035,000	$ 1,031,184
HIGHLAND	$ 223,202	$ 177,518
ISLE OF WIGHT	$ 511,414	$ 396,090
JAMES CITY	$ 254,236	$ 426,636
KING & QUEEN	$ 178,544	$ 194,518
KING GEORGE	$ 195,009	$ 227,777
KING WILLIAM	$ 165,031	$ 241,446
LANCASTER	$ 163,040	$ 203,811
LEE	$ 445,644	$ 447,453
LOUDOUN	$ 1,253,549	$ 960,513
LOUISA	$ 555,135	$ 441,870
LUNENBURG	$ 475,076	$ 331,808
MADISON	$ 354,022	$ 243,618
MATHEWS	$ 117,795	$ 157,334
MECKLENBURG	$ 697,672	$ 583,053
MIDDLESEX	$ 109,542	$ 168,874
MONTGOMERY	$ 455,208	$ 494,609
NELSON	$ 362,330	$ 346,687
NEW KENT	$ 150,476	$ 209,785
NORTHAMPTON	$ 327,807	$ 302,235
NORTHUMBERLAND	$ 209,902	$ 218,486
NOTTOWAY	$ 290,921	$ 262,948
ORANGE	$ 390,882	$ 399,550
PAGE	$ 274,994	$ 334,617
PATRICK	$ 532,890	$ 426,227
PITTSYLVANIA	$ 1,492,991	$ 1,373,330
POWHATAN	$ 262,666	$ 291,898
PRINCE EDWARD	$ 424,667	$ 283,593
PRINCE GEORGE	$ 382,797	$ 509,039

Table 10

OPTION S-1 (Continued)
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
PRINCE WILLIAM	$ 1,857,384	$ 2,530,839
PULASKI	$ 475,653	$ 497,611
RAPPAHANNOCK	$ 209,847	$ 163,137
RICHMOND	$ 156,833	$ 169,752
ROANOKE	$ 645,890	$ 1,141,999
ROCKBRIDGE	$ 511,414	$ 452,295
ROCKINGHAM	$ 1,227,467	$ 1,203,608
RUSSELL	$ 399,458	$ 661,043
SCOTT	$ 625,345	$ 572,761
SHENANDOAH	$ 586,590	$ 602,334
SMYTH	$ 384,361	$ 557,508
SOUTHAMPTON	$ 522,233	$ 481,789
SPOTSYLVANIA	$ 486,639	$ 699,265
STAFFORD	$ 489,290	$ 747,647
SUFFOLK	$ 719,858	$ 725,205
SURRY	$ 184,020	$ 182,941
SUSSEX	$ 375,459	$ 324,796
TAZEWELL	$ 506,728	$ 719,540
WARREN	$ 241,310	$ 403,433
WASHINGTON	$ 667,879	$ 869,619
WESTMORELAND	$ 300,791	$ 297,490
WISE	$ 452,903	$ 693,532
WYTHE	$ 353,913	$ 441,443
YORK	$ 370,934	$ 613,110
	$48,174,471	$58,276,801

Note: Both the current allocation and the allocation for the JLARC option include bridge replacement funds to ensure comparability. The table does not include the construction allocations for Arlington and Henrico counties which would have to be made from these amounts under the new process recommended by JLARC staff (Chapter V.).

Option S-2: Vehicle Registration--80%; Area (Revised)--20%

The second option for the secondary sysem is based on the combination of vehicle registration weighted 80 percent, and area weighted 20 percent. This formula results in an R^2 of .90 in the regression analysis.

The option includes a demand measure as the major factor. The vehicle registration in each county would be the more important factor in this formula.

The area factor accounts for the need for consideration of the road network necessary for county-wide travel. It ensures that the larger, rural counties receive an appropriate share of funds. The area factor was revised for this final report to exclude military reservations and parks.

The following table (Table 11) shows the allocations for each county in the secondary system based on this option. Current FY 1984 allocations are shown for comparison.

Table 11

OPTION S-2
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
ACCOMACK	$ 699,564	$ 666,237
ALBEMARLE	$ 893,246	$ 1,108,818
ALLEGHANY	$ 223,797	$ 367,947
AMELIA	$ 336,551	$ 255,979
AMHERST	$ 436,831	$ 575,719
APPOMATTOX	$ 292,291	$ 312,144
AUGUSTA	$ 1,292,197	$ 1,294,338
BATH	$ 311,506	$ 259,128
BEDFORD	$ 674,861	$ 897,868
BLAND	$ 216,831	$ 207,187
BOTETOURT	$ 555,279	$ 572,698
BRUNSWICK	$ 556,562	$ 398,052
BUCHANAN	$ 556,080	$ 726,850
BUCKINGHAM	$ 467,792	$ 358,882
CAMPBELL	$ 762,639	$ 866,116
CAROLINE	$ 299,734	$ 416,848
CARROLL	$ 725,086	$ 568,664
CHARLES CITY	$ 150,245	$ 163,839
CHARLOTTE	$ 364,166	$ 338,500
CHESTERFIELD	$ 1,504,824	$ 2,609,920
CLARKE	$ 190,417	$ 232,228
CRAIG	$ 169,341	$ 176,073
CULPEPER	$ 445,374	$ 383,065
CUMBERLAND	$ 263,661	$ 201,836
DICKENSON	$ 339,737	$ 397,747
DINWIDDIE	$ 568,636	$ 466,454
ESSEX	$ 197,135	$ 227,823
FAIRFAX	$ 3,689,598	$ 9,522,458
FAUQUIER	$ 687,864	$ 788,566
FLOYD	$ 471,163	$ 323,366
FLUVANNA	$ 269,908	$ 259,177
FRANKLIN	$ 762,008	$ 739,500
FREDERICK	$ 579,282	$ 788,793
GILES	$ 312,722	$ 384,607
GLOUCESTER	$ 297,446	$ 445,974

Table 11

OPTION S-2 (Continued)
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
GOOCHLAND	$ 259,287	$ 299,536
GRAYSON	$ 319,300	$ 385,710
GREENE	$ 164,693	$ 177,292
GREENSVILLE	$ 215,028	$ 244,412
HALIFAX	$ 871,123	$ 727,485
HANOVER	$ 735,998	$ 1,036,196
HENRY	$ 1,035,000	$ 1,085,638
HIGHLAND	$ 223,202	$ 184,472
ISLE-OF-WIGHT	$ 511,414	$ 397,178
JAMES-CITY	$ 254,236	$ 404,137
KING & QUEEN	$ 178,544	$ 207,464
KING GEORGE	$ 195,009	$ 235,801
KING WILLIAM	$ 165,031	$ 253,845
LANCASTER	$ 163,040	$ 226,010
LEE	$ 445,644	$ 454,168
LOUDOUN	$ 1,253,549	$ 1,061,810
LOUISA	$ 555,135	$ 468,518
LUNENBURG	$ 475,076	$ 318,989
MADISON	$ 354,022	$ 246,118
MATHEWS	$ 117,795	$ 178,362
MECKLENBURG	$ 697,672	$ 583,964
MIDDLESEX	$ 109,542	$ 197,322
MONTGOMERY	$ 455,208	$ 408,055
NELSON	$ 362,330	$ 351,429
NEW KENT	$ 150,476	$ 222,948
NORTHAMPTON	$ 327,807	$ 277,951
NORTHUMBERLAND	$ 209,902	$ 254,694
NOTTOWAY	$ 290,921	$ 261,712
ORANGE	$ 390,882	$ 427,954
PAGE	$ 274,994	$ 342,127
PATRICK	$ 532,890	$ 437,493
PITTSYLVANIA	$ 1,492,991	$ 1,324,401
POWHATAN	$ 262,666	$ 282,082
PRINCE EDWARD	$ 424,667	$ 244,205
PRINCE GEORGE	$ 382,797	$ 364,689

Table 11

OPTION S-2 (Continued)
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
PRINCE WILLIAM	$ 1,857,384	$ 2,457,615
PULASKI	$ 475,653	$ 468,139
RAPPAHANNOCK	$ 209,847	$ 180,232
RICHMOND	$ 156,833	$ 182,920
ROANOKE	$ 645,890	$ 1,279,143
ROCKBRIDGE	$ 511,441	$ 475,031
ROCKINGHAM	$ 1,227,467	$ 1,290,478
RUSSELL	$ 399,458	$ 614,764
SCOTT	$ 625,345	$ 508,052
SHENANDOAH	$ 586,590	$ 681,914
SMYTH	$ 384,361	$ 525,700
SOUTHAMPTON	$ 522,233	$ 467,158
SPOTSYVLANIA	$ 486,639	$ 726,188
STAFFORD	$ 489,290	$ 757,812
SUFFOLK	$ 719,858	$ 656,061
SURRY	$ 184,020	$ 187,546
SUSSEX	$ 375,459	$ 324,263
TAZEWELL	$ 506,728	$ 688,246
WARREN	$ 241,310	$ 236,390
WASHINGTON	$ 667,879	$ 771,083
WESTMORELAND	$ 300,791	$ 324,149
WISE	$ 452,903	$ 666,820
WYTHE	$ 353,913	$ 424,939
YORK	$ 370,934	$ 504,585
	$48,174,471	$58,276,801

Note: Both the current allocation and the allocation for the JLARC option include bridge replacement funds to ensure comparability. The table does not include the construction allocations for Arlington and Henrico counties which would have to be made from these amounts under the new process recommended by JLARC staff (Chapter V.).

Option S-3: VMT--80%; Area (Revised)--20%

The third option for the secondary system is a two-factor formula which is strongly demand oriented. The factors and their associated weights are: vehicle miles of travel on the secondary system weighted 80 percent and area weighted 20 percent. The R^2 for this formula is .89.

Vehicle miles of travel is the most direct measure of demand. Its use in this formula is consistent with the concept that needs are generated as a result of travel. Unlike the other demand factors, vehicle miles of travel measures the demand generated by non-residents of the county as well as by residents.

The area factor reflects the need for construction of the road network necessary for county-wide travel. Its use ensures that larger, rural counties receive an appropriate share of secondary funds. The area factor was revised for this final report to exclude military reservations and parks.

The following table (Table 12) shows the allocations for each county in the secondary system based on this option. Current FY 1984 allocations are shown for comparison.

Table 12

OPTION S-3
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
ACCOMACK	$ 699,546	$ 609,874
ALBEMARLE	$ 893,246	$ 1,166,794
ALLEGHANY	$ 223,797	$ 343,525
AMELIA	$ 336,551	$ 308,182
AMHERST	$ 436,831	$ 450,787
APPOMATTOX	$ 292,291	$ 319,627
AUGUSTA	$ 1,292,197	$ 1,191,546
BATH	$ 311,506	$ 271,466
BEDFORD	$ 674,861	$ 787,466
BLAND	$ 216,831	$ 190,457
BOTETOURT	$ 555,279	$ 436,055
BRUNSWICK	$ 556,562	$ 498,413
BUCHANAN	$ 556,080	$ 806,923
BUCKINGHAM	$ 467,792	$ 368,206
CAMPBELL	$ 762,639	$ 785,708
CAROLINE	$ 299,734	$ 422,587
CARROLL	$ 725,086	$ 514,921
CHARLES CITY	$ 150,245	$ 191,619
CHARLOTTE	$ 364,166	$ 354,158
CHESTERFIELD	$ 1,504,824	$ 3,145,179
CLARKE	$ 190,417	$ 210,693
CRAIG	$ 169,341	$ 161,927
CULPEPER	$ 445,374	$ 362,419
CUMBERLAND	$ 263,661	$ 191,834
DICKENSON	$ 339,737	$ 359,883
DINWIDDIE	$ 568,636	$ 524,767
ESSEX	$ 197,135	$ 237,008
FAIRFAX	$ 3,689,598	$11,724,808
FAUQUIER	$ 687,864	$ 816,074
FLOYD	$ 471,163	$ 296,259
FLUVANNA	$ 269,908	$ 235,762
FRANKLIN	$ 762,008	$ 847,184
FREDERICK	$ 579,282	$ 620,389
GILES	$ 312,722	$ 235,187
GLOUCESTER	$ 297,446	$ 360,105

Table 12

OPTION S-3 (Continued)
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
GOOCHLAND	$ 259,287	$ 332,370
GRAYSON	$ 319,300	$ 343,170
GREENE	$ 164,693	$ 141,554
GREENSVILLE	$ 215,028	$ 294,048
HALIFAX	$ 871,123	$ 707,568
HANOVER	$ 735,998	$ 1,042,181
HENRY	$ 1,035,000	$ 1,007,264
HIGHLAND	$ 223,202	$ 176,035
ISLE OF WIGHT	$ 511,414	$ 383,243
JAMES CITY	$ 254,236	$ 303,598
KING & QUEEN	$ 178,544	$ 221,402
KING GEORGE	$ 195,009	$ 142,570
KING WILLIAM	$ 165,031	$ 215,049
LANCASTER	$ 163,040	$ 178,212
LEE	$ 445,644	$ 344,431
LOUDOUN	$ 1,253,549	$ 1,030,430
LOUISA	$ 555,135	$ 475,405
LUNENBURG	$ 475,076	$ 338,331
MADISON	$ 354,022	$ 220,147
MATHEWS	$ 117,795	$ 124,115
MECKLENBURG	$ 697,672	$ 517,852
MIDDLESEX	$ 109,542	$ 154,734
MONTGOMERY	$ 455,208	$ 512,895
NELSON	$ 362,330	$ 285,252
NEW KENT	$ 150,476	$ 165,254
NORTHAMPTON	$ 327,807	$ 247,056
NORTHUMBERLAND	$ 209,902	$ 236,832
NOTTOWAY	$ 290,921	$ 235,901
ORANGE	$ 390,882	$ 329,241
PAGE	$ 274,994	$ 274,994
PATRICK	$ 532,890	$ 415,766
PITTSYLVANIA	$ 1,492,991	$ 1,360,905
POWHATAN	$ 262,666	$ 296,658
PRINCE EDWARD	$ 424,667	$ 256,727
PRINCE GEORGE	$ 382,797	$ 356,502

Table 12

OPTION S-3 (Continued)
HIGHWAY ALLOCATION
OPTIONS SUMMARY
SECONDARY SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
PRINCE WILLIAM	$ 1,857,384	$ 2,773,545
PULASKI	$ 475,653	$ 525,520
RAPPAHANNOCK	$ 209,847	$ 150,059
RICHMOND	$ 156,833	$ 175,685
ROANOKE	$ 645,890	$ 689,741
ROCKBRIDGE	$ 511,441	$ 440,723
ROCKINGHAM	$ 1,227,467	$ 1,181,981
RUSSELL	$ 399,458	$ 421,103
SCOTT	$ 625,345	$ 472,761
SHENANDOAH	$ 586,590	$ 539,724
SMYTH	$ 384,361	$ 409,586
SOUTHAMPTON	$ 522,233	$ 657,062
SPOTSYVLANIA	$ 486,639	$ 726,317
STAFFORD	$ 489,290	$ 738,726
SUFFOLK	$ 719,858	$ 592,312
SURRY	$ 184,020	$ 199,383
SUSSEX	$ 375,459	$ 320,136
TAZEWELL	$ 506,728	$ 560,669
WARREN	$ 241,310	$ 220,248
WASHINGTON	$ 667,879	$ 687,499
WESTMORELAND	$ 300,791	$ 279,102
WISE	$ 452,903	$ 652,240
WYTHE	$ 353,913	$ 348,834
YORK	$ 370,934	$ 391,606
	$48,174,471	$58,276,801

Note: Both the current allocation and the allocation for the JLARC option include bridge replacement funds to ensure comparability. The table does not include the construction allocations for Arlington and Henrico counties which would have to be made from these amounts under the new process recommended by JLARC staff (Chapter V.).

URBAN SYSTEM ALLOCATIONS

Major highways and roads in cities and towns over 3,500 in population constitute the urban highway sytem. Under the provisions of sections 33.1-41 and 33.1-43 of the *Code of Virginia*, roads are designated as part of the urban system by the State Highway Commission. With 8,301 miles, the urban system is the second largest of the State systems.

The JLARC review of urban allocations focused on the equity of the administrative procedures developed by DHT to allocate urban funds, and on several alternatives for distribution of the urban funds. It is clear that some adjustment to the current process would improve equity, by ensuring that allocations are legislatively mandated and that this mandate is consistently applied from year to year.

Current Allocation Process

Urban construction allocations are presently made without explicit statutory guidelines or formulas. The *Code of Virginia* does specify that urban construction allocations be made based on statewide need for urban system improvements in cities and towns with populations greater than 3,500. In practice, this allocation process has resulted in funding for localities with larger and more extensive urban construction projects. Smaller construction needs generally are identified and addressed independently by cities and towns in the State.

The need for transportation improvements in cities and towns is identified either through the thoroughfare planning process or independently by each locality. A locality then requests that DHT explore the feasibility of a construction project to meet the identified transportation need. After local staff and DHT cooperatively examine the need, DHT provides the local governing body with preliminary plans for construction or with alternatives to construction that respond to the need. The locality, through its governing body, must then endorse or reject these recommendations. If endorsed, further development on the improvement is undertaken and the locality agrees to provide five percent of the total cost of the work.

DHT and the locality proceed cooperatively to develop plans and designs for the road project. After preparation of more detailed plans, the project moves to public review through appropriate hearings at the local level. The content of these hearings depends on characteristics of the project, such as environmental impacts on other land uses.

After DHT's review of public comment or other suggested modifications in the plans, an estimate of the project's cost is prepared, and designs are again presented to the local governing body for

their final endorsement before proceeding to construction. The Highway Commission then begins the process of allocating the bulk of construction funds to urban projects in the State. This process is oriented toward shifting the emphasis from one urban project to another to allow for timing of actual construction.

Equity of the Current Process

Distribution of urban funds in the past has been based on the population in the municipalities. DHT's urban division has tried to ensure that a city or town's proportion of funds eventually equals its proportion of the State's population. But equity has been measured in terms of 10-year cycles. That is, a city might have to wait 10 years for its allocations to be in line with its percentage of Statewide population. This contrasts sharply with the statutory process used for the secondary system, where equity can be judged on an annual basis.

Because of the rapidly changing funding environment, it is important that urban allocations also be equitable from year to year. If this is not done, those municipalities which receive allocations when revenues are low, as in recent years, will receive less than their fair share when compared to localities that received allocations when revenues were high. Each city may have allocations in proportion to its share of population, but a city allocated funds in a year when revenues are low will receive less funding.

A second problem is that the process currently in use has not been adopted by the General Assembly. In fact, there is no formal documentation of the process. The methods used to allocate such large sums of public funds should be legislatively mandated if they are to be consistent with other allocation procedures.

Statutory Allocations for the Urban System

The JLARC interim report on highway allocations proposed three possible formulas for allocating urban construction funds. The formulas were based on the regression analysis of urban highway needs and various urban factors. However, revision of the area factor for the final report resulted in high factor intercorrelations in all of the previously recommended formulas.

The area factor was revised at the suggestion of several localities and the urban division of DHT. The new area factor excluded the area of military reservations, federal and State parks, wildlife refuges, and other areas where highway construction would not be the responsibility of DHT or the localities. Only contiguous areas of five square miles or more were excluded. The changes in the area factor resulted in high intercorrelations with the other factors in the formulas. None of the options to be used to allocate funds should have

such inter-related factors. Therefore, the formulas from the interim report are not recommended for use with the revised area factor, and have been excluded from this final report.

Additional analysis shows that the population factor can be used to allocate funds equitably, however. This is the factor currently used by DHT in its ten-year cycle for allocating urban funds. The population factor has a .86 bivariate correlation with urban needs. Thus, the General Assembly could enact a statutory system for allocating urban funds by simply adopting, with some modification, the informal system already in use at DHT. Population would be used on an annual basis, however, instead of on a ten-year cycle.

One objection raised to the use of a statutory formula for urban allocations is that the formula would distribute funds to every city and town, even if a jurisdiction had no urban projects for which the funds could be used. This would tie up much needed funds unnecessarily. Therefore, any formula-based system would have to include a solution to this problem.

Two alternative approaches are possible. First, allocations could be made only to those cities and towns which have approved urban projects. This approach would ensure that the funds allocated would be usable on projects immediately, and much-needed funding would not be tied up unnecessarily. The allocations made could not exceed the cost of the approved projects in each jurisdiction.

As a second alternative, allocations could be made to all jurisdictions, with the provision that funds would lapse in three years if not allocated to an approved urban project. Any allocations which lapse would be reallocated to the other cities and towns. Because of its ease of administration, JLARC staff recommends the use of the first alternative.

Recommendation (7). The General Assembly may wish to amend the *Code of Virginia* to establish a statutory formula for allocating urban system funds based on the proportion of population in the jurisdictions eligible for urban funding. Annual allocations should be made only to those cities and towns with approved urban projects.

Option U-1 (Population-100%)

Option U-1 is based on Recommendation (7). It allocates 100 percent of the urban funds on the basis of population in cities and towns. No allocations were made to jurisdictions which currently have no approved urban projects. The allocations are based on urban system funds of $65.26 million, which is one-third of the construction funds as recommended plus the required five percent local match. The total amount includes bridge replacement funds. Table 13 shows the FY 1984 allocations which would result from this option, and the current FY 1984 allocations made by DHT.

Table 13

OPTION U-1
HIGHWAY ALLOCATION
OPTIONS SUMMARY
URBAN SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
ALEXANDRIA	$ 3,250,000	$ 3,314,213
BEDFORD	$ 200,000	$ 200,000
BLACKSBURG	$ 900,000	$ 957,933
BLACKSTONE	$ 100,000	$ 113,309
BLUEFIELD	$ 100,000	$ 185,909
BRISTOL	$ 200,000	$ 569,044
CHARLOTTESVILLE	$ 850,000	$ 1,250,647
CHESAPEAKE	$ 3,035,000	$ 3,667,521
CHRISTIANSBURG	$ 0	$ 323,448
COLONIAL HEIGHTS	$ 900,000	$ 519,018
CULPEPER	$ 500,000	$ 207,013
DANVILLE	$ 1,200,000	$ 1,431,990
EMPORIA	$ 200,000	$ 159,457
FAIRFAX	$ 700,000	$ 700,000
FALLS CHURCH	$ 0	$ 297,029
FRANKLIN	$ 200,000	$ 231,370
FREDERICKSBURG	$ 400,000	$ 478,372
FRONT ROYAL	$ 400,000	$ 347,867
GALAX	$ 700,000	$ 212,610
HAMPTON	$ 3,100,000	$ 3,867,624
HARRISONBURG	$ 0	$ 640,956
HERNDON	$ 300,000	$ 357,966
HOPEWELL	$ 200,000	$ 744,135
LYNCHBURG	$ 1,900,000	$ 2,101,086
MANASSAS	$ 500,000	$ 522,145
MARION	$ 300,000	$ 219,770
MARTINSVILLE	$ 700,000	$ 559,664
NEWPORT NEWS	$ 3,680,000	$ 4,574,240
NORFOLK	$ 6,745,000	$ 8,360,572
PETERSBURG	$ 200,000	$ 1,253,773
POQUOSON	$ 200,000	$ 284,522
PORTSMOUTH	$ 2,600,000	$ 3,254,808
PULASKI	$ 400,000	$ 315,976
RICHLANDS	$ 600,000	$ 181,219
RICHMOND	$ 6,400,000	$ 6,816,024

Table 13

OPTION U-1 (Continued)
HIGHWAY ALLOCATION
OPTIONS SUMMARY
URBAN SYSTEM FY 1984

NAME	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
ROANOKE	$ 1,500,000	$ 3,151,629
ROCKY MOUNT	$ 200,000	$ 131,255
SALEM	$ 700,000	$ 750,388
SMITHFIELD	$ 0	$ 114,090
SOUTH BOSTON	$ 200,000	$ 215,737
STAUNTON	$ 300,000	$ 687,856
SUFFOLK	$ 200,000	$ 276,956
TAZEWELL	$ 200,000	$ 139,666
VINTON	$ 600,000	$ 250,973
VIRGINIA BEACH	$ 6,800,000	$ 8,532,536
WARRENTON	$ 0	$ 122,157
WAYNESBORO	$ 0	$ 472,119
WILLIAMSBURG	$ 200,000	$ 318,915
WINCHESTER	$ 2,300,000	$ 625,323
WISE	$ 100,000	$ 121,750
WYTHEVILLE	$ 200,000	$ 223,084
	$55,160,000	$65,262,333

The following 16 jurisidictions had no approved urban projects:

Abingdon	Leesburg
Altavista	Lexington
Ashland	Luray
Big Stone Gap	Manassas Park
Buena Vista	Norton
Clifton Forge	Radford
Covington	South Hill
Farmville	Vienna

Note: Both the current allocation and the allocation for the JLARC option include bridge replacement funds to ensure comparability.

PRIMARY SYSTEM ALLOCATIONS

The primary system includes the arterial highways and the extensions of arterial highways within cities and towns. The primary system is defined by Section 33-1.25 of the *Code of Virginia* as the state highway system that supplements and complements the federal interstate system. The primary system also forms a complete network of through highways that serves both interstate and principal intrastate and regional traffic flow. As of December 1981, 7,901 miles of primary roads were open to traffic.

Construction allocations are made to the highway districts based on a formula set out in Section 33.1-23.2 of the *Code of Virginia*. The distribution factors used in the current statutory requirements for allocating primary funds are highly intercorrelated and are not the best predictors of primary needs. In addition, the regional planning district boundaries were found to be a preferred geographical basis on which to distribute the primary system funds.

Current Allocation Process

Section 33.1-23.2 of the *Code of Virginia* establishes the formula for primary system allocations. In addition to requiring five factors, it requires that allocations be made on the basis of DHT highway construction districts.

A construction district's allocation for primary roads is equal to the proportion the construction district bears to the State as a whole in terms of:

(a) area, population and primary road mileage each treated equally and weighted 40 percent;

(b) vehicle registration weighted 40 percent; and

(c) primary lane mile need weighted 20 percent.

The amount of State funds needed to match federal interstate aid in each district is deducted from each district's primary system allocations. The remaining funds are then allocated to primary route improvements and new construction within the districts.

Equity of the Current Allocation Formula

The JLARC evaluation of the current statutory provisions for allocating primary funds was based on an analysis of the factors currently used. The analysis revealed that several problems may exist in using the factors as provided for by law.

Intercorrelation of Factors. The JLARC analysis of factors indicated that some of the factors used in the current primary system

formula are highly interrelated. For example, population and vehicle registration are closely related; they measure the same phenomenon and convey essentially the same information. Area and primary system mileage are also highly interrelated. In the case of population and lane mile need, the relationship is not quite as strong, but by including the two factors in the same formula, the information they convey is doubly counted. Use of these highly related factors in the current formula is unnecessary and technically inappropriate. The formula can account for the information to be used in allocating funds by using fewer factors.

Recommendation (8). The General Assembly may wish to amend the *Code of Virginia* to revise the current statutory formula for allocating primary system funds to include independent factors which are weighted in proportion to their relationship to construction needs.

Geographical Units. The primary system was established to link metropolitan areas and economic centers of regional importance with one another. This was the basic reason the General Assembly combined the primary and interstate systems for allocation purposes and allocated funds on a district basis. An analysis of the geographical base for allocating primary funds, however, revealed that the planning district boundaries provided the best correlations of factors with primary needs. This finding is not surprising, since the planning districts were established to serve regional areas in economic and transportation planning.

The analysis of the geographical base involved the correlation of demographic and demand factors with the primary system needs within the geographical units. Three alternatives were analyzed, based on the boundaries of (1) localities, (2) construction districts, and (3) planning districts. It was clear from the correlation analysis that a greater number of factors correlated with the need when the planning district boundaries were used. In fact, seven of the 11 factors used had the highest correlation when the planning districts were used as the base.

Recommendation (9). The General Assembly may wish to amend the *Code of Virginia* to change the geographical basis of aggregating primary allocations from DHT's eight districts to the planning district boundaries. These boundaries should be used only for the purpose of allocating funds. The districts should continue to administer any projects in their areas. In order to facilitate the programming of projects, the funds might be aggregated at the district level, and allocated to projects as needed. Any transfer of allocations from a planning district would create a balance which would have to be funded at a later date. The General Assembly may wish to specify a limit on the time that such balances may exist.

Primary System Options

The primary system models were developed from factors that correlated highly with primary system needs. The models were developed

using the 22 planning districts as a base. All options are based on the planning district geographical unit.

Two different options are presented in the following section. Each option includes a description of the model and a table showing the allocations for each planning district. The allocations are based on total primary funds of $61.76 million, including bridge replacement funds. This is one-third of the available funding for construction.

Option P-1 includes measures of population and primary system lane miles. Option P-2 also includes lane miles as a factor, but replaces population with vehicle registration.

Option P-1: Population--80%; Lane Mileage--20%

In the first formula option, allocations are based on measures of population and primary system lane mileage.

The first factor, population, is a measure of demand on the transportation system. It is an accurate reflection of the travel which might be expected on the highways.

The second factor, lane mileage, measures the length of the primary system within the planning district. The size of the network of primary roads affects the need for new roads by increasing the demand for connectors. When demand increases, volume also increases, which leads to the need for greater capacity.

The regression equation resulted in a high degree of accuracy with an R^2 of .85. The weights for the factors are 80 percent for population and 20 percent for lane mileage. The allocations for the planning districts under this option are listed in Table 14.

Table 14

OPTION P-1
OPTIONS SUMMARY
PRIMARY SYSTEM FY 1984

PLANNING DISTRICT	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
ACCOMACK NORTHAMPTON	$ 581,000	$ 881,430
CENTRAL SHENANDOAH	$ 6,917,000	$ 2,702,588
CENTRAL VIRGINIA	$ 4,356,000	$ 3,115,661
CRATER	$ 5,129,000	$ 1,527,181
CUMBERLAND PLATEAU	$ 3,793,000	$ 2,412,070
FIFTH	$ 7,249,000	$ 3,210,550
LENOWISCO	$ 4,688,000	$ 1,680,022
LORD FAIRFAX	$ 675,000	$ 2,307,358
MIDDLE PENINSULA	$ 1,741,000	$ 1,284,815
MOUNT ROGERS	$ 1,887,000	$ 2,570,332
NEW RIVER VALLEY	$ 2,613,000	$ 1,982,077
NORTHERN NECK	$ 785,000	$ 814,727
NORTHERN VIRGINIA	$ 8,857,000	$13,201,362
PENINSULA	$ 1,912,000	$ 988,379
PIEDMONT	$ 1,476,000	$ 1,764,637
RADCO	$ 2,254,000	$ 1,912,445
RAPPAHANNOCK-RAPIDAN	$ 3,205,000	$ 1,701,680
RICHMOND REGIONAL	$ 8,023,000	$ 6,564,620
SOUTHEASTERN VIRGINIA	$ 7,524,000	$ 4,435,059
SOUTHSIDE	$ 738,000	$ 1,646,774
THOMAS JEFFERSON	$ 1,347,000	$ 2,033,095
WEST PIEDMONT	$ 6,217,000	$ 3,025,717
	$81,967,000	$61,762,580

Note: Both the current allocation and the allocation for the JLARC option include bridge replacement funds to ensure comparability.

Option P-2: Vehicle Registration--85%; Lane Mileage--15%

The second option also includes two factors which measure demand and system size. The first factor is vehicle registration, which measures the demand on a system by local residents. While use of vehicle registration as a factor may slightly underestimate the demand on the highway system, it is a good substitute for population. The second factor, lane miles, is a measure of the length and capacity of the network of primary roads.

The model predicted the primary system needs very well with an R^2 of .89. The weights for the factors are 85 percent for vehicle registration and 15 percent for lane miles. The allocations for the planning districts under this option are listed in Table 15.

Table 15

OPTION P-2
OPTIONS SUMMARY
PRIMARY SYSTEM FY 1984

PLANNING DISTRICT	CURRENT ALLOCATION	ALLOCATION FY 1984 WITH THIS OPTION
ACCOMACK	$ 581,000	$ 869,639
CENTRAL SHENANDOAH	$ 6,917,000	$ 2,862,932
CENTRAL VIRGINIA	$ 4,356,000	$ 3,118,871
CRATER	$ 5,129,000	$ 1,290,605
CUMBERLAND PLATEAU	$ 3,793,000	$ 2,267,896
FIFTH	$ 7,249,000	$ 3,370,388
LENOWISCO	$ 4,688,000	$ 1,487,287
LORD FAIRFAX	$ 675,000	$ 2,336,607
MIDDLE PENINSULA	$ 1,741,000	$ 1,338,254
MOUNT RODGERS	$ 1,887,000	$ 2,365,302
NEW RIVER VALLEY	$ 2,613,000	$ 1,774,478
NORTHERN NECK	$ 785,000	$ 879,412
NORTHERN VIRGINIA	$ 8,857,000	$13,860,783
PENINSULA	$ 1,912,000	$ 890,157
PIEDMONT	$ 1,476,000	$ 1,595,856
RADCO	$ 2,254,000	$ 1,943,724
RAPPAHANNOCK RAPIDAN	$ 3,205,000	$ 1,752,062
RICHMOND	$ 8,023,000	$ 7,088,152
SOUTHEASTERN VIRGINIA	$ 7,524,000	$ 4,091,323
SOUTHSIDE	$ 738,000	$ 1,518,529
THOMAS JEFFERSON	$ 1,347,000	$ 2,001,567
WEST PIEDMONT	$ 6,217,000	$ 3,058,696
	$81,967,000	$61,762,518

Note: Both the current allocation and the allocation for the JLARC option include bridge replacement funds to ensure comparability.

ALLOCATIONS FOR THE 1990's

JLARC's review of highway construction allocations was based on an empirical analysis of factors that can serve as surrogates for highway construction needs. By identifying the factors which most nearly approximate need, allocation formulas can be developed to distribute funds on the basis of need.

This approach has a strong theoretical base for determining highway allocation formulas. The options developed and presented in this study are solutions to current imbalances among the administrative systems and among various localities in the State. Figure 4 shows the system of allocations proposed by JLARC staff. This system should not be viewed as a permanent solution, because of the constantly changing environment of transportation needs and funding sources. It was just such a change in the environment that led the General Assembly to request this study. Reassessment of the allocation formulas will be necessary on a periodic basis. Such an effort can be made more useful and less difficult through careful preparation and planning.

Measures of Need. Highway construction needs are controversial and difficult to identify. Any inventory that is developed might exclude perceived needs in the localities, or include needs with which the localities are not in agreement. The Department of Highways and Transportation, under the direction of the Secretary of Transportation and Public Safety, must therefore begin now to develop inventories of need for the 1990's. Those inventories should be a continuing part of the statewide transportation planning process, and should be based on a comprehensive and consistent methodology. Transportation goals should be established, and projects should be prioritized as to their relative importance. Local government involvement throughout the process would improve the inventory needs.

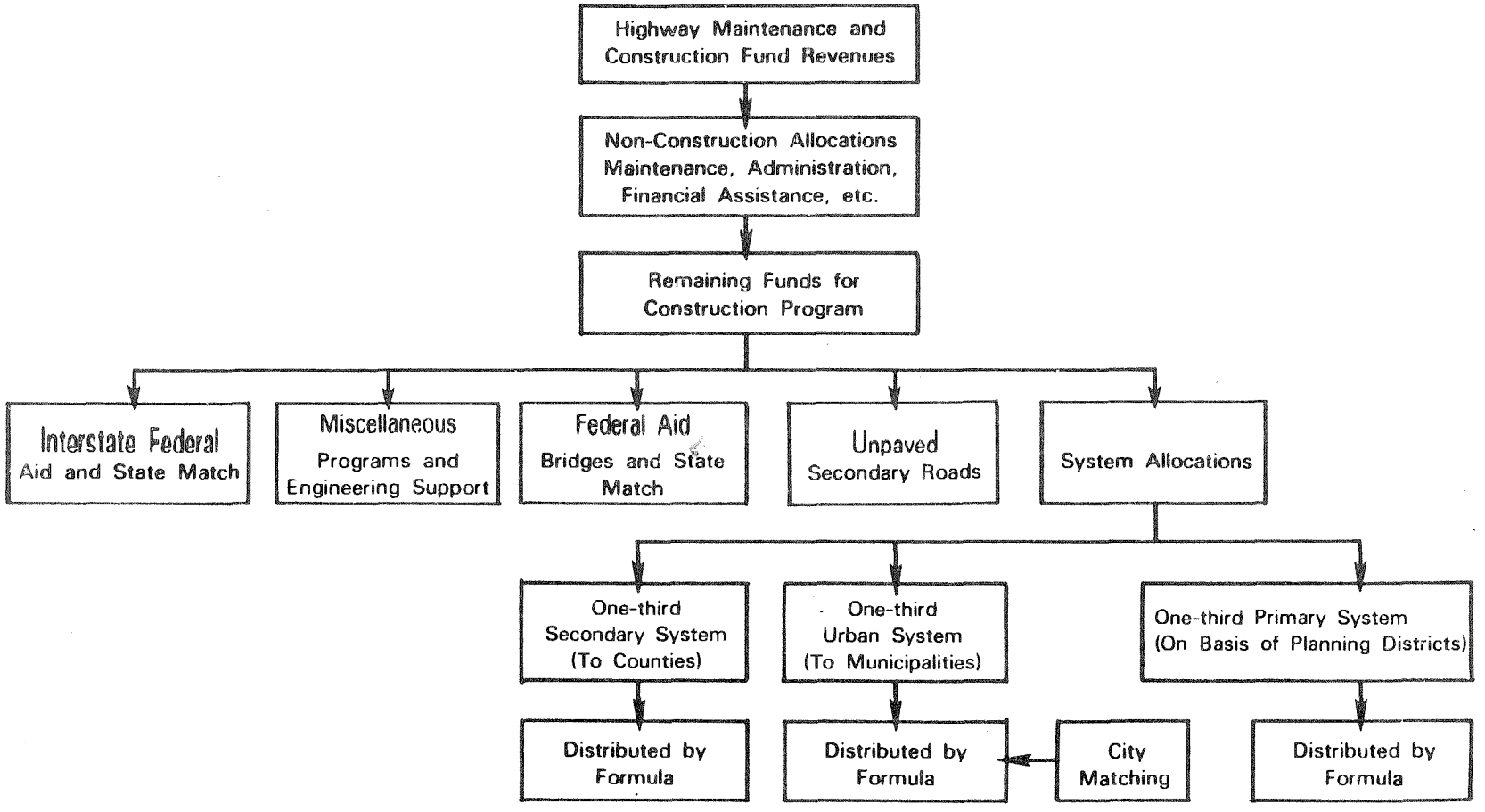
Data on Local Characteristics. Data currently available on local characteristics should be improved. New sources could be added, and additional measures of demand for transportation services developed. During the course of the JLARC allocation study, inadequacies were found to exist in many data sources and measures. Vehicle travel data was not available for the urban system in cities and towns. This is a serious shortcoming in the current traffic count system, and should be remedied as soon as possible. Information on accidents in cities was also lacking.

Several other factors, such as business intensity and industrial intensity, should be tested to determine their relationship to transportation need. Those sources were not available during the course of the JLARC review.

The reassessment of transportation needs should include the factors identified by JLARC during its review and should include additional factors that are evident based on the transportation environment at that time.

Figure 4

JLARC Staff Proposal For Allocating Highway Construction Funds



Source: Summary of JLARC Recommendations

Recommendation (10). The General Assembly may wish to amend the *Code of Virginia* to mandate the collection of data for the evaluation of highway fund equity. Because it is essential to such evaluations, the collection of data on vehicle miles of travel for all systems should be specifically included in such a mandate.

Recommendation (11). The Secretary of Transportation and Public Safety should ensure that a reassessment of highway construction allocations is made on a periodic basis as a part of the statewide transportation planning process. The analysis should be based on the prioritization of needs among systems and localities, and transportation goals should be more clearly established for the future. An improved methodology for identifying special needs and involving local governments should be developed.

III. COUNTY MAINTENANCE ALLOCATIONS

The General Assembly has recognized that adequate maintenance is essential to preserving Virginia's highway system and ensuring the safety of the traveling public. In 1977, the General Assembly assigned highway maintenance first priority in transportation funding by directing that the Highway and Transportation Commission allocate all "reasonable and necessary" funds for maintenance before allocating funds for other programs.

The Appropriations Act specifies an overall maintenance appropriation, but there are no statutory requirements concerning the distribution of funds among localities and activities. How funds are allocated is dependent on DHT's budgeting process. Therefore it is critical in assessing the reasonableness and equity of maintenance funding to look at DHT's process for budgeting and allocating those funds.

Four key issues were identified in the study of DHT's maintenance budgeting process:

(1) Has DHT's maintenance budgeting process provided for reasonable and equitable allocations?

(2) Has DHT funded all reasonable and necessary maintenance needs?

(3) Has DHT placed adequate priority on the development of a pavement management system?

(4) Has the budgeting of snow removal as part of ordinary maintenance had any adverse impacts on the equity of maintenance allocations?

The Highway Maintenance Program

With the exception of secondary roads in Arlington and Henrico, highway maintenance work in counties is the responsibility of DHT. The General Assembly has given the department this responsibility to ensure that all reasonable and necessary maintenance work in the counties is performed. It also ensures a more consistent level of service across the State. This arrangement differs from the situation in cities and towns, where the municipalities receive payments from the State to aid them in maintaining their own roads. As a result, cities and towns have their own maintenance crews, while counties do not.

The basic goals of the DHT county maintenance program are: (1) the preservation and restoration of existing facilities; and (2) the promotion of the safety of the traveling public. The maintenance budget also funds operation of special facilities (tunnels, for example) and provides for services, such as rest areas, which contribute to the comfort and convenience of highway users.

Maintenance work is classified into two broad categories by DHT: ordinary and replacement. These categories reflect the scope and frequency of work performed. Ordinary maintenance consists of routine activities intended to preserve roads in their current condition or to maintain essential operations. Almost all ordinary maintenance work is performed by DHT personnel, although a small percentage is contracted to the private sector. Examples of typical ordinary maintenance are filling potholes, removing brush, and cleaning ditches. Snow removal is also currently funded as part of ordinary maintenance.

Maintenance replacement, on the other hand, is directed at restoring a deteriorated road to its original condition. This activity involves rehabilitation work such as pavement resurfacing; replacing guardrails, signs, or drainage structures; and extensive bridge repair. Some maintenance replacement work is performed by DHT staff, but a substantial portion, including resurfacing work, is contracted out by DHT. Replacement work is generally more expensive and performed less frequently than ordinary maintenance.

The *Code of Virginia* requires that the Highway and Transportation Commission allocate all "reasonable and necessary" funds for highway maintenance before allocating funds for other programs. Statutes do not, however, require or provide guidelines for any particular DHT approach to determining a "reasonable and necessary" funding level for maintenance. In addition, there are no statutory requirements or guidelines as to how DHT is to distribute these funds among localities. There also is no distinction in law between ordinary maintenance and maintenance replacement allocations.

Current DHT Allocation Process

Although the distinction between ordinary maintenance and maintenance replacement is not required by law, DHT treats the two areas separately in its budgeting process. DHT estimates the cost of ordinary maintenance for its biennial budget (and for the six-year plan) by applying specific inflation and system growth estimates to its planned labor, equipment, and material costs for the chosen base year. Anticipated maintenance costs for new facilities are also added to the estimate.

The planned cost for ordinary maintenance in the base year is developed partially through the use of DHT's maintenance management system (MMS). About 42 percent of the ordinary maintenance budget,

excluding snow removal, is determined by using maintenance management system quantity standards. The remainder of the budget comes from estimates of workload and cost, based on past budgets and experience.

Workload, staffing requirements, and unit costs for each maintenance activity are specified for the various regions of the State. These regional differences are based on variations in soil condition, topography, and material and labor costs. The final product of the process is a budget for the ordinary maintenance activities in each county.

DHT estimates the cost of maintenance replacement for its biennial budget (and for the six-year plan) by applying inflation and system growth estimates to its planned maintenance replacement allocations in the selected base year. Additional costs may be included in the estimate to meet other replacement needs specifically identified by the department.

There are a number of maintenance replacement categories (such as roadside, bridge, and sidewalk replacement) for which the department budgets money, but the category which has typically received the largest allocation is roadway resurfacing. For the secondary system, maintenance resurfacing allocations have been based on a five-year resurfacing cycle. Allocations are calculated by the maintenance division using this cycle, county secondary mileage figures, and anticipated differences in resurfacing costs. Resident engineers determine the road segments which can be resurfaced within the allocations.

For interstate and primary roads, maintenance replacement resurfacing allocations have been based on ten- or twelve-year cycles. The maintenance division sends tentative allocations for resurfacing to the districts based on these cycles. The districts provide the residencies with information on the amount of resurfacing they can expect.

Resident engineers then request funding for resurfacing based on their assessment of needs or on what they believe the department will fund. Residency requests are reviewed, amended, and prioritized by district staff. District requests are then forwarded to the central office. A field review of the requests is conducted, and priorities for funding particular projects are decided by the central office.

HIGHWAY MAINTENANCE BUDGETING

The highway maintenance budget is developed by DHT's maintenance division. The funds budgeted for expenditure in each county constitute the maintenance allocations. Current and future allocations may be inappropriate because of problems in the process used to budget maintenance expenditures. JLARC staff have identified two problems: (1) the current process is grounded on the planned costs for previous years rather than actual experience; and (2) maintenance management system standards used in budgeting may be inadequate.

Adequacy of the Maintenance Budgeting Process

In order to evaluate how closely DHT maintenance expenditures have matched budget projections, JLARC compared maintenance appropriations and expenditures for the period from FY 1980 to FY 1983. The results are shown in Table 16.

Table 16

COMPARISON OF MAINTENANCE APPROPRIATIONS AND EXPENDITURES

Fiscal Year	Appropriation	Expenditure	Difference
1983	$263,428,300	$233,342,218	$30,086,082
1982	$243,663,700	$211,098,531	$32,565,169
1981	$222,263,700	$190,623,405	$31,640,295
1980	$150,570,000	$184,533,448	($33,963,448)

Source: Appropriation Acts and DHT expenditure data.

In FY 1980, appropriations were overspent by almost $34 million. The department's maintenance appropriation was increased in FY 1981 by $71.7 million, or about 48 percent. In that fiscal year (and for the next two consecutive fiscal years), DHT underspent its budget for highway maintenance by more than $30 million. A portion of the $30 million annual surpluses in FY 1981 and FY 1982 was used to offset the maintenance deficit incurred during FY 1980.

In FY 1983 there were no prior maintenance deficits to finance. Nevertheless, the FY 1983 appropriation was increased by about 8.1 percent over the appropriation level for the previous year. As a result, in FY 1983 expenditures were $30,086,082 less than appropriations. Maintenance replacement accounted for $15,819,123 of this difference. In the area of ordinary maintenance, allocations exceeded expenditures by $14,266,959, of which $12,032,824 of the underexpenditure was for non-snow removal activities. The differences between allocations and expenditures for ordinary maintenance activity groups are shown in Table 17.

It is important to note that the underexpenditure did not result in a reduction of the maintenance work accomplished by DHT. As can be seen in Table 18, DHT accomplished a greater portion of its planned work in FY 1983 than in any of the previous five years. The median accomplishment for 1983 was 100.25 percent, compared to a range for the previous five years of 83.05 to 95.5 percent. Of the 16 activities with planned quantities, in only four did the department fail to achieve 90 percent of the planned work, the goal set by DHT in its 1984-1986 Program Proposal. This also was a significant improvement from prior years.

Table 17

COMPARISON OF ORDINARY MAINTENANCE ALLOCATIONS
AND EXPENDITURES BY ACTIVITY GROUP, FY 1983

Activity Group	FY 1983 Allocation	FY 1983 Expenditure	Allocation Compared to Expenditure
Bituminous Surface	$ 24,057,326	$ 27,018,174	- 2,960,848
Concrete Surface	427,169	316,471	+ 110,698
Shoulders	5,612,684	6,494,171	- 881,487
Drainage	19,492,445	17,012,569	+ 2,479,876
Roadside	11,514,001	11,078,013	+ 435,988
Vegetation Control	12,455,108	12,811,327	- 356,219
Signs	8,066,917	7,160,395	+ 906,522
Traffic Services	2,610,321	2,097,758	+ 512,563
Bridges	2,212,739	1,738,360	+ 474,379
Drawbridge-Ferry	6,505,781	3,192,972	+ 3,312,809
Special Facilities	0	2,748,226*	- 2,748,226
Gen. Expense, Supervision	20,287,359	18,935,544	+ 1,351,815
Aggregate Surface	9,565,140	9,161,168	+ 403,972
Miscellaneous	8,990,982	0	+ 8,990,982
Total Non-Snow Removal	$131,797,972	$119,765,148	+12,032,824
Snow Removal	24,242,904	22,008,769	+ 2,234,135
Total Ordinary Maintenance	$156,040,876	$141,773,917	+14,266,959

*Includes tunnels, weigh stations, and bus shelters.

Source: DHT Maintenance Division Allocation and Expenditure Data.

The size of maintenance underexpenditures is critical in evaluating DHT budget projections. As previously discussed, DHT has projected future maintenance budgets from its planned allocations in the 1983 base year. DHT built its budget for the FY 1984-86 biennium, as well as for its current six-year plan, on the basis of FY 1983 planned ordinary and replacement maintenance costs. Had DHT projected from actual cost experience, the base would have been significantly less.

DHT's choice of FY 1983 as a base was a part of its normal budgeting process, so the significant overestimation which resulted was apparently an unintentional consequence. However, the use of FY 1983 planned costs greatly exaggerates the maintenance budget for the six-year program. Table 19 shows the potential magnitude of DHT overestimations for maintenance. For the 1984-86 budget, the overestimate is $63.4 million. For DHT's six year plan, the total overestimate is $209.5 million.

Table 18

COMPARISON OF DHT ACTUAL WORK ACCOMPLISHMENTS
WITH PLANNED WORK QUANTITIES
FY 1978 - FY 1983

Activity	Percentage of Planned Work Accomplished					
	1983	1982	1981	1980	1979	1978
Skin Patching	119.7	126.9	120.2	130.6	91.4	72.7
Premix Patching	215.1	141.0	123.8	187.4	115.0	97.4
Patching Non-Hard Surface	145.2	124.7	84.6	123.7	161.5	153.2
Machining Non-Hard Surface	102.3	100.5	86.3	84.6	81.3	79.2
Apply Dust Palliatives	103.9	94.5	99.4	98.7	103.7	95.8
Machine Non-Hard Shoulders	60.7	66.4	73.9	64.5	154.3	67.0
Repair Non-Hard Shoulders	115.2	69.6	92.3	106.3	93.6	86.9
Wedging of Shoulders	120.4	133.1	112.3	96.8	103.4	112.2
Repair Hardsurface Shoulders	248.9	257.3	253.1	232.7	199.9	157.7
Ditching, Spoil Hauled	59.2	64.2	68.7	71.2	65.8	48.3
Ditching, Spoil Left	94.1	87.8	85.5	77.6	58.8	51.0
Hand Clean Ditches	74.1	81.7	75.6	69.6	66.7	62.8
Cleaning Rights-of-Way	51.7	49.3	58.7	48.3	46.6	39.6
Tractor Mowing	94.8	81.8	79.4	86.0	97.4	93.4
Brush Cutting	90.6	127.7	109.4	71.9	56.1	66.3
Guardrail Repair	98.2	87.6	95.1	111.9	124.1	108.1
MEDIAN ACCOMPLISHMENT	100.25	91.15	89.3	91.4	95.5	83.05

Source: JLARC analysis of DHT budgets and workload data.

Recommendation (12). DHT should prepare its biennial maintenance budget on the basis of a realistic assessment of the ordinary and replacement maintenance program to be accomplished, and the actual expenditures anticipated in achieving the proposed program. DHT should revise its six-year program estimates on the basis of actual costs for the 1983 base year. Maintenance projections should be reduced by $30.8 million in FY 1985, $32.6 million in FY 1986, $34.1 million in FY 1987, $35.7 million in FY 1988, $37.3 million in FY 1989, and $39.0 million in FY 1990.

Because the budget for the 1984-1986 biennium was also based on an artificially high budget for FY 1983, the General Assembly could reduce the maintenance appropriation for the second year of the 1984-1986 biennium by $32.6 million without any reduction of the maintenance work accomplished by the department.

Problems With Ordinary Maintenance Workload Planning

Maintenance management systems are now widely used across the country by state highway departments as tools for maintenance needs

Table 19

OVERESTIMATION OF ORDINARY AND REPLACEMENT MAINTENANCE BUDGETS FOR THE CURRENT SIX-YEAR PROGRAM

Fiscal Year	Ordinary Amount Over	Replacement Amount Over	Total Amount Over
1983	$12,030,000	$ 15,819,126	$ 27,849,126
1984	12,820,000	16,624,977	29,444,977
1985	13,330,000	17,471,939	30,801,939
1986	14,210,000	18,362,113	32,572,113
1987	14,790,000	19,297,709	34,087,709
1988	15,400,000	20,281,046	35,681,046
1989	16,030,000	21,314,564	37,344,564
1990	16,590,000	22,400,830	38,990,830
Total	$90,350,000	$119,128,201	$209,478,201

Source: JLARC calculations using DHT inflation, system growth and new facility assumptions.

assessment, budgeting, and performance evaluation. Virginia was one of the states in the forefront of this development.

As discussed in this chapter, DHT's system has apparently aided the department in providing more than sufficient funding for ordinary maintenance. There are indications, however, that the maintenance management system is not performing as well as it could be in the area of work quantity planning for particular activities. Since the planned workloads for activities are a major factor in determining the size of DHT budgets for county work, deficiencies in the planning of work quantities can affect the reasonableness and equity of DHT county maintenance allocations.

In a 1981 report entitled Organization and Administration of the Department of Highways and Transportation, JLARC showed that there was substantial variation between planned and actual expenditures for ordinary maintenance activity groups during the 1978-80 biennium. In DHT's response to the report, the department stated that "for any specific activity, substantial fluctuations are possible due to local conditions" but that "overall, the standards are useful for 'average cost' planning and fund distribution."

An updated overview of the performance of the maintenance management system over the last six fiscal years again raises questions, however, about how well the standards provide for average cost planning and fund distribution. The department's view is that its standards for activities are reasonably related to needs, although

substantial fluctuations for specific activities are possible. However, if DHT performs its work for a particular activity in a county at the same or at a higher unit cost than planned, and if it consistently performs more work than planned in the county for that activity, then it can only stay within its overall budget for that county by reducing its workload over the years in other activities. And, if budget planning for the reduced activities was reasonably related to some statewide level of service, then the needs of the county for those activity areas will not be met, and maintenance allocations will be inequitable.

Similarly, if DHT performs its work for a particular activity at the same or at a lower unit cost than planned in a county, and if it consistently performs less work than planned for the activity in that county, then it can stay within its overall budget and shift additional money into other activities in that county. DHT can then provide a higher level of service in that county than in other counties, and the equity of allocations will be affected.

This is why it is critical that actual activity workloads do not vary widely and consistently from planned workloads over time if the maintenance management system is to be most useful for average cost planning and fund distribution. There appear to be three major reasons why planned and actual work quantities for activities have varied widely and consistently over time: differences between field and central office work priorities, problems with workload assumptions in the budgets, and a need to update maintenance standards.

Because of the technical and detailed nature of JLARC's findings on the MMS, a separate letter report has been provided to DHT. That report outlines in more detail the nature of the three problems with MMS, and how they might be remedied. Copies of the letter report are available on request.

Recommendation (13). DHT should review the MMS standards periodically and update the standards based on work priorities, workload assumptions, and quality considerations.

ADEQUACY OF MAINTENANCE FUNDING

To further assess the appropriateness of maintenance budgeting, JLARC staff surveyed the views of DHT resident engineers and reviewed DHT's process for maintenance replacement budgeting. The key findings of these efforts were: (1) most resident engineers believed that sufficient ordinary maintenance funds have been provided, (2) there is a difference between central office staff and resident engineers about the need for maintenance replacement funds, and (3) the maintenance replacement budgeting process appears to have placed arbitrary restrictions on the assessment of needs and is not based on systematic knowledge of pavement condition.

The belief of resident engineers that they have been allocated sufficient ordinary maintenance funds is supported by the fact

that ordinary maintenance allocations were underspent by $14.26 million in FY 1983. The views of the resident engineers are also supported by a JLARC analysis which indicates that FY 1983 ordinary maintenance expenditures for typical activities were greater in constant dollars per lane mile than in any of the five previous fiscal years, and 1.6 times greater in constant dollars per lane mile than in FY 1978.

However, there appears to be a difference of opinion about replacement spending. The resident engineers did not believe that they received all reasonable and necessary replacement funds. While the survey was a subjective assessment and is inconclusive, it raises questions about the department's ability to consistently and accurately identify replacement maintenance needs.

Constraints on Replacement Needs Assessment

It appears that the most important factor in determining DHT maintenance replacement allocations has been the availability of funds, as determined by resurfacing cycles, and not an assessment of needs. One maintenance division administrator stated that the division does not review original residency requests for resurfacing, because the district requests usually are already much greater than the division is willing to fund. In one of the districts, a memorandum is sent to the residencies at the beginning of the process which tells the residencies the number of tons of asphalt which they can reasonably expect for resurfacing, and the residencies are asked to tailor their need requests to that level. When asked about resurfacing requests as part of a JLARC survey, resident engineer comments included the following:

> "I expect my superintendents to request their needs, but I'll make decisions based on the funds available."
>
> "Generally speaking, the level of service is dictated by pocketbook."
>
> "I may know the need, but the funding availability is not there. So I keep things [my requests] to those roads with a substantial chance for funding."
>
> "We got behind a couple of years ago when the budget got tight. We need a lot more plant mix. Maybe if we could take plant mix overlays and call them construction, we could get more."

The General Assembly has required that the maintenance of existing roads be given first priority in transportation funding by directing that all "reasonable and necessary" funds be provided for maintenance before other allocations are made. Therefore, limitations on the availability of funding to which DHT maintenance division, district, and residency personnel refer are based on the maintenance division's subjective estimates of maintenance replacement needs -- not on objective data.

Adequacy of Replacement Funding

Of the 42 resident engineers surveyed, about half said that all "reasonable and necessary" maintenance replacement funds were not budgeted in their residencies. This contrasts with a finding that 83% of the resident engineers said that all "reasonable and necessary" ordinary maintenance funds were budgeted in their residency. Results from the survey are shown in Table 20.

Table 20

RESIDENT ENGINEER SURVEY: ADEQUACY OF MAINTENANCE FUNDING

Survey Statement	Yes	(%)	No	(%)	Undecided
All reasonable and necessary ordinary maintenance budgeted in residency	35	(83%)	7	(17%)	0
All reasonable and necessary maintenance replacement budgeted in residency	18	(43%)	24	(57%)	0
Support increase in ordinary maintenance even if construction cut	16	(38%)	25	(59%)	1
Support increase in maintenance replacement even if construction cut	26	(62%)	15	(36%)	1

Source: JLARC Survey of Resident Engineers.

Most of the resident engineers who said that their residencies were underfunded indicated that the problem was moderate rather than severe. The general areas in which the engineers said replacements were inadequately funded were primary overlays, secondary resurfacing, and bridge replacements.

Because resident engineers submit resurfacing requests for the primary system (whereas they are simply given lump sums for the secondary system), it is possible to get an indication of the difference between primary resurfacing needs as viewed by resident engineers, and the primary resurfacing needs which have been funded. Residency requests still can only estimate the needs as viewed by resident engineers, because some engineers may request more work than is necessary while others limit their requests according to the funds which are available. However, the difference between primary resurfacing requests and allocations for FY 1984 was $10,750,000.

Since the unfunded residency requests are subjective in nature, and because of the restrictions imposed by the central office, questions are raised about the department's ability to identify and fund maintenance needs in accordance with legislative priorities. The view of many resident engineers that all reasonable and necessary maintenance replacement needs are not funded is a compelling reason for the department to put a higher priority on the development of a pavement management system which can provide objective data to resolve this question.

PAVEMENT MANAGEMENT SYSTEM

A pavement management system (PMS) is used to collect and analyze data on highway pavement condition. The information provided by the PMS is used to index pavement condition and monitor changes over time. Policy can then be established regarding the level of pavement deterioration which will trigger spending for maintenance.

The 1982 and 1983 Appropriations Acts require that DHT's maintenance program for the 1984-86 budget "be based on an up-to-date pavement management system which provides data on pavement and bridge conditions on all highway systems." DHT is currently developing a pavement management system, but it is not complete, and department staff now project that it will be several years before the system will be used in budgeting for all highway systems. DHT may not have placed adequate priority on this project, and consequently will not be able to comply with the Appropriations Act requirements for the use of PMS.

Thus, it is also impossible at this time to document whether the maintenance division's or the resident engineers' view is a more accurate assessment of the reasonable and appropriate level of maintenance replacement work and funding. A pavement management system can aid in objectively measuring needs. Furthermore, experiences in other states show that pavement management systems, by identifying the most efficient timing for overlays, can actually reduce replacement costs.

The State of Arizona found in its first year of implementation of a PMS (FY 1981) that it spent only $32 million out of the $46 million budgeted to maintain roads to existing standards. The following year, Arizona budgeted $28 million for resurfacing, and this amount was reportedly sufficient to keep roads above previous standards. Thus, a pavement management system may enable the department to reduce replacement costs, or to provide the higher level of service considered necessary by resident engineers without a need to increase the total replacement budget.

PMS Development

In 1981, JLARC was told by the DHT maintenance engineer that pavement condition data on the interstate system would be available

that year, and that given adequate priority, data on a representative sample of the primary and secondary systems could be developed in 1982. This was amended by a "status of action" document provided to JLARC in preparation for a follow-up report. DHT stated that "on the Interstate System, the acquisition of field data is complete" and that the program "should be operational by January 1, 1983." The document also stated that the primary system program "should be operational by July 1, 1983," and that the secondary system program "should be operational by March 1, 1984."

In January of 1983, a memorandum from the DHT Commissioner to several legislative committees revised this timetable for the interstate and primary systems. The Commissioner's memorandum stated:

> The pavement management system will be operational for the interstate system this spring, for the primary system by the fall of this year, and for the secondary system by the spring of 1984.

The Commissioner's memorandum, however, presented the timetable by which DHT expected to finish the data collection and automation. It did not present the dates when the system would be ready for use. DHT staff involved with the development of the pavement management system have stated that the system cannot be used until a second set of ratings has been obtained. The tentative DHT timetable for developing the second set of ratings is the winter of 1983-84 for the interstate system, the winter of 1984-85 for the primary system, and the winter of 1985-86 for the secondary system.

There are good reasons for the department to develop a second set of pavement ratings. A second set of ratings will aid DHT in developing a method for projecting the effects of traffic on road condition, and for projecting pavement quality over time. Without the ability to project pavement deterioration, pavement condition ratings are simply snapshots of the quality of the road at the time the rating is made.

However, the DHT timetable for developing a second set of ratings indicates that it will be some time before PMS is actually operational. Appropriation Act requirements that the maintenance program for the 1984-86 biennium be based on a pavement management system for all highway systems will not be met.

It appears that DHT has not and is not putting adequate priority on this project. There are no individuals in the department with a full-time responsibility for pavement management. In addition, the pavement management system steering committee of the department expressed concern to the maintenance engineer in August of 1983 that PMS was not receiving sufficient priority for data processing:

> ...a higher priority must be established in Data Processing if we are to meet Legislative mandates. HPMS [Highway Performance Monitoring System] has

been assigned a number three priority from a thirteen field listing whereas PMS has been assigned a number twelve priority.

Furthermore, DHT's decision to plan for the fall of 1983 and March of 1984 as completion dates for preparing just the first set of ratings for the primary and secondary systems appears questionable given Appropriations Act requirements. Considering DHT's timetable and its commitment of resources to the project, there is some question that the department will even be ready to use PMS in the preparation of the 1986-88 biennial maintenance program. The General Assembly should insist that DHT give high departmental priority to the development of the PMS, and that the department take all necessary steps to ensure its use in the budgeting process for the 1986-88 biennium.

Recommendation (14). The General Assembly may wish to require that DHT take all necessary steps to ensure that the pavement management system now under development is used in budgeting on all highway systems for the 1986-88 biennium. In order to monitor the process, the department should be required to periodically report its progress to the House Roads and Internal Navigation Committee, and the Senate Transportation Committee.

Needed PMS Developments

There are two important areas where DHT could improve or expand upon the scope of its present PMS work. The first area is the validation of pavement distress ratings, and the determination of critical distress ratings. The second area is the use of PMS in budgeting for ordinary maintenance surface repair work as well as maintenance replacement.

Pavement Distress Ratings. A key component of the pavement management system planned by DHT is the "distress maintenance rating" (DMR). The DMR is a road condition measure which reflects the assessment of DHT rating teams. The components of the DMR are factors which the Virginia Highway and Transportation Research Council (VHTRC) determined have an effect on the need for maintenance replacement. These factors have been weighted according to how important they are in reflecting road deterioration.

In DHT's work to date, a different three-member team for each district has evaluated roads and used VHTRC's system for determining distress ratings. These ratings have only been validated by a sporadic check by VHTRC on sections of pavement scheduled for maintenance replacement. This validation effort is inadequate.

Instead, the department should always validate a sample of all ratings of each district team to ensure that reasonably consistent and objective ratings are obtained statewide each year. DHT could use a method similar to the one used in North Carolina, where a sample of all ratings done by the field rating teams are checked by a four-member statewide team which includes a maintenance engineer from the central office.

There is also some question about threshold distress ratings, which identify pavement segments for resurfacing consideration. The DMR index which the department uses theoretically ranges from 31.6 to 100. The poorer the condition of the road, the lower the rating should be. The decision to give replacement consideration to a pavement segment should be based on its rating falling below some established rating at which the pavement is considered deficient.

While this concept appears sound, DHT's selection of tentative threshold ratings was somewhat arbitrary. The department currently views a ten-year resurfacing cycle as generally appropriate for the interstate system. So, to select the threshold rating, DHT simply identified the rating level at which approximately the lowest 10 percent would fall. That rating was 85. This tentative method of the department works backward from making a subjective judgement of what resurfacing cycle should be used, to determining the rating which yields the desired level of work. Predetermined resurfacing cycles are inadequate for budgeting whenever there is a backlog of resurfacing work or when asphalt quality, traffic weights, freeze-thaw cycles, or other factors cause pavement life to differ considerably from the subjectively determined cycles.

An arbitrary decision was apparently also made by DHT to tentatively assign a threshold rating of 80 for the primary system. Neither the maintenance division nor VHTRC could identify exactly how that threshold rating was selected.

It is important for the department to give greater consideration to the setting of threshold ratings for resurfacing. DHT should conduct a study to determine the optimal ratings below which road segments on the interstate, primary, and secondary systems should be considered for replacement. Factors to be considered in the study might include the preservation of the highway investment, driver safety and comfort, and tradeoffs between ordinary maintenance and maintenance replacement costs. Thus, roads would be identified for possible resurfacing with regard to need and without regard to predetermined resurfacing cycles.

Recommendation (15). The department should put a high priority on integrating the pavement management system into the budgeting process as required by the Appropriation Acts. The system should be used to help determine funding needs for maintenance replacement. The threshold rating for resurfacing consideration should be set based on a study of the optimal distress ratings below which pavements should be replaced, rather than on predetermined resurfacing cycles. The pavement management system should also be used to project future biennial budget replacement needs, to assess the consequences of deferred replacement maintenance, and to assess the cost-effectiveness of various types of replacement activities (such as a comparison of surface treatment and plant mix).

Management of Ordinary Maintenance. Although the emphasis of DHT has been on using PMS to determine maintenance replacement needs,

there are other states which are moving in the direction of using pavement ratings to help determine ordinary maintenance allocations for surface repair. Intuitively, there seems to be a strong basis for budgeting surface repair dollars according to a measure of pavement quality.

In Arizona, pavement quality data has been used for three years as one factor in determining ordinary maintenance allocations for paved surface activities. In Colorado, pavement quality data is used as one of several factors in classifying roads. Different road classes are budgeted different proportions of money for ordinary maintenance paved surface activities.

In North Carolina, the pavement management system has been designed to indicate the need for ordinary maintenance as well as maintenance replacement. Field ratings for each distress type are entered into a computerized system. The system has been designed to print out the major maintenance activity required by various distress ratings on four different classifications of types of surface and traffic volume. The appropriate maintenance activities were defined by a maintenance committee of the highway department. For example, depending on the distress rating and the classification of the road, the recommended activity for alligator cracking might range from an ordinary maintenance crack sealing activity to a maintenance replacement activity of a 2.5-inch plant mix overlay.

The Safety and Maintenance Operations Division of the Texas State Department of Highways and Public Transportation has plans for the next two years to work on integrating their pavement management system into their maintenance management system in order to help determine routine maintenance needs. This work will involve using the PMS data to determine the miles of deficient roadway which do not need to be replaced. The types of distress on these roadways will be considered to determine ordinary maintenance repair strategies. The division plans to use the PMS data and the recommended repair strategies to help determine resource requirements for ordinary maintenance.

DHT should incorporate a measure of road condition into its standards for ordinary maintenance surface repair. Use of measures which are clearly related to ordinary maintenance repair, such as the cracking distress type, would probably yield allocations more closely related to needs than the complete DMR. Therefore, the department should incorporate the measure of cracking distress and other measures relevant to the need for ordinary maintenance surface repair as a separate element of the pavement management system to be used in making ordinary maintenance allocations.

Recommendation (16). DHT should explore the use of pavement condition measures of the pavement management system as one factor in allocating ordinary maintenance surface repair funds.

SNOW REMOVAL BUDGETING

Snow and ice control is an expensive element in DHT's ordinary maintenance program in the counties. In five of the six fiscal years from FY 1978 to FY 1983, snow removal activities cost the State of Virginia more than $21 million. In FY 1982, the cost was a record $27.9 million. Present budgeting of snow removal as part of the ordinary maintenance program is a DHT practice, not a legislative requirement.

Effects of Fluctuating Snow Removal Costs

The department currently budgets for snow removal in the counties on the basis of recent snow cost experience. Because it is difficult to estimate for any given fiscal year how much snow removal will be required, this method has not generally been a reliable guide to snow removal costs.

For example, the difference between planned and actual snow costs statewide between FY 1978 and FY 1982 was always in excess of 30 percent. Though it is high, the statewide percentage actually understates the level of the problem in some areas. For some regions of the State the difference between planned and actual snow costs as a proportion of the snow budget was considerably above the State average. In FY 1982, when statewide snow costs were 146 percent of allocated amounts, the Richmond and Fredericksburg districts had snow costs which were 208 percent and 184 percent of their allocated amounts.

Snow removal overexpenditures were responsible for total overspending in 28 of 31 counties in FY 1982. It is not considered a problem by the department if a number of county budgets are exceeded. First of all, because the residencies include more than one county, the residency budget may still balance. Second, if there are residency-wide deficits within a district, the districts have a reserve fund which can be used to finance the deficit.

If the district reserve cannot fund all of the residency deficits, then surpluses from other districts may be used. Finally, if statewide maintenance expenditures exceed budgeted amounts due to snow removal, the deficit can be funded off the top of transportation allocations for the next year.

Section 33.1-23 of the *Code of Virginia* also establishes provisions for using funds allocated to construction to address extraordinary maintenance expenditure needs on the secondary system, such as might result from heavy snow removal costs. The section specifically gives the Highway and Transportation Commission the authority to take funds allocated to construction and transfer them to maintenance "made necessary by highway damage resulting from accidents, severe weather conditions, from acts of God, or vandalism."

However, higher than planned snow costs are a problem for field personnel who must decide between the goals of staying within budgets and performing planned work. In a survey of DHT resident engineers, 20 of the 43 respondents said that the budgeting of snow removal as part of ordinary maintenance caused a problem in their residencies. Many of the other resident engineers indicated that they did not view snow removal budgeting as a problem because their residencies did not typically get much snow.

The unpredictability of snow costs makes it difficult for DHT field personnel to plan their work and their expenditures in the summer and fall. Inequities may result if DHT staff in some residencies are more cautious than others in holding back expenditures before the winter. Reducing maintenance expenditures in the summer and fall, such as keeping expensive machine ditching activity at a minimum, may mean that all reasonable and necessary expenditures are not made.

Variable snow costs also have impacts upon the budget accountability problem faced by the field in the springtime. High snow costs can force field personnel to either overspend their total budgets, or find ways to spend significantly less than planned on non-snow removal activities. Inequities may again result when some field personnel choose to disregard budget constraints and not reduce non-snow related spending, while other field personnel abide by the budgeted amounts and reduce non-snow spending.

Cutbacks in springtime non-snow spending may also mean that not all reasonable and necessary maintenance expenditures are made. Lower than planned snow costs, on the other hand, can give DHT staff in some counties windfall budgets which can be spent on non-snow activities in the springtime.

The Budget Accountability Problem: Summer and Fall

Before the beginning of each fiscal year, highway district and residency offices receive budget estimates which show the total ordinary maintenance allocations for each county by administrative highway system. The annual memo to district engineers which explains the allocations has stated that "the quantity, man-hours and cost shown for each activity are based on standards which have been developed so as to insure adequate planning of maintenance operations in your District." Residency offices also receive the county budget estimates, and they allocate the funds to the area superintendents in the counties in proportion to the standards .

The budgeting of snow removal as part of ordinary maintenance makes it difficult, however, for field personnel to adequately plan maintenance operations or budget spending. The comments of resident engineers highlighted this problem:

> "If we could get snow out of ordinary maintenance, we could plan better. The way it is now is no way to have a work planning process."

"We could regulate spending, and plan better, if snow was budgeted separately."

Field personnel make tradeoffs between two responsibilities: budget accountability, and performing planned work for non-snow activities to maintenance standards. This tradeoff causes a budget accountability problem.

The problem occurs because snow removal costs are highly unpredictable. The unpredictability of snow combined with the July to July fiscal cycle makes it impossible until the end of the winter for DHT field personnel to determine how much of their non-snow budgets to expend and still respect their overall budget. For several recent fiscal years, the maintenance division has greatly underestimated snow costs. In an effort to cope with this uncertainty, and out of a concern for keeping budgets balanced, the department asked residencies to plan to spend 10 percent less by December 1 of each year than a straight-dollar trend of their overall budget would indicate.

This practice, however, did not solve the problem that budgeting snow removal as ordinary maintenance poses for making rational workload decisions. Counties in residencies where DHT staff take their budget responsibilities most seriously, and spend conservatively in the summer and fall, may be penalized. Residency personnel have indicated some of these problems:

A maintenance supervisor indicated to JLARC staff during the summer of 1982 that snow removal budgeting impaired work planning in his residency. He specifically cited problems with cutbacks in machine ditching in July, August, and September. These three months, he said, were ideal to do machine ditching, which is a critical activity for preserving the road surface. However, it is an expensive activity, so the residency does less than would be maximally productive in the summer in order to keep costs down in case of a bad winter.

* * *

A resident engineer said that his residency holds back before the winter, but that this practice puts pressures on his maintenance supervisors and superintendents due to the work which is needed.

The practice of reducing expenditures in the summer and fall is no longer a uniform control. The JLARC resident engineer survey found that 11 resident engineers hold back 10 percent or more, while eight said they hold back by a percentage less than 10 percent, and 24 said that they do not hold back funds at all. Nine of the 24 resident engineers who said their residencies do not hold back indicated they

had done so in the past. The comments of two of those resident engineers follow:

> "Last year, we held back too much. The weather was good, and we didn't spend all of our planned ordinary maintenance. We have recently been instructed to do our other maintenance activities up to their funded amounts. Each resident engineer, however, takes this with a grain of salt."

> "When I started as a resident engineer, we attempted to hold back. But we found that we were penalizing our ordinary maintenance program because of infrequent bad winters. It is better to spend money uniformly throughout the year."

There is no way for field personnel to predict how much of their ordinary maintenance allocations they will need to spend on snow in the winter, and how much will be available to them in the spring.

The Budget Accountability Problem: Springtime

Residencies where snow costs run higher than planned during the winter, and in which insufficient expenditures were held back during the summer and fall to make up the difference, will either: (1) reduce springtime maintenance expenditures, (2) go over budget, or (3) get additional funds from the district. About half of the resident engineers surveyed by JLARC said they would reduce springtime expenditures for ordinary maintenance if snow costs were higher than planned. About 20 percent of the resident engineers said they would risk going over budget instead, and a significant number said it would depend on the directions from the district.

Residencies which have resident engineers willing to risk going over budget may gain an advantage over residencies which do not. The resident engineers who said they were willing to risk going over budget indicated that they did not see why their residency's performance of work should be dependent upon the amount of snowfall. Some of their comments were:

> "We'd risk going over budget. We can't afford to let things go just because of the snow. The detriments of cutting back would be too severe in the long run."

> "We have not overspent our budget since I've been a resident engineer. But if there would be an unusual amount of snow, we wouldn't let it detract from the ordinary maintenance being done. As far as I am aware, the district supports this."

There are also problems in the springtime if snow costs are much lower than planned. Part of the problem is that residencies are uncertain if they will be able to keep the unspent snow allocations and use them for other activities. For example, at the end of April 1981, the maintenance division recalled 51 percent of unspent primary snow allocations, 35 percent of unspent secondary snow allocations, and 45 percent of unspent interstate snow allocations. The residencies received word of the recall from the districts around the first of May.

The size of the allocations which were recalled was in many cases very substantial. In five counties, more than $50,000 was recalled. The DHT budgets for 45 counties were exceeded in FY 1981, and in 23 of these counties DHT budgets would not have been exceeded except for the recall of snow allocations. Some resident engineers made the point that if they are expected to reduce ordinary maintenance in the springtime when snow costs are higher than planned, then they should be able to keep snow allocations and use them to catch up when snow costs are lower than planned.

Improving the Snow Budgeting Process

The budgeting of snow removal as a part of ordinary maintenance has made rational work planning by field units very difficult. It can also force some field units to choose between their budget constraints and what they view as a reasonable and necessary maintenance program, and it can give other field units extra funds.

The General Assembly may wish to provide in Section 33.1-23 of the *Code of Virginia* that snow removal should be funded as a separate maintenance item. Snow removal could then be set up as a separate subprogram under maintenance appropriations in future appropriations acts. Appropriations based on DHT calculations of average year snow removal costs, with inflation adjustments, could be specified for each of the fiscal years in the biennium. The General Assembly could also provide by statute and in the appropriations acts that unexpended snow removal funds at the close of a fiscal year would be reappropriated in the following fiscal year. This clause would permit the building of a fund which could be used to finance snow removal in fiscal years when snow removal costs are much higher than planned. In the event, however, that the size of the snow removal fund in any given year is less than snow removal costs, then the State Highway and Transportation Commission could be given the authority to transfer funds from the construction program to cover the snow removal deficit. This would help ensure that the first priority in transportation funding -- maintenance -- does not suffer due to higher-than-planned snow costs.

If the General Assembly provides for the budgeting of snow removal as a separate maintenance item, then DHT will need to set up a process of control to ensure that only reasonable and necessary snow removal activity is performed and charged to the snow fund, and DHT will need to require that specific policies on snow plowing and the use of chemicals are followed. DHT field units should also be required to keep records of snow removal expenditures and the reasons why they were necessary.

Recommendation (17). The General Assembly may wish to provide in Section 33.1-23 of the *Code of Virginia* that snow removal should be funded as a separate maintenance item, and that unexpended snow removal funds at the end of a fiscal year should be reappropriated in the following fiscal year. The General Assembly may then wish to provide authority to the State Highway and Transportation Commission to transfer funds from the construction program if the funds in the snow removal fund in any given year are less than snow removal costs.

If the General Assembly provides for the budgeting of snow removal as a separate maintenance item, then DHT should establish the necessary controls to ensure that only reasonable and necessary snow removal activities are charged to the snow removal fund.

CONCLUSION

The reasonableness, appropriateness, and equity of county maintenance budgeting can be improved. To achieve this improvement, the General Assembly may wish to require several DHT actions. First, DHT should prepare its biennial maintenance budget on the basis of a realistic assessment of the ordinary and replacement maintenance program to be accomplished, and the actual expenditures anticipated in achieving the proposed program.

Second, the General Assembly may wish to require that DHT give a high departmental priority to the development of a pavement management system to help identify maintenance replacement and ordinary maintenance needs. The General Assembly may also wish to require that DHT take all necessary steps to ensure the use of PMS in the budgeting of all highway systems for the 1986-88 biennium.

Third, DHT should periodically review and update its budgeting standards for the maintenance management system. Finally, the General Assembly may wish to provide in statute that snow removal activities should be funded as a separate maintenance item. These steps should ensure that the DHT budgeting process for maintenance results in more equitable allocations to the counties.

IV. URBAN STREET PAYMENTS

The General Assembly recognized in 1932 that the creation of a statewide motor fuel tax would make it difficult for cities and towns to perform highway construction and maintenance without assistance from the State. Legislation was enacted in that year requiring the State Highway Commissioner to make payments to cities and towns with a population in excess of 3,500 for the maintenance and construction of their roads and streets.

In the years following that early legislation, many minor changes were made in the urban street payments program to account for inflation, increased mileage, increased population, annexations and mergers, and larger volumes of traffic. No substantial changes were made, however, until 1972 and 1979. In 1972, the General Assembly enacted legislation which changed the basis for mileage calculations from centerline to lane miles. This legislation was intended to account for both the size and capacity of the qualifying network of streets and roads. In FY 1979, the General Assembly established base amounts per lane mile for each type of road. DHT was required to adjust the payments annually based on the maintenance experience in the surrounding construction district.

Currently, 74 cities and incorporated towns receive payments to maintain, improve, construct, and reconstruct the approved roadways. Payments are made quarterly, based on the approved lane mileage of primary extensions and "other" streets. These payments, like county maintenance, are made prior to any other allocations. In fiscal year 1984 the payments are expected to approach $69.9 million.

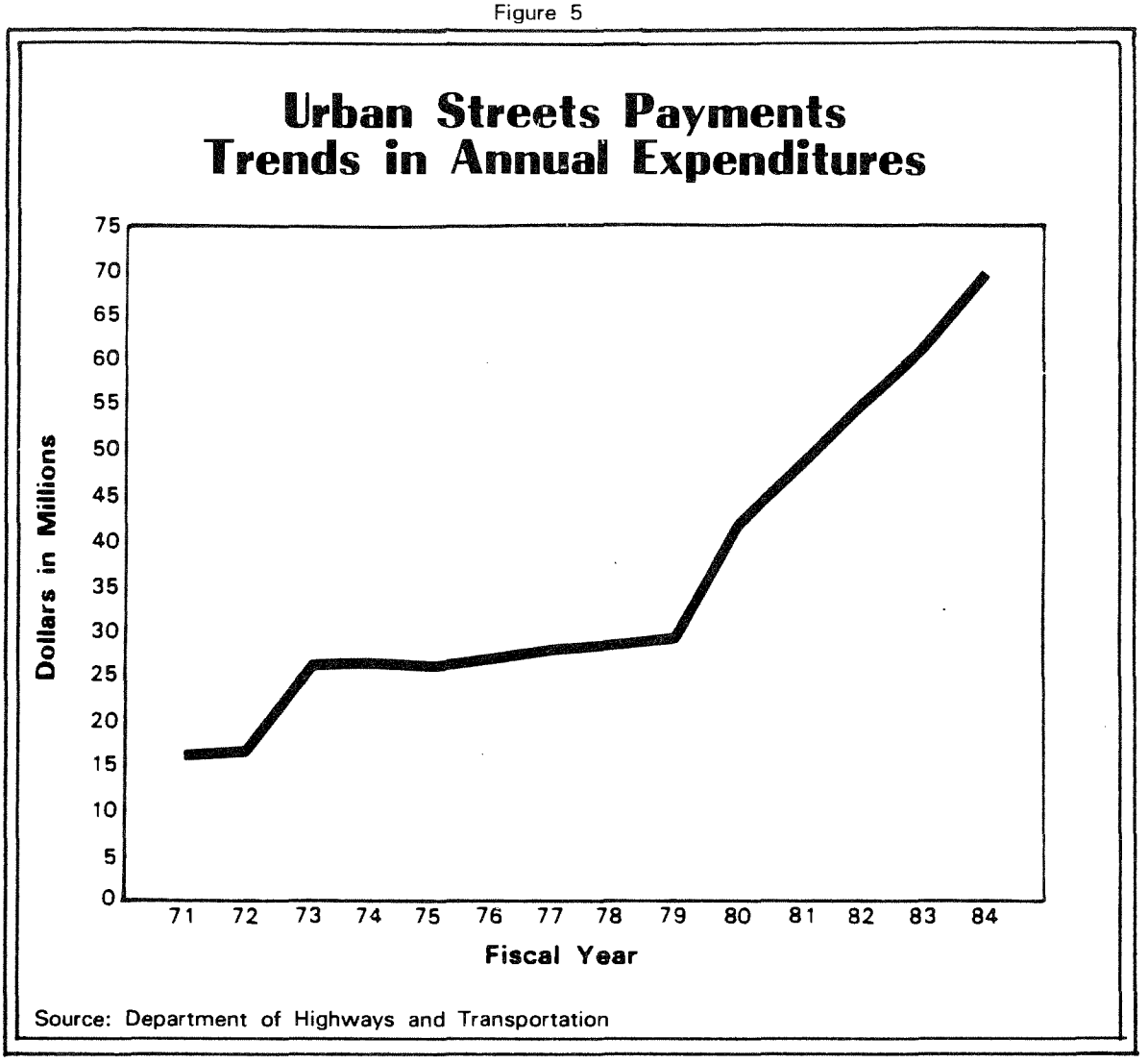
The current process for making the street payments results in an inequitable distribution of funds. Specifically, the current street classifications are inappropriate, and the payment rates do not accurately reflect the need for maintenance on urban streets. In addition, DHT's implementation of statutory requirements to adjust the rates annually may have contributed to the inequities in the payments. In some instances, pavement standards required for municipalities to receive payments may be inappropriate.

Program Funding

Section 33.1-23.1A of the *Code of Virginia* requires the Highway and Transportation Commission to allocate all "reasonable and necessary" funds for maintenance on the State highway systems and for urban assistance payments to cities and towns. From FY 1970 through FY 1979, payments to municipalities were based on a fixed amount per mile of approved roads. Periodically the General Assembly would adjust the

fixed rate. Figure 5 reflects the relative growth over time in the payments to municipalities.

Figure 5



Source: Department of Highways and Transportation

In FY 1972 the method of calculating payments on the basis of mileage was changed by the General Assembly from centerline miles to lane miles. This increased the payments in FY 1973 by more than 65 percent.

When the General Assembly adopted legislation adjusting assistance payments annually on the basis of maintenance experience in the surrounding DHT construction district, the payments increased at a much higher rate each year. The increases have actually outpaced the DHT inflation index used in establishing maintenance budgets in counties. Fiscal year 1980's increase was the result of establishing the base amounts of $3,850 for primary extensions and $2,200 for other streets.

Study Approach

In order to assess the reasonableness, appropriateness, and equity of the distribution of urban assistance payments, JLARC staff made a comparison of the actual payments to municipalities with the estimated maintenance costs on a sample of urban road segments. The research effort focused primarily on the payment rates and the designation of qualifying streets and roads because they govern the actual payments to cities and towns. The method had several parts:

(1) a stratified sample of municipalities;

(2) functional classification of the roads and streets in each municipality that qualify for urban assistance payments;

(3) a sample of road segments from each functional classification in each sample municipality;

(4) an estimate by DHT resident engineers of the ordinary maintenance costs over a five-year period and the replacement maintenance costs for a 20-year period;

(5) calculation of the payment rates for each functional classification, with the sample costs and mileage weighted back to the population proportions.

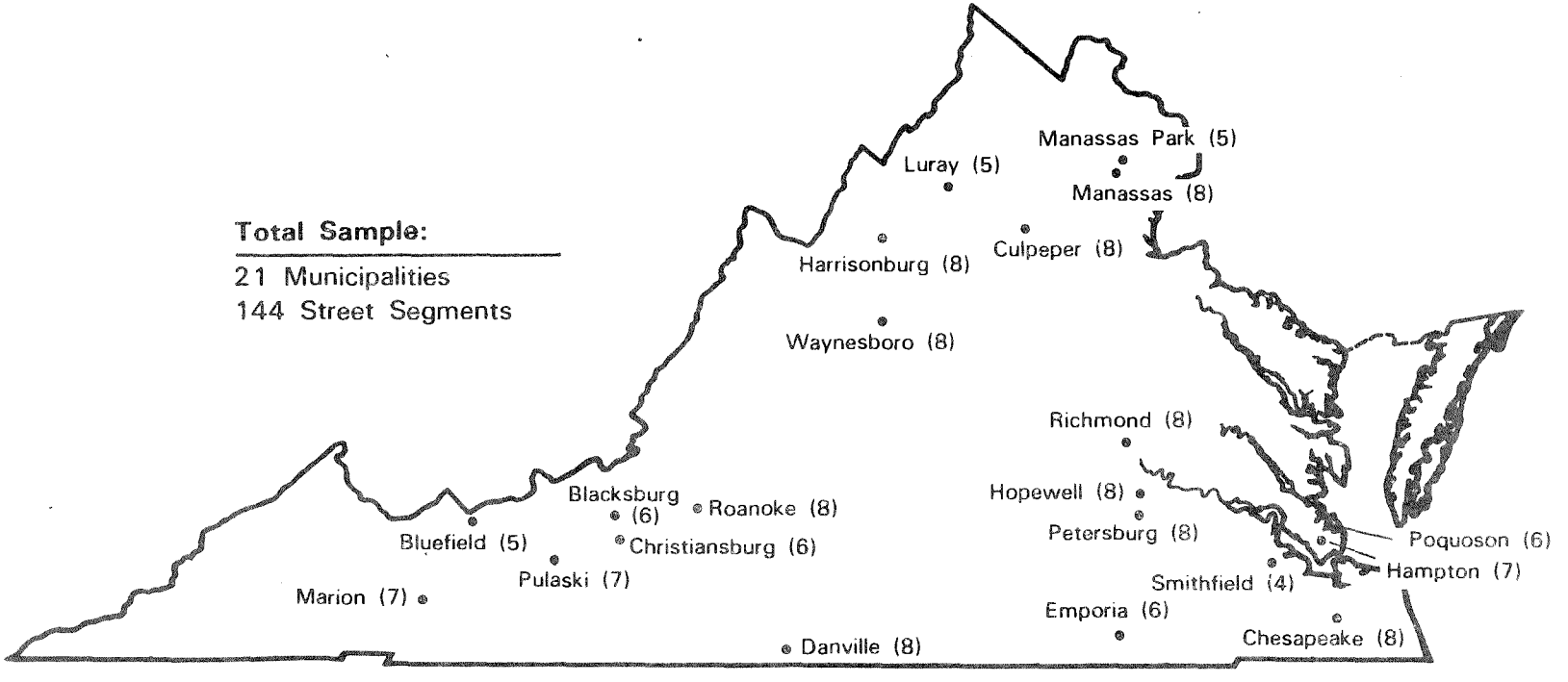
A key element in the methodology was the use of DHT standards and unit costs in estimating the cost for maintenance on the sample segments. This approach was specifically designed to provide for an estimate of costs which would be equivalent to the maintenance costs incurred by DHT on behalf of counties. Thus, the resulting options for urban payments improve equity not only among cities and towns, but also between the urban jurisdictions and the counties. The JLARC analysis focused on maintenance because urban construction and reconstruction needs are addressed in the analysis of urban construction allocations.

Sample of Municipalities. The first step in the method involved taking a stratified sample of cities and towns on the basis of geographic location and population. The regional categories were based on major differences in terrain, and included: (1) coastal, (2) upper Tidewater and Piedmont, (3) Blue Ridge and valley, and (4) Appalachian. Each municipality was also categorized into one of three population groups: (1) 0-10,000; (2) 10,001-25,000; and (3) 25,001 or more. The distribution of sampled municipalities across the State is shown in Figure 6. The number of street segments sampled in each jurisdiction is shown in parentheses.

Functional Classification of Streets. The four functional classifications for urbanized areas are principal arterials, minor arterials, collector streets, and local streets. The urban principal arterial system serves the major centers of activity in metropolitan areas -- the highest traffic volume corridors -- and carries a high proportion of the total area travel on a minimum amount of mileage.

Figure 6

Distribution of Sample Localities For Urban Street Payments Analysis



Source: JLARC Sample of Municipalities

The minor arterial system interconnects and augments the principal arterial system by distributing traffic to geographic areas smaller than those of the principal system. The collector street system provides both land access and traffic circulation within residential neighborhoods, and commerical and industrial areas. The local street system provides direct access to abutting land and access to the higher systems. Through-traffic generally does not occur, and the system is generally confined to residential neighborhood streets.

A system based on functional classifications was used by JLARC as a way of examining the differences in maintenance costs. In this way, roads were grouped according to the character of service they actually provided. Traffic volumes and specific uses, both of which were expected to affect the maintenance cost, were accounted for with this approach.

Sample of Road Segments. The third part of the method involved sampling the functionally classified road segments in each sample municipality. Two segments were randomly selected from each of the four functional classifications in each city and town. The sampling resulted in 144 segments because not all municipalities had two segments in each functional classification. Road segments ranged from .11 miles to 3.25 miles in length with varying widths and lanes. The segments were sorted by locality, functional classification, route, and sequence along the same route.

Estimation of Maintenance Costs. The fourth part of the method involved estimating the ordinary or routine maintenance costs for a period of five years, and replacement maintenance costs for 20 years. DHT resident engineers made the calculations based on a field inspection, an inventory of maintainable items, historical costs in contiguous counties, and comments from the locality in which the segments were located. This estimation of maintenance cost was the principal component in analyzing the existing and proposed payment rates.

The first step in estimating the maintenance cost involved a field inspection by DHT resident engineers to record roadway features requiring maintenance.

The inventory was used by DHT resident engineers as a guide in estimating maintenance costs for each segment. To assist resident engineers in estimating maintenance costs, JLARC provided actual expenditures for each ordinary and replacement maintenance activity for 1981 and 1982. Cities and towns selected in the sample were given the opportunity to comment on the unit costs for each of the maintenance activities.

Annual costs were derived by multiplying the unit costs by the quantity of a particular activity the resident engineer felt necessary for each segment. The total ordinary and replacement maintenance costs for the segment were derived by summing all activities for each year.

Calculation of Base Rates. The last step in the analysis involved calculating the average annual cost for each of the functional classifications. All of the calculations were made after the sample data had been weighted to reflect the population proportions in several categories including functional class, geographic region, and city size. Five years of ordinary maintenance costs were estimated by DHT resident engineers for each segment of functionally classified roadway. Total annual costs were derived by summing all activities over the five-year period and then dividing the sum by five. The average annual lane mile cost for ordinary maintenance was then derived by dividing the average annual cost by the lane miles for the segment. An annual maintenance replacement cost was derived using a 12-year replacement cycle. Total annual costs were divided by lane miles.

Several statistical tests were conducted to determine whether significant differences in cost existed between the functional classes and the administrative designations, between the four geographic regions and the highway districts, and between the three categories of population. Variance was analyzed to determine whether the differences in average maintenance cost were statistically significant. The analysis used the weighted data. This analysis formed the basis for the recommendations in the last section of this chapter.

EQUITY OF CURRENT STATUTORY PROVISIONS

The current statutory requirements for allocating urban street payments were the result of legislation passed by the 1979 General Assembly. Clearly, the provisions adopted that year were an improvement over the methods previously used to distribute the urban payments. But several aspects of the current statutory provisions still appear to be inappropriate, and in some instances inequitable. In addition, interpretation and implementation of these provisions by DHT has been inconsistent and may have contributed to the inequities in payments. JLARC staff have identified four specific problems with the current statutory provisions:

(1) the current payment classes are not related to differences in the costs for highway maintenance;

(2) the current payment rates do not equitably reflect estimated costs as compared with the counties;

(3) the methods for adjusting rates annually have been used inconsistently; and

(4) current urban pavement standards are unreasonable in some instances.

Payment Classes

Two classes of roads are currently designated for urban assistance payments: primary extensions and other streets. Primary

extensions are those roads in the corporate limits of cities and towns that connect State primary routes in the adjacent county or city. The extensions provide a continuity to the State primary system.

Other streets are local in nature, but must meet minimum standards before they qualify for urban street payments. Section 33.1-43 of the *Code of Virginia* sets out the standard as a 30-foot pavement width and a 50-foot right-of-way. Roads built prior to 1950 with a pavement width of 16 feet and 30 feet of right-of-way also qualify as other streets for payment purposes.

Adequacy of Existing Administrative Classes. In order to assess the adequacy of the current payment classes, the cost estimates prepared by DHT resident engineers were aggregated by those two classes. The segment costs were tested for variation between the classes and within the classes. While the variation of costs within the classes was quite large, there was no statistically significant difference between the two classes. This has a serious adverse impact on the equity of payments.

The problem is that the payment rates for the two classes are different, while the costs for the two classes may not be. And within each class, the segments vary widely in costs, meaning some will be seriously underpaid relative to actual cost and some will be overpaid. It seems clear that this problem exists because the current classes are somewhat arbitrary. The designations of "primary extensions" and "other streets" have nothing to do with the function of the street or the cost of maintaining it. While it is clear that the use of a street has an impact on the maintenance it will need, the current payment classes do not account for use. Some examples illustrate the point:

> *In the City of Virginia Beach, 21st and 22nd streets channel traffic from the resort area to the Virginia Beach-Norfolk Expressway. The streets carry over 15,000 vehicles per day and are functionally classified as principal arterials. Yet, for the purposes of the urban street payments these two streets are classified as "other streets" and receive the lower payment rate. On the other hand, Route 60 -- which intersects the two streets and carries the same traffic -- receives a higher payment rate per lane mile because it has a primary route designation.*
>
> * * *
>
> *In the City of Richmond, 8th Street from Broad to Main is classified by DHT as an "other street." The street functions however, as a major corridor for traffic, and is classified as a principal arterial.*

Because of these obvious problems, the current classification of urban streets seems inappropriate. A preferable system for classi-

fying roads and establishing rates would be one that accounts for the use of the street and the traffic it carries. The four functional classifications accomplish this objective.

Functional Classification. All streets and roads located within the boundaries of municipalities have been functionally classified by the Transportation Planning Division of DHT. These classifications were used to conduct an analysis of variance identical to that done for the two administrative classes. While there were no significant differences among the four functionally classified categories, by grouping principal and minor arterials and the collector and local streets into two categories, strong statistical differences did exist.

Thus the equity between and within municipalities would be improved if the rates were based on the combination of functionally classified streets and roads into two categories. Total funds for urban street payments would increase by 32 percent as a result of establishing equitable payment rates on the basis of the functional classification of streets and roads.

Recommendation (18). The General Assembly should amend Sections 33.1-41, 33.1-43, and 33.1-80 of the *Code of Virginia* to establish the functional classifications of roads defined by the FHWA as the basis for making urban street payments. The principal and minor arterial systems should be grouped into one payment category, and the collector and local streets grouped into a second category. As an alternative, collector and local streets might remain separate because of the differences in mileage.

Payment Rates

The current payment rates vary by construction district. The original base rates established in 1979 were $3,850 per lane mile for primary extensions and $2,200 per lane mile for other streets. Because of required adjustments to the rates since 1979, the districts all have different rates now (Table 21). There is about a 40 percent difference between the highest and lowest rates for primary extensions, and a 26 percent difference between the highest and lowest rates for other streets.

Inequities in Payment Rates. Because these payments are based on the two administrative classes, the amounts are inequitable. The previous base rates were not established as a result of an objective analysis of urban street maintenance costs. Since 1979 the adjustments have compounded the inequities in the base rates.

JLARC staff used the maintenance cost estimates prepared by DHT resident engineers to develop new payment rates. For the purpose of comparison, new rates were first developed using the existing payment categories. Those rates were $7,900 per lane mile for primary extensions and $5,771 per lane mile for other streets. If these rates are compared to those shown in Table 21, it is clear that the current rates are inappropriate.

Table 21

URBAN PAYMENT RATES FOR FY 1984

District	Primary Extension Payment Rate	Other Street Payment Rate
Bristol	$5,533	$2,980
Salem	6,297	3,362
Lynchburg	6,112	3,376
Richmond	6,306	3,667
Suffolk	5,770	2,940
Fredericksburg	5,323	3,026
Culpeper	7,756	3,703
Staunton	6,089	3,604

Source: Department of Highways and Transportation.

Because the payment categories are also inappropriate, JLARC staff next calculated rates for the new functional categories. For a two-class functional system the rates were $8,243 for principal/minor arterials and $4,216 for collectors/locals. If collectors and local streets are kept as separate categories, the rates would be $5,375 for collectors and $4,061 for local streets. The payments to cities and towns using these rates are shown in the options at the end of this chapter.

Additional problems with equity have been caused by the current statutory requirement that rates be adjusted based on the maintenance experience in the surrounding DHT construction district. The result has been eight different sets of rates (Table 21). The maintenance cost data prepared by resident engineers were analyzed at the district level to determine whether significant differences really existed among the costs for the cities and towns in different districts. That analysis revealed no significant differences in the average maintenance cost per lane mile among the various districts.

In addition, regional categories were developed by JLARC to represent the major geographical areas of the State. The regional categories used in the analysis were the same as those used in taking the stratified sample of municipalities. Again, there were no significant differences in the average lane-mile maintenance cost between the four geographic regions, except between extreme eastern and western parts of the State. Neither extreme eastern nor western Virginia were significantly different from the other parts of the State. As a result, the differences do not justify a regionally adjusted set of payment rates.

Recommendation (19). Payment rates should be established for the functional categories of streets and roads on the same basis as for State maintenance on county roads. Rates could be based on the esti-

mates for ordinary and replacement maintenance prepared for JLARC by DHT resident engineers.

Recommendation (20). The General Assembly should amend Sections 33.1-41, 33.1-43, and 33.1-80 of the *Code of Virginia* to eliminate the use of different payment rates in the eight DHT construction districts. A single rate for each funding class should be used statewide.

Methods of Adjusting Rates

The definition of maintenance experience dictates to some extent the adjustment factor. The index method requires adjusting payments in each district on the basis of inflation. The "total maintenance cost" method requires accounting for the level of expenditures by DHT. Inconsistent use of these methods, and the nature of maintenance activities included within each method, have adversely affected payment equity. In addition, DHT has used an inappropriate base rate to adjust payments annually. Finally, the use of maintenance replacement expenditures has caused problems with the annual adjustment.

Interpretation and Use of Maintenance Experience. DHT uses the maintenance experience of county primary and secondary roads as the basis for calculating urban street payments as required by statute. It is clear that maintenance on county highways is not the same as that on streets in municipalities, however. The Highway and Transportation Research Council indicated in a letter to JLARC that traffic signs, traffic signalization, pavement markings, street lighting, and street sweeping are substantially more costly in cities and towns than in counties. Other activities, such as curbing and gutters, do not exist on any large scale in counties but are important to cities and towns for drainage purposes.

The adjustments are further complicated by the methods used by DHT to make the annual adjustment. In 1981, DHT adjusted the base rates for primary extensions and other streets for the first time. The department has indicated that the method for measuring changes in maintenance experience was considered most carefully. DHT decided that an inflation index including only ordinary maintenance in the construction district was intended by the General Assembly when the 1979 legislation was enacted.

By only including ordinary maintenance, however, a major portion of maintenance expenditures in each district was excluded from the definition. Maintenance replacement has historically represented about 40 percent of total maintenance expenditures each year, so it is reasonable to expect that it could affect the inflation index for each district.

In FY 1983 a new method of defining maintenance experience was employed by DHT. It was defined as the total expenditures in a construction district for both ordinary and replacement maintenance.

Inflation was no longer the sole consideration by DHT, but the level of activity as well, because it also affects the total level of maintenance expenditures.

Costs for several maintenance activities included in this "total maintenance cost" method were inappropriate, however. Among the activities which were inappropriate were rest area maintenance, weigh station operations, and ferry boat service. These items represent costs for activities that generally do not exist in cities and towns. By including such costs in the definition of maintenance experience, adjustment factors for cities and towns in some districts would be impacted differently. Ferry boat maintenance for example, occurs only in the Suffolk district. Although this type of maintenance would affect only one district, wide variation from one year to the next would significantly affect the city and town payments in the district. Accidents involving the dock and ferry and requiring expenditures by DHT, for example, increase the payments to cities and towns located in the Suffolk district.

Major storms and floods might also alter payment rates and adjustment factors using the "total maintenance cost" method. Storms or major floods in one or two counties could increase substantially the total maintenance expenditures in a district regardless of the location of the storm. A localized storm could affect payment rates for all cities and towns in the district.

Use of Base Rates. DHT adjusts the payments each year based on its assessment of maintenance experience. DHT has always made the adjustments to the rate from the previous year, not to the base of $3,850 for primary extensions and $2,200 for other streets. The effect of this practice is to change the base rate every year. It also means that any inequity in an adjustment made in one year is carried forward into the next. Inequities in the payment rates are compounded year after year as a result.

Use of Maintenance Replacement Expenditures. Maintenance replacement activities account for about 40 percent of the total maintenance expenditures. Because the maintenance replacement season overlaps two fiscal years, expenditure patterns for maintenance replacement vary considerably between districts and fiscal years. The cities and towns in the different DHT districts are affected quite differently as a result.

Table 22 illustrates the impact that overlapping maintenance replacement expenditures has on the annual adjustment factor calculated by DHT. Using expenditures results in nearly a 32 percent increase for the Culpeper district. DHT used this method in FY 1983 to calculate the FY 1984 payments.

Expenditures for maintenance replacement however, will only be equal to allocations over a biennium. Allocations then, reflect the real increases over time in maintenance replacement activities. The 7.35 percent increase illustrated in Table 22 is a better measure of DHT's experience for ordinary and replacement maintenance acitvities.

Table 22

THE IMPACT OF MAINTENANCE REPLACEMENT ON PAYMENT RATES IN THE PRIMARY SYSTEM

The example below indicates the allocations and expenditures over three fiscal years for the Culpeper highway construction district.

Part A
Table of Expenditures and Allocations
(In Millions)

Maintenance Replacement	FY 1981	FY 1982	FY 1983
Allocated	$ 5.9	$ 6.2	$ 6.9
Expended	$ 4.3	$ 4.4	$ 7.8
Ordinary Maintenance	**FY 1981**	**FY 1982**	**FY 1983**
Allocated and Expended	$ 5.6	$ 7.4	$ 7.7

Part B

DHT uses the amount of funds expended each year for ordinary and replacement maintenance in a district to calculate the adjustment factor. This adjustment factor is then used to calculate the next year's payments. The formula used is as follows:

$$\frac{\text{FY 1983 Expenditures} - \text{FY 1982 Expenditures}}{\text{FY 1982 Expenditures}} = \text{Adjustment Factor}$$

Applying the EXPENDITURES in Part A to the formula would result in the following:

$$\frac{15.5 - 11.8}{11.8} = 31.36\%$$

Applying the ALLOCATIONS in Part A to the formula would result in the following:

$$\frac{14.6 - 13.6}{13.6} = 7.35\%$$

Source: DHT, and JLARC analysis.

Conclusion. Creating new base rates each year for each district and defining maintenance experience in two different ways results in an inequitable distribution of urban street payments. The use of maintenance replacement expenditures has also affected equity. A 40 percent difference between districts for primary extension base rates and a 26 percent difference in base rates for other streets clearly does not exist in the county maintenance program. In fact, one maintenance division official indicated that a 40 percent difference between districts was totally unreasonable. The urban division, however, has indicated that this variation between districts can be expected to continue from year to year under the current process for adjusting rates.

Recommendation (21). For urban street payments to be reasonable and equitable among municipalities, a clear and reasonable definition of maintenance experience is necessary. The definition should be tied to the level of maintenance funding DHT provides, as well as the activities that occur in cities and towns.

Recommendation (22). The General Assembly may wish to amend Sections 33.1-41, 33.1-43, and 33.1-80 of the *Code of Virginia* to establish a method for annually adjusting payments to cities and towns. DHT should establish a unit cost index with a 1983 base which would indicate changes in maintenance allocations due to inflation each year. Adjustments should be made to the base rates established for urban street payments. Each adjustment thereafter should also be made to the base rates.

Urban Pavement Standards

Not all roads in cities and towns are eligible for urban street payments. One of the requirements for eligibility is a pavement width of 30 feet and a right-of-way width of 50 feet. The purpose of this requirement is to ensure sufficient pavement for two travel lanes and one parking lane. While this standard appears generally appropriate, its application to industrial access roads appears somewhat less reasonable.

The Industrial Access Program. Section 33.1-221 of the *Code of Virginia* provides for funds to build access roads to new or substantially expanding manufacturing, processing, and industrial establishments. Policies and procedures are largely set by the Highway and Transportation Commission. Fund accounting and program administration are handled by DHT. Program administration appears to meet legislative intent.

Under current Commission policy, funds for industrial access roads are made on a first come, first served basis. The *Code*, however, charges the Commission with examining the type of business and the costs of projects in relation to the volume and nature of the traffic, prior to funding projects. Although the fund is set annually at three million dollars, the Commission restricts the allocation of funds in

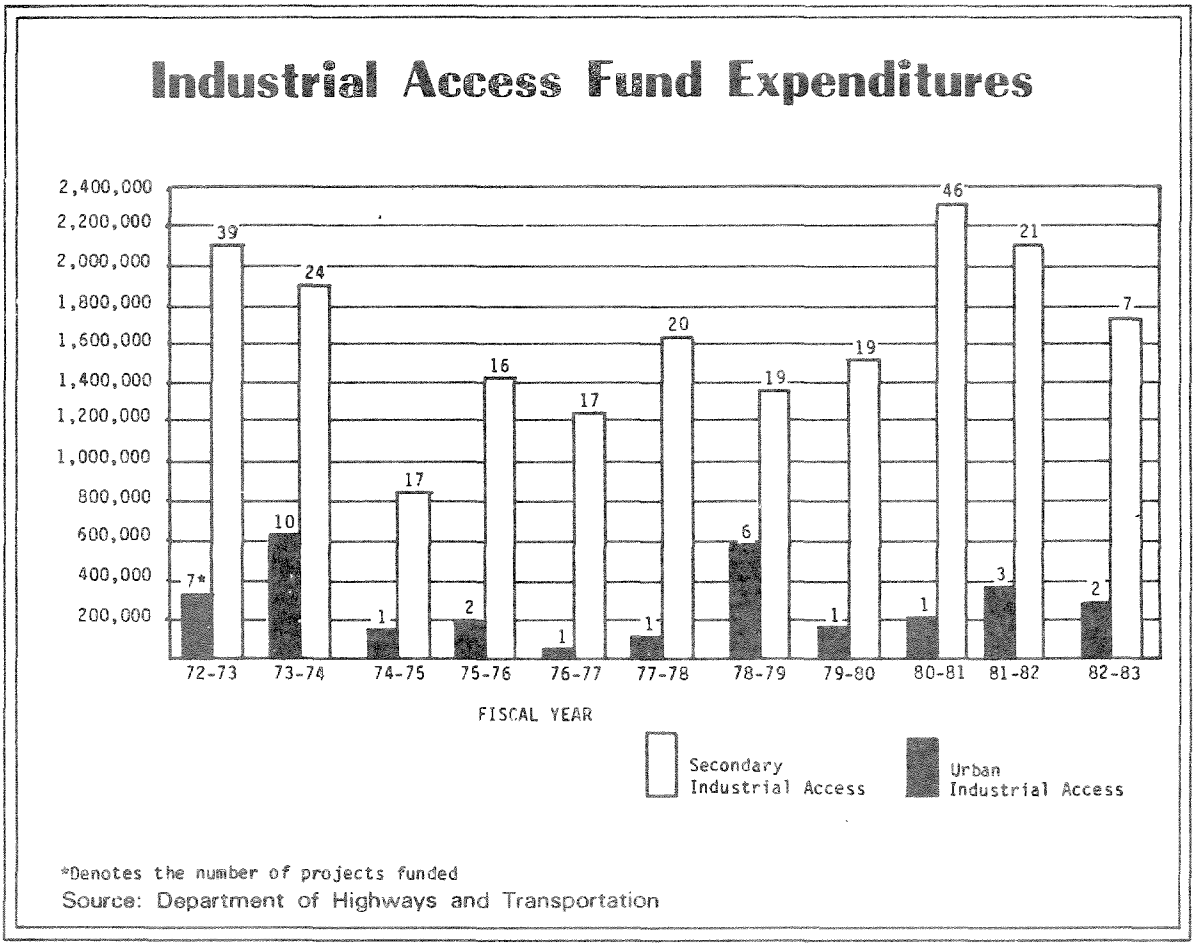
any one city, town, or county to an annual total of $450,000 in matched and unmatched funds. The level of funding has increased from 1.5 million in FY 1957 to $3 million in FY 1984.

By statute, industrial access roads which are constructed or improved with access funds become part of the road system of the locality in which they are located. Industrial access roads built in counties become part of the secondary system, and access roads built in cities and towns become part of the other streets eligible for urban street payments.

County Standards. Most industrial access roads have been built in counties (Figure 7). Although there are no specified pavement width standards in the *Code of Virginia*, Department standards call for most rural roads to be built at 20 to 24 feet wide, depending on the nature and volume of the traffic. As a result, industrial access roads are built at a pavement width of 24 feet. None have been built at a width greater than 24 feet.

Urban Standards. Urban industrial access roads make up a substantially smaller portion of the total expenditures for industrial

Figure 7



*Denotes the number of projects funded

Source: Department of Highways and Transportation

access roads. Since 1970, 14 percent of the total dollars have been expended in cities and towns (Figure 7). Industrial access roads in cities and towns are funded at a level necessary to construct a 30-foot road. Only roads built at or above a 30 foot width in urban areas are eligible for urban street payments.

Prior to 1980, it was the Commission's policy to fund all requests, regardless of the proposed location, with design widths of 24 feet. In 1980, however, the Commission changed this policy and began to fund roads at 30 feet, thus making them eligible for urban street payments. According to DHT officials, the only justification for a 30-foot urban pavement is to allow for two moving lanes and one parking lane.

JLARC staff visited several cities and towns that had received industrial access funds for at least one project. In some cases the access roads were built prior to 1980, and in other cases the roads were built after 1980. No vehicles were observed parked on access roads with 30-foot pavement widths. In several instances "No Parking" signs were clearly posted along the road.

> *In the town of Culpeper, an Industrial Access Road was built with State funds for an international banking communications company. Having built the road prior to the 1980 change in funding policy, the town and the corporation had to absorb the cost for the additional six feet of pavement in order for the road to qualify for urban street payments. The road divided into two 15-foot lanes with "No Parking" signs clearly placed along the road. In this case, the need for the additional six feet of pavement is highly questionable.*
>
> *Less than two miles from Culpeper's corporate limits is another industrial access road. Located in the county of Culpeper, the access road was built with 24 feet of pavement. The plant manager indicated that the width was adequate for the industrial trucks which use the road. Parking on the road surface is prohibited.*
>
> * * *
>
> *The Highway and Transportation Commission granted a request for industrial access funds to Fredericksburg in November of 1980. The funds were used to build an industrial access road for a wire company. The road, which was built with a 30-foot width has pavement markings for two 15-foot lanes. A parking lane is not marked, and according to the Director of Public Works, is not needed for an industrial access road. At 15 feet, these access road lanes are wider than required widths for interstate highways. In addition, the 30-foot*

pavement width has added unnecessary construction and maintenance costs.

Clearly, in some cases, the building of city and town industrial access roads at the higher urban standard is unnecessary. Funding roads at 30 feet increases the construction and maintenance costs for industrial access road in cities and towns. In addition, funds allocated to construct a 30-foot wide pavement decreases the amount available for all other projects.

Recommendation (23). The General Assembly may wish to amend Sections 33.1-43 33.1-221(b) of the *Code of Virginia* to allow the Highway and Transportation Commission to grant variances in the pavement width requirements for industrial access roads located in cities and towns that qualify for urban street payments. The Commission should take into consideration the need for parking on industrial access roads.

OPTIONS FOR FUNDING URBAN ASSISTANCE

Because the current system of classifying streets and roads in municipalities is inappropriate, and the current rates are unreasonable, several options for making urban assistance payments are presented as proposed replacements. Two separate combinations of the functional classifications are presented. The first uses a two-class system which combines principal and minor arterials in the first class, and collectors and locals in the second class. The second option keeps the collectors and locals as separate payment categories. A discussion of the calculations and assumptions preceeds each option.

Each table shows the amount the localities would receive under the option and the amount they will receive in FY 1984 under the current rates and designation of streets and roads.

Option USP-1 (Two Functional Classes)

The first option for legislative consideration uses two urban functional categories as a basis for distributing urban assistance to cities and towns. The principal and minor arterials have been combined into one category and the collectors and locals into another category. The rates established for each category apply to all cities and towns currently receiving urban assistance.

The following example illustrates how allocations were calculated using two functional classifications (Table 23). Table 24 shows the allocations which would be provided by this option for all cities and towns.

Table 23

CALCULATION OF ALLOCATIONS FOR OPTION USP-1

Functional Class	Payment Rate		Lane Miles		Total Dollars
Arterial	$8,243	x	4,323.96	=	$35,642,402
Others	$4,216	x	13,824.21	=	58,282,869
Total			18,148.17		$93,925,271

Table 24

OPTION USP-1
URBAN STREET PAYMENTS
OPTION SUMMARY

TWO FUNCTIONAL CLASSES

Locality	Current Distribution (Administrative)	Proposed Distribution (Functional)
Abingdon	$ 187,082	$ 267,045
Alexandria	2,017,540	2,587,449
Altavista	171,231	213,836
Ashland	272,289	264,933
Bedford	332,823	415,431
Big Stone Gap	$ 193,286	$ 269,992
Blacksburg	697,337	921,857
Blackstone	226,582	260,145
Bluefield	147,856	214,029
Bridgewater	61,124	71,503
Bristol	$ 759,132	$1,157,040
Buena Vista	287,780	358,506
Charlottesville	1,145,047	1,433,181
Chase City	122,404	140,730
Chesapeake	4,857,942	7,261,558
Christiansburg	$ 508,463	$ 653,200
Clifton Forge	167,072	197,262
Colonial Heights	582,561	711,676
Covington	314,962	376,897
Culpeper	390,803	440,997
Danville	$1,698,779	$2,372,251
Elkton	93,055	108,857
Emporia	182,979	278,683
Fairfax	737,523	846,803
Falls Church	332,202	402,509
Farmville	$ 312,866	$ 411,696
Franklin	261,690	425,007
Fredericksburg	474,337	698,633
Front Royal	469,444	622,245
Galax	474,360	642,331
Hampton	$3,089,782	$4,683,713
Harrisonburg	594,734	777,821
Herndon	313,061	400,553
Hopewell	898,831	1,111,756
Leesburg	200,310	246,707

Table 24

OPTION USP-1 (Continued)
URBAN STREET PAYMENTS
OPTION SUMMARY

TWO FUNCTIONAL CLASSES

Locality	Current Distribution (Administrative)	Proposed Distribution (Functional)
Lexington	$ 206,398	$ 262,687
Luray	221,884	244,319
Lynchburg	2,601,813	3,463,723
Manassas	581,467	710,928
Manassas Park	130,265	145,339
Marion	$ 234,069	$ 347,013
Martinsville	798,220	1,105,143
Narrows	86,403	108,351
Newport News	3,412,948	4,974,845
Norfolk	5,780,824	8,678,528
Norton	$ 192,291	$ 213,245
Pearisburg	89,429	112,146
Petersburg	1,535,517	1,949,478
Poquoson	302,357	394,900
Portsmouth	2,782,087	4,182,508
Pulaski	$ 448,737	$ 616,411
Radford	540,288	739,162
Richlands	136,495	165,478
Richmond	7,084,389	8,797,023
Roanoke	3,547,871	4,722,745
Rocky Mount	$ 216,794	$ 243,468
Salem	1,042,661	1,381,286
Saltville	48,395	68,468
Smithfield	118,100	169,357
South Boston	339,434	444,048
South Hill	$ 301,320	$ 342,468
Staunton	848,958	1,062,474
Suffolk	262,535	396,900
Tazewell	162,956	168,667
Vienna	504,091	611,519
Vinton	$ 288,551	$ 377,985
Virginia Beach	7,320,758	11,133,043
Warrenton	288,493	292,018
Waynesboro	617,673	811,138
Williamsburg	335,643	452,482

Table 24

OPTION USP-1 (Continued)
URBAN STREET PAYMENTS
OPTION SUMMARY

TWO FUNCTIONAL CLASSES

Locality	Current Distribution (Administrative)	Proposed Distribution (Functional)
Winchester	$ 631,493	$ 785,989
Wise	94,153	114,928
Woodstock	111,219	130,106
Wytheville	499,891	758,601
	$68,324,179	$93,925,482

Option USP-2 (Three Functional Classes)

The second option also combines the principal and minor arterial systems into one category. The collector streets and local streets remain separate for the calculations, however. Rates have been calculated for each of the categories and apply to all cities and towns currently receiving urban street payments.

The following example illustrates how allocations were calculated using the three functional categories (Table 25). Table 26 shows the allocations which would be provided by this option for all cities and towns.

Table 25

CALCULATION OF ALLOCATIONS FOR OPTION USP-2

Functional Class	Payment Rates		Lane Miles		Total Dollars
Arterial	$8,243	x	4,323.96	=	$35,642,402
Collector	$5,375	x	1,625.71	=	8,738,191
Local	$4,061	x	12,198.50	=	49,538,109
Total			18,148.17		$93,918,702

Table 26

OPTION USP-2
URBAN STREET PAYMENTS
OPTION SUMMARY

THREE FUNCTIONAL CLASSES

Locality	Current Distribution (Administrative)	Proposed Distribution (Functional)
Abingdon	$ 187,082	$ 260,669
Alexandria	2,017,540	2,567,100
Altavista	171,231	212,202
Ashland	272,289	281,473
Bedford	332,823	416,837
Big Stone Gap	$ 193,286	$ 269,194
Blacksburg	697,377	918,687
Blackstone	226,582	260,427
Bluefield	147,856	214,847
Bridgewater	61,124	70,504
Bristol	$ 759,132	$ 1,150,929
Buena Vista	187,780	363,504
Charlottesville	1,145,047	1,435,321
Chase City	122,404	136,923
Chesapeake	4,857,942	7,254,274
Christiansburg	$ 508,463	$ 650,941
Clifton Forge	167,072	201,292
Colonial Heights	582,561	709,866
Covington	314,962	382,582
Culpeper	390,803	441,473
Danville	$ 1,698,779	$ 2,387,889
Elkton	93,055	106,537
Emporia	182,979	279,085
Fairfax	737,523	834,236
Falls Church	332,202	401,667
Farmville	$ 312,866	$ 418,091
Franklin	261,690	426,712
Fredericksburg	474,337	703,498
Front Royal	469,444	617,436
Galax	474,360	641,921
Hampton	$ 3,089,782	$ 4,670,845
Harrisonburg	594,734	787,357
Herndon	313,061	409,157
Hopewell	898,831	1,102,398
Leesburg	200,310	254,387

Table 26

OPTION USP-2 (Continued)
URBAN STREET PAYMENTS
OPTION SUMMARY

THREE FUNCTIONAL CLASSES

Locality	Current Distribution (Administrative)	Proposed Distribution (Functional)
Lexington	$ 206,398	$ 264,767
Luray	221,884	254,327
Lynchburg	2,601,813	3,440,527
Manassas	581,467	705,491
Manassas Park	130,265	145,287
Marion	$ 234,069	$ 349,648
Martinsville	798,220	1,106,498
Narrows	86,403	104,368
Newport News	3,412,948	4,935,784
Norfolk	5,780,824	8,625,758
Norton	$ 192,291	$ 226,902
Pearisburg	89,429	109,757
Petersburg	1,535,517	1,957,331
Poquoson	302,357	411,128
Portsmouth	2,782,087	4,207,621
Pulaski	$ 448,737	$ 615,277
Radford	540,288	739,519
Richlands	136,495	168,934
Richmond	7,084,389	8,796,851
Roanoke	3,547,871	4,674,084
Rocky Mount	$ 216,794	$ 251,480
Salem	1,042,661	1,374,330
Saltville	48,395	74,807
Smithfield	118,100	167,007
South Boston	339,434	442,498
South Hill	$ 301,320	$ 324,305
Staunton	848,958	1,058,622
Suffolk	262,535	396,612
Tazewell	162,956	185,144
Vienna	504,091	602,957
Vinton	$ 288,551	$ 370,323
Virginia Beach	7,320,758	11,192,812
Warrenton	288,493	301,044
Waynesboro	617,673	817,406
Williamsburg	335,643	457,828

Table 26

OPTION USP-2 (Continued)
URBAN STREET PAYMENTS
OPTION SUMMARY

THREE FUNCTIONAL CLASSES

Locality	Current Distribution (Administrative)	Proposed Distribution (Functional)
Winchester	$ 631,493	$ 788,233
Wise	94,153	124,395
Woodstock	111,219	129,632
Wytheville	499,891	761,351
	$68,324,179	$93,918,905

V. ARLINGTON AND HENRICO COUNTY ALLOCATIONS

The local roads and streets for two counties remain outside of the State secondary highway system. Arlington and Henrico counties chose in 1932, when the secondary system was established, to remain independent. The two counties receive payments directly from the Department of Highways and Transportation and have complete responsibility for constructing and maintaining their secondary roads. The two counties combined will receive $13.6 million in FY 1984.

The current procedures for allocating funds to Arlington and Henrico are confusing and complex as a result of the many pieces of legislation enacted over the last 50 years. The current percentages were based on factors which had little relationship to transportation needs. In addition, an analysis conducted by JLARC staff indicates that the current process may not provide appropriate levels of funding to the two counties.

Current Allocation Process

By statute, Arlington and Henrico receive jointly 3.106 percent of the net gas tax receipts, and 3.106 percent of the revenues attributable to the Acts of 1964 and 1966. As a result of the 1982 Appropriation Act, they receive 3.042 percent of the total revenues derived from H.B. 532.

Basis of Current Percentage. The percentage of highway funds currently distributed to Arlington and Henrico is based on a formula that was established in 1932. This formula was based on the distribution of funds in 1930, which allocated 30 percent of gas tax receipts to the counties for maintenance and construction of local roads.

In 1932, when the State secondary system was created, the counties of Arlington, Henrico, Warwick and Nottoway chose to remain independent. Today only Arlington and Henrico remain out of the system. As a result, those two counties receive a share of gas tax receipts that were applicable to the State secondary system on the basis of the following factors:

(1) State taxes collected by the County Treasurer as provided for by the Acts of 1918, weighted one third; and

(2) area, population, and taxes collected by the County Treasurer on State and local levies in the next preceding fiscal year, each counted equally and the resulting factor weighted two thirds.

Under the provisions of the first part above, the percentages for the counties would remain static in future years. Under the second part, the factors for area and population changed every ten years, at the time of the U.S. Census, while the factor for taxes collected changed each year.

A new percentage was calculated annually for each of the two counties by the State Comptroller. While it may have made sense in 1932 to distribute funds on the basis of the above factors, conditions in the counties, transportation policies, funding mechanisms, and needs have changed considerably over time. Funding road maintenance and construction on the basis of the above formula is contrary to current transportation funding policies and procedures, and bears little relationship to transportation needs within the two counties.

Acts of 1964 and 1966. The Acts of 1964 established and increased several fees for service and user charges. As a result, additional revenue was generated for highway maintenance and construction activity. The *Code of Virginia* was amended so that counties not part of the State secondary system would receive a portion of the new revenues. Under the act, Arlington and Henrico would receive a portion of new revenue equal to the percentage they received of the gas tax from that portion of increased secondary funds. The gas tax percentages were, therefore, applied to only the increased amount of secondary funds.

The Acts of 1966 established the Sales and Use Tax on the sale of motor vehicles at a rate of two percent of the sales price. The funds derived from this tax were to be for highway maintenance and construction activity. DHT calculated that the increase in secondary funds was 18 percent. Arlington and Henrico therefore received their calculated proportion of the 18 percent increase.

Acts of 1977. In 1977, the General Assembly enacted Section 33.1-23.5 of the *Code of Virginia*, which required that Arlington and Henrico counties receive:

(1) 3.106 percent of the net revenues available for highway purposes. Arlington would receive 1.281 percent and Henrico 1.825 percent (motor fuel tax revenues); and

(2) 3.106 percent of the secondary fund increases resulting from the Acts of 1964 and 1966. Arlington would receive 1.281 percent and Henrico 1.825 percent.

In addition to fixing the percentages calculated for fiscal year 1976, the General Assembly legitimized the method of calculation.

Acts of 1982 and 1983. The 1982 session of the General Assembly enacted legislation which greatly increased the Highway Department's revenues, primarily through user charges. Arlington and

Henrico were allocated a share of these funds for FY 1983. Based on the amount appropriated to each county by the Appropriations Act, the counties received 3.042 percent of the entire revenue generated from HB 532. The 1983 General Assembly modified the funding for the biennium by appropriating specific amounts to the two counties. Actual funding for FY 1984 totals $5.9 million for Arlington and $8.3 million for Henrico. In addition, the two counties receive credits for certain federal assistance.

Equity of the Current Allocations

The current process for distributing funds to Arlington and Henrico is clearly more complex than it need be. A number of revisions could be made to the allocation process to make it easier to administer, and certainly easier to understand. The difficulty in revising and simplifying the procedures, however, is in measuring the impact of the changes on the equity of the funds provided.

In order to assess the equity of the current allocations and develop an equitable alternative, JLARC staff conducted an analysis which was based on the premise that the allocations for Arlington and Henrico should be equivalent to the allocations for counties in the secondary system. The problem with making a direct comparison is that the allocations for Arlington and Henrico include funding for all of the secondary system programs, including construction, maintenance, and administration. On the other hand, regular secondary system allocations are for construction only. Maintenance and other secondary activities are budgeted separately by DHT. So the analysis had to tie all of these parts into a single comparison.

The JLARC methodology reflects the major parts of the secondary funding, including: (1) an estimation of the maintenance costs based on DHT standards and unit costs; (2) calculation of the construction allocations using the three secondary system formulas proposed in this report; and (3) an estimation of administrative, design, engineering, and inspection costs from county budget and expenditure data. The results of this analysis show that the current allocations made to Arlington and Henrico may not be appropriate.

Estimation of Maintenance Costs. The first step in the analysis was to estimate for the two counties a maintenance cost equivalent to the county allocations that DHT prepares for maintenance on the secondary system. DHT calculates secondary maintenance allocations for each ordinary maintenance activity. The calculation involves multiplying the units of measurement for the activity by the quantity of work per unit and the unit cost. For example, to calculate the allocated amount for tractor mowing, the mileage of hard surface road in each county (unit of measure) is multiplied by the number of acres to be mowed for each mile of road (quantity standard), resulting in the work units to be accomplished. The work units are multiplied by the unit costs to produce the activity amount. The total maintenance cost is the sum of the activity amounts.

JLARC staff calculated maintenance costs for Arlington and Henrico counties using the same process outlined above. For Arlington, Fairfax County standards and unit costs were used, and for Henrico, Chesterfield County standards and unit costs were applied. Estimates of maintenance replacement were based on DHT per lane mile costs. The Arlington County estimate was based on the Northern Virginia division's planned secondary maintenance replacement budgets for FY 1983 and FY 1984. Henrico County estimates were based on the Chesterfield residency's planned secondary maintenance replacement budgets for FY 1983 and FY 1984. The FY 1984 estimates for ordinary and replacement maintenance for the two counties are shown in Table 27.

Table 27

MAINTENANCE COST ESTIMATES FOR FY 1984

	Ordinary Maintenance	Replacement Maintenance	Total
Arlington	$1,523,747.44	$1,347,053.00	$2,870,800.44
Henrico	$2,807,974.86	$1,409,129.10	$4,217,103.96

Source: JLARC estimates from county data.

Administrative and Engineering Costs. Costs for administration, traffic engineering, design, and inspection were reviewed as the second step. The purpose of the review was to identify those costs directly related to the maintenance and construction of secondary roads in the two counties. Public works or utilities costs related to water and sewer service, solid waste disposal, parks, or public buildings maintenance were excluded. These road-related costs were estimated to be $2,595,000 for Arlington County and $2,257,091 for Henrico County.

Construction Allocations. The third step in the analysis was to use the secondary system options, S-1, S-2 and S-3, to allocate construction funds for the two counties. The total amount from which the allocations were made was $53,324,006 which is the total secondary allocation for FY 1984 plus the difference between the current allocations for the two counties and the amounts estimated above for maintenance and administration. The allocations are shown in Table 28.

Summary of JLARC Estimates. Table 29 is a summary of the estimates from the JLARC staff analysis. Three tables are shown for each county to reflect the different construction allocation formulas. The table also shows the current total amounts allocated to the two counties. Compared to any of the three options, the current process appears to provide an inadequate level of funding.

Table 28

ESTIMATED CONSTRUCTION ALLOCATIONS FOR FY 1984

	S-1	S-2	S-3
Arlington	$2,022,852	$1,876,783	$1,678,891
Henrico	$2,509,268	$2,561,994	$4,604,050

Source: JLARC construction options.

Table 29

SUMMARY OF JLARC ESTIMATES FOR
ARLINGTON AND HENRICO COUNTIES
(FY 1984)

	Current Allocation	Estimated Total With S-1	Estimated Total With S-2	Estimated Total With S-3
Arlington	$5,858,655	$7,488,652	$7,342,583	$ 7,144,691
Henrico	$8,346,554	$8,983,463	$9,036,189	$11,078,245

Source: Appropriation Act and JLARC analysis.

Improving The Allocations Process

Because the current process appears to allocate insufficient funds to Arlington and Henrico, a new process which better reflects the nature of the allocations to be made to the counties is needed. In order to ensure that the allocations are equitable, the process should account for increases and decreases in State Highway Fund revenues and the system mileage in the counties. The process should provide for adjustments for inflation or changes in the secondary system maintenance and construction programs. In addition, the process should be relatively simple to administer.

These objectives can be achieved by separating the allocations for the counties into two parts. In the first part, maintenance, administrative, and engineering allocations would be made on a per-lane-mile basis. The rates for making these allocations can be calculated from the JLARC analysis. Table 30 shows the rates which should be used for the current fiscal year. The rates shown in Table 30 should be adjusted annually based on the percentage increase or decrease in the unit costs for county maintenance. By using a per-lane-mile rate, the allocations will automatically account for changes in system mileage.

Table 30

RATES FOR ARLINGTON AND HENRICO
MAINTENANCE AND ADMINISTRATIVE ALLOCATIONS
(FY 1984)

	Estimated FY 1984 Maintenance and Administrative Costs	Secondary Lane Mileage	Allocation Rate Per Lane Mile
Arlington	$5,465,800	874.0	$6,254
Henrico	$6,474,195	2,068.75	$3,130

Source: JLARC Analysis.

In the second part, allocations for construction would be made by the formula used for the regular secondary system. The maintenance and construction allocations would be paid to the two counties as a lump sum. The allocations which would result from this proposal are equivalent to the totals shown in Table 29. The actual allocations would vary depending on the construction options adopted by the General Assembly, and the total revenues available for allocation.

Recommendation (24). The General Assembly may wish to repeal Section 33.1-23.5 of the *Code of Virginia*, substituting a new process for allocating funds to Arlington and Henrico which provides: (1) an amount for maintenance and administration on a per-lane-mile basis at the rate of $6,254 per lane mile for Arlington, and $3,130 per lane mile for Henrico in FY 1984, with the rates adjusted annually to account for increases or decreases in maintenance costs due to inflation for the secondary system; and (2) an amount for construction as allocated by formula for the secondary system. The total allocations should be made to the counties as a lump sum on a quarterly basis as is the current practice.

VI. PUBLIC TRANSPORTATION ASSISTANCE

There are currently 19 public transportation systems operating in Virginia. The largest of these systems is the Washington Metropolitan Area Transit Authority, which provides bus and rail service in Northern Virginia. The other large systems provide bus service in Richmond, Tidewater, the Peninsula, Roanoke, and Lynchburg. The remaining 13 systems serve smaller cities, towns, and rural areas. In all, 2.8 million Virginians, or about half of the State's population, are served by the public transportation systems.

State financial assistance for public transportation is one of the newest programs funded from the Highway Maintenance and Construction Fund. It was made necessary by the failure of the private transit operators in the early 1970's, a situation not unique to Virginia. The State assistance program is administered by the Department of Highways and Transportation. Funds provided to the transit systems have increased substantially since 1972, from $2.5 million in the 1972-1974 biennium, to $64.5 million for the 1982-1984 biennium.

The current provisions for allocating these funds are inadequate to equitably meet the transit systems' changing needs. Statewide objectives for the program are unclear and may no longer reflect the State's best interests. There is a critical lack of consistent, reliable information on the operations of the transit systems, and there is no evaluation of system performance to ensure efficient use of State funds. In addition, because the allocations are not based on formally established and consistent criteria, funding for the systems is unpredictable. This uncertainty in State assistance makes financial planning by the transit systems and ridesharing agencies more difficult.

State assistance for public transportation should be directed at specific Statewide objectives endorsed by the General Assembly. The method for allocating the assistance to the transit systems should promote those objectives. In addition, the funding mechanisms should provide greater stability and predictability to the allocations.

APPROPRIATENESS OF THE STATE ASSISTANCE PROGRAM

The current public transportation assistance program has evolved gradually over the past ten years. There are no statutory requirements related to public transportation funding. Instead, the Department of Highways and Transportation has developed certain admin-

istrative requirements, and the General Assembly has provided for general policies and some program restrictions as a part of the Appropriations Act.

While the assistance program may have been entirely appropriate to meet rapidly changing capital requirements, it is not adequate to meet the current needs of the transit systems for operating and maintenance funding. The policies and funding restrictions of the current program are no longer consistent with the public transportation funding environment, and the financing problems facing Virginia's transit systems. Major revisions to program policies and objectives are needed to ensure that State assistance meets critical public transportation needs.

Legislative History

State aid for public transportation began in Virginia when the 1972 General Assembly allocated funds to assist Northern Virginia jurisdictions in paying their share of the regional bus service operated by the Washington Metropolitan Area Transit Authority (WMATA). A total of $2.5 million in general funds was appropriated for the 1972-1974 biennium.

In the 1974-1976 biennium, the General Assembly expanded assistance for mass transit by increasing funding to $23.2 million, and by making aid available to other transit systems in the State. It was also at this point that the General Assembly set out a policy of restricting use of State aid to capital and administrative costs.

The General Assembly again revised the transit assistance program in the 1976-1978 biennium by providing funds for smaller jurisdictions. A limit was set on the amount of State aid which could be used for Metro rail construction. In addition, funding for the biennium was reduced to $18.0 million.

In the 1978-1980 budget, the program was further expanded. For the first time, State aid was available as a financial incentive to localities for experimental mass transit and ride sharing projects. In addition, a division of public transportation was established in the Department of Highways and Transportation. The division was made responsible for administering federal and State grant programs, developing and coordinating public transportation plans, developing data on Virginia public transit systems, and acting as liaison with other transportation agencies. Funding was increased to $19.0 million.

For the 1980-1982 biennium, previous programs and funding restrictions were continued. Funding was increased to $24.3 million.

In the current biennium funding was increased substantially from previous budgets as a result of additional revenues from H.B. 532 (1982). Appropriations from State sources for 1982-1984 total $64.5 million.

The Current Assistance Program

The State assistance program is based on the philosophy that financial assistance be distributed according to need, but with considerable discretionary authority maintained by the State. The funding policies endorsed by the General Assembly have limited the use of the assistance for certain purposes. So DHT's budgeting of these funds has reflected the needs identified by transit operators, and the Legislature's clear intent through 1982 that the funds be used only for capital and administrative costs.

Restrictions. While State aid is provided to transit operators as a lump sum, there are restrictions on how the funds can be used. The Appropriations Act provides that the funds can be used to support up to 95 percent of the local, or non-federal, share of capital project costs. Capital projects include the purchase or construction of facilities and equipment for public transportation programs. Typical capital items include buses, operations and maintenance facilities, support vehicles, bus stop signs, shelters, radios, fareboxes, computer hardware and software, and the initial purchase of special tools required for bus maintenance.

The act also provides that State aid may be used to support a maximum of 50 percent of the public transit administrative costs borne by the locality. For the administration of these funds, DHT has relied on the definitions and functional classifications established by the Urban Mass Transportation Administration (UMTA) for the "Uniform System of Accounts and Records and Reporting System." This is the only reporting or accounting system that provides a breakdown of expenses into functional classifications which are uniform across the State.

The General Assembly has also always prohibited the use of State aid for operating costs. Operations have generally included salaries and wages, vehicle maintenance, fuel, lubricants, tires, and maintenance supplies. In the current biennium, however, appropriations are greater than the capital and administrative eligibility of the transit systems. Without some action of the 1983 General Assembly, about $3.5 million could not have been used by the transit systems. But changes in the 1983 Appropriations Act now permit some items in the operating category to be funded for the first time. These items include gas, tires, and lubricants. Wages and salaries are still not eligible.

Allocating Funds for the 1982-1984 Biennium. Despite these legislative restrictions, the General Assembly has not specified how public transportation funds are to be allocated. Because there is no required allocation formula or procedure, allocations are made as a part of DHT's budgeting process.

The total amount made available for public transportation is determined in an arbitrary manner, though it is based partially on an

objective analysis. The analysis, conducted by the public transportation division of DHT, is based on a survey of transit operators. The total transit needs identified in the survey are reduced arbitrarily to levels considered acceptable in comparison to funding for other transportation programs. Thus the final funding level is most probably an arbitrary amount which is based more on the previous year's funding level than on the original survey of needs.

The process which resulted in the allocations for individual transit systems for 1982-1984 began in the spring of 1981 when the public transportation division of DHT conducted its survey of all of the transit systems in the State. In that survey, the division asked for projections of capital and operating costs for fiscal years 1983 and 1984. The budgeting and allocations process began with these projections.

The division first deducted the amount of federal aid each system would receive. The remaining amount was the non-federal expenses eligible for State assistance. The eligible amount is 95 percent of total non-federal capital costs and 50 percent of total non-federal administrative costs. In addition, the division developed cost estimates for experimental, ridesharing, and other discretionary activities. These needs totalled $127.5 million for the biennium.

The needs identified in the survey were considered unrealistically high, so the division reduced the amount to $50 million. Each system's allocation was reduced proportionately. This was the first budget submitted by the division for internal review at DHT.

The internal review resulted in a further reduction of the total available for the public transit program to $36.0 million. As in the first reduction, the allocations for the systems were reduced proportionately. In the second internal review, the division's submission at the $36.0 million level was reduced to $24.6 million for the biennium.

In order to achieve the $24.6 million level, a major revision of the budget was made. First, $10 million was cut from the Northern Virginia share since an agreement for the funding of certain METRO parking lots had expired. Next, experimental, ridesharing, and other discretionary programs were cut to minimal levels. In allocating the funds to the transit systems it was decided to fund capital needs first. The budget allowed for funding 95 percent of non-federal bus capital. The remaining funds were allocated proportionately to the system on the basis of the needs identified in the survey.

For the purpose of the budget submission, the capital portion and administrative portion were combined. In addition, the allocations for the small systems were lumped into the discretionary item. The $24.6 million proposal was submitted by the Governor as a part of the executive budget.

The funding process for public transportation was complicated, however, by the introduction of House Bill 532. This bill increased funding for the Highway Maintenance and Construction Fund by creating the oil franchise tax and increasing other highway user fees. The funding for public transportation was increased as a result.

As a part of its survey of transit system capital and operating needs, the division determined what percentage of the operating costs each system had of the total statewide costs. The Washington Metropolitan Area Transit Authority's share of the costs was 72 percent. Through negotiations in the Legislature it was determined that WMATA would receive $28 million of the new revenue over the biennium. This amount was equated to the 72 percent of operating costs, which meant that the total increase for public transportation would be $39 million (100 percent). The proportion of the new funds received by each transit system was based on its proportion of operating expenses. So, the total allocated for public transit in the 1982-1984 biennium was $70.4 million (including federal aid pass-throughs).

Funding Policies and Changing Transit Needs

When the State first involved itself in providing assistance to public transportation in the early 1970's, the purpose of the aid was generally clear. After years of neglect, the capital equipment of most transit systems could not be expected to provide adequate levels of service. So at about the same time that local jurisdictions began to assume ownership of the transit properties, a major recapitalization of the systems was necessary. State assistance was directed primarily at this effort.

At the same time, of course, the federal aid programs also directed funding to capital projects. As a result, by 1982 the transit sytems in Virginia were largely recapitalized. This assessment was confirmed by Richard Grefe' Associates, a consulting firm working for DHT. In their report on transit financing, Grefe' Associates write that, "Significant capital investment in transit systems during the last five years has meant... that... transit properties in Virginia are generally well capitalized."

The outcome of the State and federal assistance programs, in addition to providing much needed equipment, was a radical change in the nature of the financial problems facing the transit operators. The almost overwhelming need for capital funding has been significantly reduced, but operating costs and projected operating deficits continue to increase. Today, there is a far greater need for operating assistance than for capital. This is clear from the estimates of operating and non-federal capital spending for the next biennium. Projected capital costs amount to only 16 percent of the total projected costs for the 1984-1986 biennium. Most of this capital spending is for

Northern Virginia's METRORAIL; the other systems have only minor capital needs (Table 31). Grefe' Associates projects that this trend will continue through the rest of this decade.

Table 31

ESTIMATED OPERATING AND NON-FEDERAL
CAPITAL SPENDING BY VIRGINIA TRANSIT SYSTEMS
(In thousands)

	FY 1985		FY 1986	
Transit System	Operating	Capital	Operating	Capital
WMATA	$122,449	$34,000	$142,258	$34,500
Tidewater	21,144	200	22,601	200
Richmond	18,281	80	19,477	160
Peninsula	7,022	95	7,490	700
Roanoke	2,326	50	2,466	50
Lynchburg	2,162	30	2,285	400
Petersburg	701	10	748	1
Charlottesville	750	5	801	30
Danville	637	100	680	10
Bristol	302	5	322	1
Staunton	342	--	365	--
Winchester	229	0.5	245	0.5
JAUNT	330	8	352	5
James City Co.	166	1	177	1
Harrisonburg	175	0.5	186	60
Colonial Beach	183	--	205	--
Blacksburg	801	15	885	10
Bluefield	50	--	55	--
Greene Co.	56	--	64	--
	$178,106	$34,600	$201,662	$37,128.5

Source: Richard Grefe' Associates.

The need for State operating assistance could become more acute if the federal government reduces further or eliminates the operating assistance it now provides. While the Congress' enactment of the Surface Transportation Assistance Act of 1982 (Public Transportation Act) appeared to ensure continued federal operating assistance, the President's proposed appropriations for FY 1984 are well below the funding levels authorized by Congress. The President has recommended that no federal operating assistance be made available for fiscal year 1989 and all subsequent years.

Despite this trend of changing needs, the State assistance program has remained unchanged until very recently. The 1983 General Assembly did take a first step in making some necessary revisions. By

permitting the use of State funds for certain specific maintenance and operating costs such as for fuel, tires, and lubricants, the General Assembly recognized the increasing pressure of these costs on the transit systems. But further changes in the State's policy with regard to subsidizing operating and capital costs may be needed.

A continued State policy which focuses too heavily on capital assistance may have some undesirable results. First, it may encourage some transit operators to dispose of capital equipment prematurely in order to take advantage of the funds. Or the operators might keep existing equipment and over capitalize -- that is, purchase more equipment than is needed to provide transit service. Second, it could result in a reduction in services or even system failures as the transit operators face rising operating costs.

In addition, reorienting the State assistance program would have some clear benefits. The use of State operating assistance for vehicle maintenance would help to protect the State's substantial investment in capital equipment. This in turn would help to reduce future capital costs. Also, State operating assistance, if allocated in certain ways, could be used as an incentive to achieve various statewide objectives regarding the availability and quality of service provided. Such incentives might also be used to improve transit system efficiency.

The reorientation of the State assistance program to include operating costs should not end the State's participation in other forms of assistance. The State should continue to fund a major portion of non-federal capital costs as a first priority. Operating assistance should be allocated only after all capital, experimental, and ridesharing needs have been met.

Recommendation (25). The General Assembly may wish to reconsider its general prohibition on the use of State assistance for operating costs. However, assistance for capital acquisition, ridesharing administrative support, and experimental transit programs should be funded prior to the allocation of operating assistance. The distribution of operating assistance should be on the basis of one or more factors which promote the statewide objectives endorsed by the General Assembly, and in no case should State operating assistance to a transit system exceed the actual operating expenditures.

Inadequacies in the Current Process

A change to include operating assistance as a part of the State's public transportation program will necessitate some other changes in the assistance program. There are three specific problems which should be addressed. First, transit system operating data is wholly inadequate for the purposes of allocating funds. Second, transit system performance, or operating efficiency, is not currently measured and cannot be considered in funding. In addition, because the

current process is informal and largely arbitrary, allocations are unpredictable, making financial planning by the transit operators more difficult than it need be.

Operating Data. If operating assistance is to be allocated by formula, accurate and reliable operating data will be needed. While the transit systems now report some data to the public transportation division, it is not adequate for use in the allocation of funds. This is not a new problem.

JLARC reported in the November 1981 study Highway Construction, Maintenance, and Transit Needs in Virginia, that the public transportation division did not provide public transportation data in a clear, timely, and comparable format for use in policy development and budget review. Since the time of that previous report, the division has made no progress in improving its data collection and reporting efforts. When operating statistics for FY 1982 were requested for this report in February 1983, the division had not yet collected such data, and had to conduct a survey of the transit systems. The division has not issued any summaries of operating or financial data since FY 1980. In addition, selected financial data reported by DHT did not correspond to data collected by JLARC directly from the transit systems.

In order to properly allocate operating assistance, several improvements in the current data collection effort would have to be made. First, the exact methods for collecting the data should be specified by DHT to ensure that comparable data is available for all systems. Such methods must be readily implementable by the transit systems, without greatly increasing their costs. Second, the department should have an independent method for verifying the accuracy of the data. For example, the public transportation division might want to audit each system on a biennial basis. Third, the department must ensure that the data is collected, verified, and reported in a timely fashion in order to avoid delays in the distribution of operating assistance.

The department currently has a study of performance indicators under way, and a part of that study is devoted to improved management information reporting. Therefore, some improvement in the available information on transit operations should be expected. However, to the extent that the consultant's study does not provide for (1) new data collection, (2) verification, and (3) reporting methods useful in the allocation of State assistance, the department should develop the necessary information system.

Recommendation (26). The public transportation division should develop uniform financial and operating data for all transit systems. The division should develop specific methodologies for the collection of such data by the transit operators. In addition, the division should regularly and systematically verify the data with annual financial audits and periodic field reviews. To the extent

possible, the data should include, but not be limited to, the measures necessary to implement a performance evaluation program.

Recommendation (27). The General Assembly may wish to amend Section 33.1-391E of the *Code of Virginia* to require the Directorate of Public Transportation to collect and report data which may be required for the allocation of public transportation assistance.

Operating Performance. Because the public transportation division has not collected the necessary operating data, it is not currently possible to evaluate the operating performance of the transit systems. While this was not a critical problem for a program directed only at capital and administrative assistance, it is an important problem when operating assistance is involved. Without such measures the State cannot assure itself of the efficient and effective use of the aid it provides. It would be inequitable to provide funds to transit systems that are inefficient at the expense of those systems that operate more efficiently.

DHT recognized the need for evaluating the systems' performance, and contracted with Littleton C. MacDorman to develop a performance monitoring program. The consultant's report, which was completed in January 1984, recommends a complete performance evaluation system including performance goals and objectives, performance indicators and data collection methods, and the necessary forms and administrative procedures. The study does not include recommendations on how the performance evaluations are to be used for allocating transit resources. This responsibility will remain with the public transportation division.

Performance evaluations can be an important part of an improved transit assistance allocation process. The evaluations can be used in at least two ways. First, the evaluations could be used to determine eligibility for State operating assistance. With this alternative, certain performance objectives would have to be met by the transit system before it could receive operating assistance. Different goals might be set for each transit system based on past performance, size of the system, or other local conditions. Capital assistance would not be affected by the operating performance indicators or the distribution of operating assistance in any way.

A second alternative would be to use the performance indicators as a part of a distribution formula. This would be a more direct use of the evaluations, since funding would be tied directly to one or more performance indicators. With this alternative, the allocation formula would include one or more factors which measured the systems' relative performance. The setting of goals to be achieved would not be necessary, since the use of the indicators in the funding formula would result in direct competition between the transit operators.

Recommendation (28). The public transportation division should implement a performance evaluation system as soon as possible. The results of performance evaluations should be used to improve the technical assistance provided to the transit operators by DHT. In addition, the General Assembly may wish to adopt the use of performance measures as a part of the public transportation allocation process.

Stability of Funding. One of the most serious problems facing transit administrators is the instability of funding. The Congressional budget process and changes in public transportation funding policy have contributed to the uncertainty of continued federal operating assistance. To a lesser degree, State assistance is also unpredictable. Because funding is determined as a part of the Appropriations process, transit operators cannot be sure of the amount of State assistance until just prior to the beginning of the fiscal year.

Funding for the 1982-1984 biennium is an example of the type of problem that may result from the current process. The Governor's Executive Budget recommended $24.6 million for public transportation. The General Assembly increased this amount to $70.4 million. While the transit systems clearly needed these additional funds, the restrictions in the Appropriation Act made it impossible for the systems to expend the funds. Such sudden, major changes are possible because no statutory allocation has been established for public transportation.

The uncertainty of operating assistance could affect the services provided, because the level of service is dependent on total revenue. Some systems may cut service to levels which could be supported without State assistance if those funds appear unreliable. Such anticipatory reductions in service may already have occurred as a result of the uncertainty of federal funding.

The unpredictability of funding was also the major complaint made to JLARC staff by administrators of ridesharing agencies. Ridesharing programs are designed to assist commuters in starting and using carpools and vanpools. The use of commuter carpools is expected to be an increasingly important tool in reducing urban congestion. A stable source of administrative funding for the ridesharing agencies would help to ensure active promotion of alternative transportation in urban areas.

The uncertainty in the State assistance program could be eliminated by establishing a statutory allocation for public transportation. The allocation should be set by law as a proportion of State revenues dedicated to the Highway Maintenance and Construction Fund. In addition, the allocations or levels of support for the capital, ridesharing, experimental, and operating programs should be specified.

Recommendation (29). The General Assembly may wish to amend Section 33.1-23.1 of the *Code of Virginia* to establish a public transportation allocation. The amount of the allocation should be specified

by statute to be not less than three percent nor more than five percent of revenues from State sources, with the exact amount of each year's allocation to be set by the General Assembly in the Appropriations Act based on the needs of the transit systems, the availability of funds, and other highway maintenance and construction needs. For the purpose of comparison, the actual allocation for public transportation for FY 1984 was 4.86 percent of revenues from State sources and under this proposal could have ranged from $19,607,235 to $32,678,725.

PUBLIC TRANSPORTATION FUNDING OPTIONS

Three basic options for funding the public transportation program have been developed. These options reflect the recommendations made in the preceding section of this chapter. The options consist of a general schedule of allocations for major program categories such as capital and operating, and three different formulas for allocating operating assistance to the transit systems. The allocations for each transit system that result are shown in Options PT-1, PT-2, and PT-3 at the end of this section.

The Basic Funding Program

The basic public transportation funding program proposed by the JLARC staff has four major components. These are (1) capital grants, (2) experimental transit grants, (3) ridesharing administrative support, and (4) operating assistance. Capital needs, experimental projects, and ridesharing programs are funded as first priorities. The operating assistance is allocated by formula.

Capital Acquisition. Grants for capital acquisition should be funded as a first priority. Under the JLARC options the State would fund 50 percent of the non-federal portion of Virginia METRORAIL capital projects and 50 percent of the non-federal portion of all bus capital projects approved by the Highway and Transportation Commission. This provision is intended to ensure continued capital investment by the transit systems, while at the same time requiring a sufficient commitment of funds from local governments to prevent requests for unnecessary projects. Thus, the State and local governments become equal partners in the capital investment for public transportation.

In those instances where transit operators choose not to use available federal funds, the State should provide only that amount that would have been funded if federal funds were used. This is consistent with the General Assembly's policy that the State and its political subdivisions should make full use of all available federal funds. For the capital program, this would mean that the State would provide only 10 percent of project costs when federal aid is not utilized (50 percent of the 20 percent normally required to match federal assistance). This would ensure that the State treats all systems equally, regardless of local policy with respect to the use of federal funds.

Currently, the Danville transit system does not use any federal funds for its capital acquisition programs or its operations. For 1984 the system has total capital needs of $1.2 million. Under the JLARC proposal, the State would provide $120,000 for the projects, requiring the local jurisdictions to bear the cost of the federal aid not used.

Experimental Projects. Grants for experimental public transit projects would be funded as the second priority. One percent of the total funds available for public transportation is to be reserved for experimental transit programs. The purpose of this provision is to ensure that there are sufficient funds for innovative transit programs which improve productivity or efficiency, or reduce operating costs.

Ridesharing Administrative Support. The third funding category is for ridesharing administrative and promotional support. One percent of the total funds available for public transportation is to be reserved for ridesharing grants. This would provide the stable and predictable source of funding seen by the ridesharing administrators as critical to the future success of the programs. It would also clearly establish the State's commitment to the alternative transportation concept.

Operating Assistance. The remaining funds would be allocated to the transit systems by formula for operating assistance. The use of a formula can have several important benefits. First, the use of a formula would result in more stable and predictable funding for the transit systems. Second, the formula relates the funding of operations to statewide relative measures of operations. Thus, the formula provides an equal level of funding to all systems. For example, if the factor used is passenger trips, each system would receive the same amount of subsidy per trip. The differences in allocations for the systems would be the result of the number of passengers carried, not uneven subsidy rates. Third, the factors used in the formulas can act as incentives for improved service delivery or reduced operating costs.

Operating Assistance Formulas

An important part of the revision of the public transportation process is the use of a formula to distribute operating assistance. In the promotion of statewide policies, such formulas can be important tools. By relating specific policy goals to State assistance, the General Assembly can provide incentives for improved service or increased operating efficiency. The use of financial incentives instead of State mandates to promote statewide goals also preserves the independence of the local transit operators.

JLARC staff reviewed 14 factors for their use in an allocation formula. The factors considered were in two basic groups: (1) operating factors, which were measures of transit operations; and (2) demographic factors, which are measures of the jurisdictions served by

the transit system. In addition, the factors from the two groups were combined to form various efficiency indicators. The factors in each group were:

Operating Factors

Passenger trips	Passenger capacity
Revenue mileage	Fleet size
Route mileage	Operating expenditures
Service hours	Operating deficit

Demographic Factors

Population
Population density
Population below the poverty level
Population using transit to travel to work
Households without a private vehicle
Area

While the demographic factors were reviewed and could be used to allocate funds, their use is not recommended because they cannot be used as incentives. For example, the actions of the transit operators cannot influence the population or area of the jurisdiction served.

In addition to the factors listed above, JLARC staff also reviewed potential efficiency indicators for use in the formulas. The indicators show the input or output per dollar expended, such as passenger trips per dollar expended. Four indicators were considered:

Passenger trips/dollar expended
Hours operated/dollar expended
Revenue miles operated/dollar expended
Route miles/dollar expended

The indicators are useful for allocating funds because an increase in funding is related directly to any increase in operating efficiency.

Specific definitions and incentives for the eight operating factors and four efficiency indicators are described below. The allocations which would result from formulas using these factors are shown as options at the end of this chapter.

Unlinked Passenger Trips. This is a measure of the total number of passengers who boarded the transit vehicles. As an allocation factor it promotes increased ridership. Increases might be accomplished by expanding service, improving quality of existing service, or reducing the cost to passengers.

Revenue Mileage Operated. This factor measures the total number of miles traveled by the transit vehicles while in revenue service. In a funding formula it provides an incentive to increase the

service available to users of the system. However, because it does not account for passengers carried, the additional mileage may not be a positive gain in service, and might result in increased costs.

Route Mileage. Route mileage is a measure of the total miles of direct roadway on which transit routes have been established. The measure is taken without respect to the number of traffic lanes and does not account for any two-directional travel on the routes by the transit vehicles. The use of this factor in the allocation formula would encourage systems to add routes. Because this factor does not measure system outputs, it is not recommended.

Service Hours. Service hours is a measure of the total cumulative hours operated by the transit vehicles while in transit service. It is a good measure of system output, and could be used in a formula as an incentive to increase the availablity of transit service.

Passenger Capacity. This factor is a measure of the sum of the number of passenger seats aboard the revenue vehicles and the number of standing passengers that can be accommodated in a normal full load. Its use in a formula would promote an increase in the size of the fleets of the transit systems. Systems using smaller buses would be encouraged to purchase larger ones at the time of replacement, a practice which might prove to be inefficient.

Fleet Size. Fleet size is the measure of the number of transit vehicles regularly maintained in condition for active revenue service. As a factor in a distribution formula it would promote larger fleets. In the absence of increased demand for transit services, this would not be efficient.

Operating Expenditures. This factor is the sum of yearly expenditures for operation, maintenance, and general administration of the transit system. Consultants to the Department of Highways and Transportation have recommended its use for allocating funds, primarily because of its accuracy and ease of administration. However, its use, if not a direct incentive to increase costs, would be an indirect incentive not to operate in the most efficient manner. For this reason, JLARC staff recommended that this factor not be used to allocate funds.

Operating Deficit. The deficit is the amount of operating expenses not met by operating revenues. In a formula, this factor might discourage efforts to increase the portion of operating costs covered by the users of the transit services.

Passenger Trips/Dollar Expended. This efficiency indicator measures how many trips the transit system can provide for each dollar of operating costs. Its use in a formula would be a strong incentive for the systems to operate more efficiently. In order to increase the funding allocated by this factor a transit system would have to either increase ridership while holding costs constant, or decrease costs while holding ridership constant. Either outcome would be beneficial.

Hours Operated/Dollar Expended. This indicator measures how many hours the systems operate for each dollar of operating costs. As with the previous indicator, the incentive is to increase hours at the same cost or decrease costs at the same level of service.

Revenue Miles Operated/Dollar Expended. This indicator is a measure of the vehicle miles driven for each dollar of operating costs. This factor would also provide a positive incentive by encouraging the systems to increase service availability at a constant cost or reduce costs at current service levels.

Route Mileage/Dollar Expended. The final indicator measures the mileage of transit routes operated per dollar of operating expenditure. In an allocation formula it would encourage a reduction of current costs or an expansion of transit routes.

Recommendation (30). In order to promote certain incentives, the General Assembly may wish to adopt a formula for the purpose of allocating public transportation operating assistance.

Each option shows the basic distribution of funds for the public transportation program, and the resulting allocations for each system. System allocations are not shown for Colonial Beach, Blacksburg, Bluefield, and Greene County due to a lack of data. Actual allocations would be made to these systems under the proposed funding process.

Capital allocations are based on expected capital needs for the year. Actual funding would be dependent on capital grant requests, and might vary from the amount shown. Operating allocations are the results of the formula shown for each option. Option PT-1 (Table 32) allocates on the basis of passenger trips, so it accounts only for the operational output of the systems. Options PT-2 (Table 33) and PT-3 (Table 34) produce significantly different allocations from PT-1 because they both include efficiency indicators. This results in some shift of funding to the smaller systems, which operate at a lower cost per trip and hour operated. The General Assembly may also want to consider the use of other performance indicators being developed for DHT.

Table 32

OPTION PT-1

Basic Program

State Funds Available (FY 1984)	$31,795,335
Less:	
50% of Rail Capital (Va. only)	12,250,000
50% of Bus Capital	3,109,750
1% for Experimental Projects	317,953
1% for Ridesharing Support	317,953
Funds Remaining for Operating Assistance	15,799,679

OPERATING ASSISTANCE FORMULA: PASSENGER TRIPS -- 100%

System Allocations

System	Capital Allocation	Operating Allocation	Total Allocation
WMATA	$14,850,000	$ 8,145,403	$22,995,403
Tidewater	100,000	1,963,409	2,063,409
Richmond	175,000	3,884,462	4,059,462
Peninsula	40,000	842,154	882,154
Roanoke	17,500	278,798	296,298
Lynchburg	10,000	294,296	304,296
Petersburg	2,500	141,688	144,188
Charlottesville	2,500	93,057	95,557
Danville	120,000*	60,699	180,699
Bristol	2,500	7,746	10,246
Staunton	20,000	20,599	40,599
Winchester	15,000	30,080	48,080
James City County	500	9,435	9,935
Harrisonburg	250	8,459	8,709
JAUNT	4,000	16,394	20,394
TOTAL	$15,359,750	$15,799,679	$31,159,429

*No federal funds--10% of total project costs.

Table 33

OPTION PT-2

Basic Program

State Funds Available (FY 1984)	$31,795,335
Less:	
50% of Rail Capital (Va. only)	12,250,000
50% of Bus Capital	3,109,750
1% for Experimental Projects	317,953
1% for Ridesharing Support	317,953
Funds Remaining for Operating Assistance	15,799,679

OPERATING ASSISTANCE FORMULA: PASSENGER TRIPS -- 50% + OPERATING HOURS/OPERATING EXPENDITURES -- 50%

System Allocations

System	Capital Allocation	Operating Allocation	Total Allocation
WMATA	$14,850,000	$ 5,035,240	$19,885,240
Tidewater	100,000	1,583,039	1,683,039
Richmond	175,000	2,887,539	3,062,539
Peninsula	40,000	1,105,235	1,145,235
Roanoke	17,500	852,935	870,435
Lynchburg	10,000	948,626	958,626
Petersburg	2,500	653,000	655,500
Charlottesville	2,500	700,000	702,500
Danville	120,000*	594,000	714,000
Bristol	2,500	281,000	283,500
Staunton	20,000	319,000	339,000
Winchester	15,000	214,000	229,000
James City County	500	155,000	155,500
Harrisonburg	250	163,000	163,250
JAUNT	4,000	308,000	312,000
TOTAL	$15,359,750	$15,799,614	$31,159,364

*No federal funds--10% of total project costs.

Table 34

OPTION PT-3

Basic Program

State Funds Available (FY 1984)	$31,795,335
Less:	
50% of Rail Capital (Va. only)	12,250,000
50% of Bus Capital	3,109,750
1% for Experimental Projects	317,953
1% for Ridesharing Support	317,953
Funds Remaining for Operating Assistance	15,799,679

OPERATING ASSISTANCE FORMULA: HOURS OPERATED -- 50% +
PASSENGER TRIPS/OPERATING EXPENDITURES -- 50%

System Allocations

System	Capital Allocation	Operating Allocation	Total Allocation
WMATA	$14,850,000	$ 4,185,329	$19,035,329
Tidewater	100,000	2,013,086	2,113,086
Richmond	175,000	3,006,893	3,181,893
Peninsula	40,000	1,417,599	1,457,599
Roanoke	17,500	947,379	964,879
Lynchburg	10,000	1,045,441	1,055,441
Petersburg	2,500	653,000	655,500
Charlottesville	2,500	569,607	572,107
Danville	120,000*	594,000	714,000
Bristol	2,500	281,000	283,500
Staunton	20,000	319,000	339,000
Winchester	15,000	214,000	229,000
James City County	500	155,000	155,500
Harrisonburg	250	163,000	163,250
JAUNT	4,000	235,344	239,344
TOTAL	$15,359,750	$15,799,678	$31,159,428

*No federal funds--10% of total projects costs.

VII. A PROGRAM FOR ALLOCATING HIGHWAY AND TRANSPORTATION FUNDS

The purpose of this final report on the equity of the current provisions for allocating highway and transportation funds was two-fold. First, it was the intent of the staff to identify for the General Assembly specific inadequacies in the current statutes or in the administrative processes developed by DHT, and to point out the consequences of those problems on equity. The second goal was to present viable alternative solutions to the problems identified.

As is always the case with public policy issues, many alternative solutions will be possible for any given problem, depending on the political and economic environment and the competing goals to be achieved. Certainly this is the case with transportation funding. The interests of urban and rural areas, for example, must be balanced. There may also be competing goals among the cities and among the counties. It is important, then, that the selection of alternatives be based to the greatest extent possible on a sound technical analysis.

The options and alternatives presented in this report are all based on an objective analysis of equity and are as technically correct as possible. There may, however, be many differing opinions about their political acceptability. JLARC staff have attempted to provide a sufficient range of alternatives to support the discussion of the issues, and to provide a basis to help the General Assembly choose among alternatives.

Development of An Allocations Program

An important part of the legislative consideration of these alternatives is the need to bring the various options, recommendations and proposals together into a single, complete program for allocating funds. Preparing such a program is somewhat problematic because of the numerous acceptable options for each of the funding categories. But in any case, a complete proposal for transportation allocations will include consideration of the following elements:

1. a proposal for county maintenance funding which addresses needs assessment and funding of maintenance replacement; maintenance budgeting; and funding for emergency snow removal;

2. new payment categories and rates for urban assistance payments that will result in payments to cities and towns that are comparable to the highway maintenance program in the counties;

3. a new process for allocating funds to Arlington and Henrico counties which treats them equitably with counties in the State secondary system;

4. a revised public transportation funding program which reflects the changing needs of the transit systems, and encourages the efficient use of funds;

5. a proposal for interstate matching funds which does not penalize the primary system construction program in some districts;

6. a proposal for a bridge fund to ensure that the State takes advantage of all available federal funds;

7. a funding rate for unpaved roads which reflects the needs on those roads and the priorities set by the General Assembly;

8. a proposal to allocate funds to the three administrative highway systems on the basis of need;

9. a proposal to end the use of FY 1977 allocations for the secondary system, and a new secondary formula to ensure equitable allocations to counties;

10. a statutory provision for allocating urban construction funds;

11. a proposal on the geographic units and formula to be used for primary system allocations to ensure that funding is related to need; and

12. a statutory provision to ensure that necessary State funds are available to match federal assistance before expenditures can be made against the allocation for any program.

Legislative Proposals

At the request of the Commission, legislation which implements the recommendations of this report was drafted for the 1984 session of the General Assembly. The legislation is based on the selection of one option for each of the 12 elements outlined above. Senate Joint Resolution 20 requests a joint subcommittee of the Senate Committees on Finance and Transportation and the House Committees on Appropriations, Finance, and Roads and Internal Navigation to review the findings of this report and the specific legislative proposals. The 18 proposed bills and one proposed resolution are printed as a part of Senate Joint Resolution 20 and are provided in Appendix B. These proposals implement the full range of staff recommendations requiring legislative action.

In addition, two bills were introduced in the 1984 Session by Commission members to implement the data collection recommendations of this report. House Bill 82 (which was carried over to the 1985 Session by the General Assembly) called for the collection of traffic count data for all highway systems. The data was to be collected by DHT, or by the planning district commissions through contracts with the department. DHT has agreed to collect this data in order that it can be evaluated for future use in an allocation formula. House Bill 83 (which was passed in the 1984 Session) mandates the collection of uniform financial and operating data for all public transportation systems in Virginia and requires DHT to develop the methods for collecting and verifying the data. These two bills are also provided in Appendix B.

Program Impact

The proposed legislative changes to the current provisions for allocating highway and transportation funds would have both immediate and long-range effects on the funding of transportation programs. The first and most direct result would be a more equitable distribution of transportation resources in the Commonwealth. Adoption of the complete proposal would ensure that funding is based on need. Cities and counties would share equitably in the funds available for highways and public transportation.

Also as a consequence of adopting the JLARC staff proposals, funding for some programs would increase and others would decrease. The changes in funding for FY 1984 that would result from the JLARC proposals illustrate this outcome.

Urban assistance payments, for example, would be increased from $69.9 million in the current program to $93.9 million with the JLARC proposal. This increase is necessary to provide a maintenance program in cities equivalent to that in the counties. It would result from increasing the rates paid for each lane mile of eligible urban roads.

Funding public transportation at a level equal to five percent of revenues from State sources would increase the funding for public transit from $31.8 million to $32.7 million for the year. Establishing public transportation assistance as a percentage of revenues is intended to provide greater stability to the annual allocations.

The funding for Arlington and Henrico counties would also be increased from the current amount of $14.2 million to $16.5 million. These increases bring the two counties into line with services provided to the counties in the State secondary system.

Funding for maintenance would decrease. This results from basing budget plans on actual experience in the FY 1983 base year

instead of on planned costs for that year. Although allocations would be reduced, the actual maintenance of roads would not be affected.

Another effect of the proposals might be a change in the funding available for the construction program. Whether there is an increase or decrease in funds would not be dependent on the relative need for construction in comparison to the other programs. Instead, it would be the result of allocating funds for construction last in the process. Unless the increases for urban street payments, public transportation, and Arlington and Henrico are offset by corresponding decreases in other programs or by increased revenues, there would be fewer dollars to be allocated for construction.

Within the construction program, there would be some shifting of funds among the programs. Interstate funding and funding for several miscellaneous programs would remain unchanged. Allocations for unpaved roads would increase. Urban and secondary system allocations would increase as a result of making one-third of the construction funds available to each of these two systems, and primary system funds would decrease accordingly.

The long-term impact of the proposal would also involve increases in funding for urban street payments, public transportation, and Arlington and Henrico counties and decreases in maintenance. Changes from the six-year program for these funding categories are shown in Table 35. The base data in the table uses projections made by DHT for the period from FY 1985 to FY 1990.

The shifts for urban street payments are based on a modest growth in urban system mileage of 1.6 percent and projected inflationary increases similar to those expected for county maintenance. Over the six-year period, urban street payments would be increased by $238.3 million as a result of the JLARC staff proposal.

The projected increases in funding for Arlington and Henrico counties are also based on modest growth in system mileage and inflation for maintenance and administration. Highway construction funding for the two counties is also included, based on secondary system option S-1. The two counties would receive $35.8 million more in State funding over the six-year period.

The shifts shown for public transportation are the result of maintaining a program at five percent of revenues from State sources. The total amount of the increase for public transportation over the six-year program is estimated by DHT to be $17,409,050. JLARC staff will assess and update the projections as part of the SJR 20 subcommittee review.

Construction, because it is the last item to be funded, might experience some reduction in funding as a result of increases for the other programs. However, such reductions in the construction program are not unavoidable. Even with the changes recommended by JLARC staff,

Table 35

CHANGES IN HIGHWAY PROGRAM FUNDING FROM JLARC STAFF PROPOSAL

(Based on Current Six-Year Program, Proposed Changes in SJR 20 and Revenue Estimates of March 1984)

		FY 1985	FY 1986	FY 1987	FY 1988	FY 1989	FY 1990
Highway Fund Revenues	Original Revenue Estimate	$1,051,540,100	$1,078,677,100	$1,067,230,900	$1,077,116,500	$1,087,661,700	$1,104,932,500
	Changes in Forecast	+ 91,478,000	+ 46,272,000	+ 49,101,000	+ 49,332,000	+ 49,788,000	+ 45,439,000
	Revised Revenue Estimate	1,143,018,100	1,124,949,100	1,116,331,900	1,126,448,500	1,137,449,700	1,150,371,500
Administration and Other	Funding in Current Six-Year Program	$ 200,581,335	$ 205,791,615	$ 205,789,690	$ 212,430,315	$ 212,361,615	$ 219,558,530
	Funding in Revised Program	200,581,335	205,791,615	205,789,690	212,430,315	212,361,615	219,558,530
	Change in Funding	0	0	0	0	0	0
Salary Adjustment and Insurance	Funding in Current Six-Year Program	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
	Funding in Revised Program	17,615,000	16,983,000	17,153,000	17,325,000	17,499,000	17,672,000
	Change in Funding	+ 17,615,000	+ 16,983,000	+ 17,153,000	+ 17,325,000	+ 17,499,000	17,672,000
County Maintenance	Funding in Current Six-Year Program	$ 301,780,900	$ 321,602,000	$ 336,008,100	$ 353,984,300	$ 370,520,200	$ 387,922,900
	Funding Required to Correct Budget	270,978,961	289,029,887	301,920,391	318,303,254	333,175,636	348,932,070
	Change in Funding	- 30,801,939	- 32,572,113	- 34,087,709	- 35,681,046	- 37,344,564	- 38,990,830
Urban Assistance Payments	Funding in Current Six-Year Program	$ 77,117,300	$ 81,942,600	$ 87,324,600	$ 91,236,300	$ 96,117,400	$ 100,607,400
	Funding Required to Achieve Equity	106,751,185	115,090,545	123,983,650	134,033,395	141,976,630	150,811,320
	Change in Funding	+ 29,633,885	+ 33,147,945	+ 36,659,050	+ 42,797,095	+ 45,859,230	+ 50,203,920
Arlington and Henrico Counties* *Does not include construction allocation.	Funding in Current Six-Year Program	$ 13,236,745	$ 13,421,030	$ 13,903,000	$ 14,066,000	$ 14,237,000	$ 14,412,000
	Funding Required to Achieve Equity	13,170,341	14,271,910	15,486,942	16,459,156	17,563,313	18,746,343
	Change in Funding	- 66,404	+ 850,880	+ 1,583,942	+ 2,393,156	+ 3,326,313	+ 4,334,343
Public Transportation Assistance	Funding in Current Six-Year Program	$ 31,795,300	$ 31,795,300	$ 31,800,000	$ 31,800,000	$ 31,800,000	$ 31,800,000
	Funding Required to Achieve Equity	33,129,250	33,792,600	34,484,700	34,902,600	35,542,500	36,348,000
	Change in Funding	+ 1,333,950	+ 1,997,300	+ 2,684,700	+ 3,102,600	+ 3,742,500	+ 4,548,000
Construction	Funding in Current Six-Year Program	$ 427,028,520	$ 424,124,555	$ 392,405,510	$ 373,599,585	$ 362,625,485	$ 350,631,670
	Funds Remaining	500,792,028	449,989,543	417,513,527	392,994,780	379,331,006	358,303,237
	Change in Funding	+ 73,763,508	+ 25,864,988	+ 25,108,017	+ 19,395,195	+ 16,705,521	+ 7,671,567

Source: JLARC Analysis of DMV and DHT Data.

reductions in the construction program need not occur. If the General Assembly wishes to maintain the construction program at its current level, additional funds can come from several possible sources.

First, if present trends continue, the revenues for the Highway Maintenance and Construction Fund will be greater than originally forecast. This year's collections are significantly above expectations, and any additional revenues would be available for the construction program. The revised forecast of March 1984 also shows significant increases in revenues in each year of the six-year program. These funds will reduce any impact on funding available for construction.

Second, additional funds will be made available by correcting the overestimate of DHT's maintenance budget. The overestimate occurred as the result of the methods used by DHT in budgeting for county highway maintenance. For the next biennium, and the remaining period of the six-year program, DHT projected its maintenance budget by inflating the planned expenditures for FY 1983. Actual expenditures for FY 1983, however, were lower than the planned amount by $27.8 million. As a result, the 1984-1986 biennial budget is overstated by $63.4 million. For the six-year program, the overestimate is $209.5 million. The overestimation for each year of the six year program is shown in Table 35. These funds would provide much of the amount necessary to reduce any impact on construction funding. JLARC staff are also reviewing the budgets for administration of DHT and other transportation agencies to determine if other funds might be made available.

Third, to the extent that reductions in other programs and increases in revenues fail to provide sufficient funds for highway purposes, the General Assembly could consider additional revenue authority. However, it now appears unlikely that any new tax will be needed before the end of the current six-year program. Any increase in taxing authority should be made only after additional study of the need for the funds, the effect of the increase on collections, and the equity of taxes on various highway user vehicle classes.

APPENDIXES

APPENDIX A

HIGHWAY CONSTRUCTION NEEDS
(DHT ASSESSMENT)
FY 1982-2005

LOCALITY=CITY

NAME	INTERSTATE NEEDS	PRIMARY NEEDS	SECONDARY NEEDS	URBAN NEEDS	TOTAL
ALEXANDRIA	$0	$0	$0	$92,556,366	$92,556,366
BEDFORD	$0	$0	$0	$48,926,866	$48,926,866
BRISTOL	$0	$0	$0	$41,139,052	$41,139,052
BUENA-VISTA	$0	$0	$0	$12,486,838	$12,486,838
CHARLOTTESVILLE	$0	$0	$0	$31,130,431	$31,130,431
CHESAPEAKE	$35,652,760	$985,000	$0	$512,318,192	$548,955,952
CLIFTON-FORGE	$0	$0	$0	$21,739,303	$21,739,303
COLONIAL-HEIGHTS	$0	$0	$0	$39,614,785	$39,614,785
COVINGTON	$0	$0	$0	$35,586,483	$35,586,483
DANVILLE	$0	$0	$0	$32,271,000	$32,271,000
EMPORIA	$0	$0	$0	$1,407,112	$1,407,112
FAIRFAX	$0	$0	$0	$8,679,100	$8,679,100
FALLS-CHURCH	$0	$0	$0	$6,392,436	$6,392,436
FRANKLIN	$0	$0	$0	$6,227,530	$6,227,530
FREDERICKSBURG	$0	$0	$0	$8,656,000	$8,656,000
GALAX	$0	$0	$0	$36,501,071	$36,501,071
HAMPTON	$28,193,756	$0	$0	$197,054,544	$225,248,300
HARRISONBURG	$0	$0	$0	$12,658,709	$12,658,709
HOPEWELL	$28,000,000	$0	$0	$29,198,770	$57,198,770
LEXINGTON	$0	$0	$0	$10,308,322	$10,308,322
LYNCHBURG	$0	$9,104,000	$0	$146,304,000	$155,408,000
MANASSAS	$0	$0	$0	$19,169,252	$19,169,252
MANASSAS-PARK	$0	$0	$0	$571,976	$571,976

HIGHWAY CONSTRUCTION NEEDS
(DHT ASSESSMENT)
FY 1982-2005

LOCALITY=CITY

NAME	INTERSTATE NEEDS	PRIMARY NEEDS	SECONDARY NEEDS	URBAN NEEDS	TOTAL
MARTINSVILLE	$0	$0	$0	$21,793,500	$21,793,500
NEWPORT-NEWS	$355,980,000	$0	$0	$218,891,768	$574,871,768
NORFOLK	$315,260,000	$0	$0	$511,393,502	$826,653,502
NORTON	$0	$0	$0	$40,185,014	$40,185,014
PETERSBURG	$0	$0	$0	$67,680,676	$67,680,676
POQUOSON	$0	$0	$0	$16,248,076	$16,248,076
PORTSMOUTH	$0	$248,000	$0	$248,200,018	$248,448,018
RADFORD	$0	$0	$0	$14,358,673	$14,358,673
RICHMOND	$0	$0	$0	$165,971,432	$165,971,432
ROANOKE	$0	$8,864,154	$0	$329,507,766	$338,371,920
SALEM	$0	$0	$0	$105,287,996	$105,287,996
SOUTH-BOSTON	$0	$2,259,042	$0	$28,594,370	$30,853,412
STAUNTON	$0	$0	$0	$89,408,360	$89,408,360
SUFFOLK	$231,350,000	$161,688,860	$56,005,000	$239,874,022	$688,917,882
VIRGINIA-BEACH	$18,375,968	$0	$0	$735,949,008	$754,324,976
WAYNESBORO	$0	$0	$0	$27,660,553	$27,660,553
WILLIAMSBURG	$0	$0	$0	$13,745,120	$13,745,120
WINCHESTER	$0	$465,000	$0	$30,096,000	$30,561,000
LOCALITY	$1,012,812,484	$183,614,056	$56,005,000	$4,255,743,992	$5,508,175,532

HIGHWAY CONSTRUCTION NEEDS
(DHT ASSESSMENT)
FY 1982-2005

LOCALITY=COUNTY

NAME	INTERSTATE NEEDS	PRIMARY NEEDS	SECONDARY NEEDS	URBAN NEEDS	TOTAL
ACCOMACK	$0	$6,718,000	$23,062,000	$0	$29,780,000
ALBEMARLE	$0	$59,986,000	$201,839,000	$0	$261,825,000
ALLEGHANY	$40,000,000	$38,419,000	$31,212,000	$0	$109,631,000
AMELIA	$0	$2,375,000	$26,714,000	$0	$29,089,000
AMHERST	$0	$72,250,000	$79,710,000	$0	$151,960,000
APPOMATTOX	$0	$22,197,000	$16,883,000	$0	$39,080,000
ARLINGTON	$29,900,000	$57,190,000	$0	$0	$87,090,000
AUGUSTA	$0	$103,060,000	$161,536,000	$0	$264,596,000
BATH	$0	$41,564,000	$42,788,000	$0	$84,352,000
BEDFORD	$0	$51,805,000	$117,109,000	$0	$168,914,000
BLAND	$0	$12,372,000	$22,162,000	$0	$34,534,000
BOTETOURT	$6,755,000	$54,678,000	$51,703,000	$0	$113,136,000
BRUNSWICK	$0	$8,466,000	$37,232,000	$0	$45,698,000
BUCHANAN	$0	$109,999,000	$165,289,000	$0	$275,288,000
BUCKINGHAM	$0	$15,593,000	$49,253,000	$0	$64,846,000
CAMPBELL	$0	$98,141,000	$52,167,000	$0	$150,308,000
CAROLINE	$15,060,000	$8,161,000	$40,510,000	$0	$63,731,000
CARROLL	$0	$10,156,000	$72,621,000	$0	$82,777,000
CHARLES-CITY	$0	$5,185,000	$13,215,000	$0	$18,400,000
CHARLOTTE	$0	$9,585,000	$23,936,000	$0	$33,521,000
CHESTERFIELD	$157,149,000	$265,603,000	$176,155,000	$0	$598,907,000
CLARKE	$0	$6,366,000	$31,249,000	$0	$37,615,000
CRAIG	$0	$6,255,000	$23,249,000	$0	$29,504,000

HIGHWAY CONSTRUCTION NEEDS
(DHT ASSESSMENT)
FY 1982-2005

LOCALITY=COUNTY

NAME	INTERSTATE NEEDS	PRIMARY NEEDS	SECONDARY NEEDS	URBAN NEEDS	TOTAL
CULPEPER	$0	$31,807,000	$55,674,000	$0	$87,481,000
CUMBERLAND	$0	$3,630,000	$35,670,000	$0	$39,300,000
DICKENSON	$0	$129,318,000	$59,399,000	$0	$188,717,000
DINWIDDIE	$0	$5,045,000	$41,200,000	$0	$46,245,000
ESSEX	$0	$14,827,000	$20,288,000	$0	$35,115,000
FAIRFAX	$0	$199,350,000	$753,580,000	$0	$952,930,000
FAUQUIER	$0	$77,611,000	$66,352,000	$0	$143,963,000
FLOYD	$0	$31,263,000	$56,933,000	$0	$88,196,000
FLUVANNA	$0	$14,900,000	$15,333,000	$0	$30,233,000
FRANKLIN	$0	$54,702,000	$78,692,000	$0	$133,394,000
FREDERICK	$0	$44,418,000	$62,866,000	$0	$107,284,000
GILES	$0	$35,992,000	$42,756,000	$0	$78,748,000
GLOUCESTER	$0	$2,805,000	$19,270,000	$0	$22,075,000
GOOCHLAND	$0	$35,703,000	$36,981,000	$0	$72,684,000
GRAYSON	$0	$12,222,000	$54,045,000	$0	$66,267,000
GREENE	$0	$14,020,000	$23,438,000	$0	$37,458,000
GREENSVILLE	$200,000	$12,697,000	$15,150,000	$0	$28,047,000
HALIFAX	$0	$64,916,000	$43,286,000	$0	$108,202,000
HANOVER	$0	$26,632,000	$96,171,000	$0	$122,803,000
HENRICO	$171,225,000	$229,610,000	$0	$0	$400,835,000
HENRY	$0	$56,847,000	$61,857,000	$0	$118,704,000
HIGHLAND	$0	$1,506,000	$23,499,000	$0	$25,005,000
ISLE-OF-WIGHT	$0	$14,337,000	$33,273,000	$0	$47,610,000

HIGHWAY CONSTRUCTION NEEDS
(DHT ASSESSMENT)
FY 1982-2005

LOCALITY=COUNTY

NAME	INTERSTATE NEEDS	PRIMARY NEEDS	SECONDARY NEEDS	URBAN NEEDS	TOTAL
JAMES-CITY	$0	$57,256,000	$61,560,000	$0	$118,816,000
KING&QUEEN	$0	$14,929,000	$19,826,000	$0	$34,755,000
KING-GEORGE	$0	$21,456,000	$10,913,000	$0	$32,369,000
KING-WILLIAM	$0	$1,881,000	$20,182,000	$0	$22,063,000
LANCASTER	$0	$12,985,000	$9,077,000	$0	$22,062,000
LEE	$0	$176,724,000	$56,218,000	$0	$232,942,000
LOUDOUN	$0	$80,792,000	$123,301,000	$0	$204,093,000
LOUISA	$0	$16,796,000	$31,662,000	$0	$48,458,000
LUNENBURG	$0	$2,663,000	$41,780,000	$0	$44,443,000
MADISON	$0	$6,894,000	$38,469,000	$0	$45,363,000
MATHEWS	$0	$1,358,000	$10,036,000	$0	$11,394,000
MECKLENBURG	$0	$17,366,000	$52,376,000	$0	$69,742,000
MIDDLESEX	$0	$9,275,000	$9,562,000	$0	$18,837,000
MONTGOMERY	$0	$44,949,000	$61,946,000	$0	$106,895,000
NELSON	$0	$21,426,000	$58,766,000	$0	$80,192,000
NEW-KENT	$0	$4,149,000	$10,320,000	$0	$14,469,000
NORTHAMPTON	$0	$50,000	$3,018,000	$0	$3,068,000
NORTHUMBERLAND	$0	$18,590,000	$9,814,000	$0	$28,404,000
NOTTOWAY	$0	$6,474,000	$17,143,000	$0	$23,617,000
ORANGE	$0	$7,013,000	$40,037,000	$0	$47,050,000
PAGE	$0	$6,843,000	$46,070,000	$0	$52,913,000
PATRICK	$0	$45,522,000	$72,434,000	$0	$117,956,000
PITTSYLVANIA	$0	$77,432,000	$137,096,000	$0	$214,528,000

HIGHWAY CONSTRUCTION NEEDS
(DHT ASSESSMENT)
FY 1982-2005

LOCALITY=COUNTY

NAME	INTERSTATE NEEDS	PRIMARY NEEDS	SECONDARY NEEDS	URBAN NEEDS	TOTAL
POWHATAN	$0	$567,000	$17,941,000	$0	$18,508,000
PRINCE-EDWARD	$0	$30,549,000	$33,758,000	$0	$64,307,000
PRINCE-GEORGE	$90,661,000	$19,521,000	$10,538,000	$0	$120,720,000
PRINCE-WILLIAM	$40,995,000	$168,182,000	$100,804,000	$0	$309,981,000
PULASKI	$0	$11,729,000	$58,797,000	$0	$70,526,000
RAPPAHANNOCK	$0	$6,807,000	$33,001,000	$0	$39,808,000
RICHMOND	$0	$1,156,000	$9,281,000	$0	$10,437,000
ROANOKE	$3,460,000	$111,229,000	$58,855,000	$0	$173,544,000
ROCKBRIDGE	$0	$38,021,000	$91,756,000	$0	$129,777,000
ROCKINGHAM	$1,310,000	$72,740,000	$171,185,000	$0	$245,235,000
RUSSELL	$0	$89,811,000	$97,417,000	$0	$187,228,000
SCOTT	$0	$62,364,000	$114,072,000	$0	$176,436,000
SHENANDOAH	$0	$18,427,000	$93,593,000	$0	$112,020,000
SMYTH	$0	$36,202,000	$52,101,000	$0	$88,303,000
SOUTHAMPTON	$0	$44,192,000	$24,880,000	$0	$69,072,000
SPOTSYLVANIA	$41,491,000	$56,083,000	$127,060,000	$0	$224,634,000
STAFFORD	$39,233,000	$86,476,000	$121,640,000	$0	$247,349,000
SURRY	$0	$3,018,000	$12,593,000	$0	$15,611,000
SUSSEX	$0	$4,753,000	$18,744,000	$0	$23,497,000
TAZEWELL	$0	$81,006,000	$60,601,000	$0	$141,607,000
WARREN	$0	$26,641,000	$33,984,000	$0	$60,625,000
WASHINGTON	$4,790,000	$89,370,000	$82,739,000	$0	$176,899,000
WESTMORELAND	$0	$14,025,000	$15,885,000	$0	$29,910,000

HIGHWAY CONSTRUCTION NEEDS
(DHT ASSESSMENT)
FY 1982-2005

LOCALITY=COUNTY

NAME	INTERSTATE NEEDS	PRIMARY NEEDS	SECONDARY NEEDS	URBAN NEEDS	TOTAL
WISE	$0	$132,387,000	$72,624,000	$0	$205,011,000
WYTHE	$24,730,000	$15,071,000	$63,844,000	$0	$103,645,000
YORK	$0	$47,733,000	$45,491,000	$0	$93,224,000
LOCALITY	$666,959,000	$4,101,165,000	$5,720,097,000	$0	$10,488,221,000

APPENDIX B

1984 LEGISLATIVE PROPOSALS

JLARC Recommendation	Legislation
(1) Interstate Match	SJR 20 - Proposed Bill No. 7
(2) Unpaved Roads	SJR 20 - Proposed Bill No. 6
(3) Bridge Fund	SJR 20 - Proposed Bill No. 9
(4) System Allocations	SJR 20 - Proposed Bill No. 5
(5) Secondary Hold-harmless	SJR 20 - Proposed Bill No. 13
(6) Secondary Formula	SJR 20 - Proposed Bill No. 14
(7) Urban Formula	SJR 20 - Proposed Bill No. 12
(8) Primary Formula	SJR 20 - Proposed Bill No. 11
(9) PDC Primary Allocation	SJR 20 - Proposed Bill No. 10
(10) Traffic Counts	House Bill 82
(11) Periodic Review	No Legislation Required
(12) Maintenance Funding Priority	SJR 20 - Proposed Bill No. 2
(13) Pavement Management System	SJR 20 - Proposed Resolution
(14) Pavement Management System	No Legislation Required
(15) Pavement Management System	No Legislation Required
(16) Maintenance Standards	No Legislation Required
(17) Snow Removal Fund	SJR 20 - Proposed Bill No. 4
(18) Urban Payment Classes	SJR 20 - Proposed Bill No. 16
(19) Urban Payment Rates	SJR 20 - Proposed Bill No. 16
(20) Single Statewide Rate	SJR 20 - Proposed Bill No. 16
(21) Adjustment of Rates	No Legislation Required
(22) Adjustment of Rates	SJR 20 - Proposed Bill No. 16
(23) Urban Pavement Standards	SJR 20 - Proposed Bill No. 17
(24) Arlington and Henrico	SJR 20 - Proposed Bill No. 15
(25) Transit Operating Assistance	SJR 20 - Proposed Bill No. 18
(26) Transit Operating Data	House Bill 83
(27) Transit Operating Data	House Bill 83
(28) Performance Evaluation	No Legislation Required
(29) Public Transportation Fund	SJR 20 - Proposed Bill No. 3
(30) Transit Assistance Formula	SJR 20 - Proposed Bill No. 8
Other Provisions for Matching Federal Assistance	SJR 20 - Proposed Bill No. 1

LD4057101

SENATE JOINT RESOLUTION NO. 20

Offered January 17, 1984

Requesting a joint subcommittee of the Senate Committees on Finance and Transportation and the House Committees on Appropriations, Finance, and Roads and Internal Navigation to review the recommendations of the Joint Legislative Audit and Review Commission concerning highway program financing.

Patrons–Andrews, Willey, Babalas, and Buchanan; Delegates: Bagley, R. M., Morrison, Manning, Ball, Putney, Callahan, and Quillen

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Referred to the Committee on Rules

WHEREAS, at the request of the General Assembly, the Joint Legislative Audit and Review Commission (JLARC) has conducted a two-year analysis of the allocation of highway and transportation funds in the Commonwealth; and

WHEREAS, the goal of JLARC's work has been to recommend to the General Assembly legislative and other steps which would ensure that Virginia's highway and transportation allocations are appropriate, reasonable and equitable; and

WHEREAS, it has been the goal of the General Assembly and JLARC that highway needs be assessed objectively and scientifically both for the present and into the future; and

WHEREAS, the proposed legislative changes, which are printed as part of this resolution and which result from JLARC's work, would involve comprehensive modifications to the current provisions for allocating and expending highway and transportation funds in Virginia; and

WHEREAS, it is highly desirable that, prior to undertaking any fundamental changes in the highway program, the greatest possible exposure be given to JLARC's proposals, and ample opportunity be made available for comment from the public; now, therefore, be it

RESOLVED by the Senate of Virginia, the House of Delegates concurring, that the Senate Committees on Finance and Transportation and the House Committees on Appropriations, Finance, and Roads and Internal Navigation form a joint subcommittee to review the work and JLARC's specific legislative recommendations, included as part of this resolution, concerning Virginia's highway program. The joint subcommittee shall consist of fifteen members as follows: three members from each of the above-named Senate Committees, appointed by the Committee on Privileges and Elections, and three members from each of the above-named House Committees, appointed by the Speaker of the House of Delegates.

In addition to an initial organizational meeting and a closing work session, the joint subcommittee shall hold such public hearings as may be required.

JLARC staff and the Department of Highways and Transportation are requested to assist the joint subcommittee as required.

The joint subcommittee will complete its work and submit its recommendations by October 1, 1984.

All direct and indirect costs of the activities of the joint subcommittee are estimated to

be $30,020.

Proposed Bill No. 1

A BILL to amend the Code of Virginia by adding a section numbered 33.1-23.02, relating to matching of federal and certain other highway funds.

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 33.1-23.02 as follows:

§ 33.1-23.02. State matching funds for federal and other nonstate funds.—A. Notwithstanding any other provision of law, before any expenditures are made pursuant to allocations for hghway maintenance and construction purposes, the Commissioner of the Department of Highways and Transportation shall first determine whether sufficient funds are available to match and obtain all federal and nonstate sources of highway funding available to the Commonwealth. In the event a determination is made that sufficient funds are not available for the purpose of matching federal and nonstate sources of funds, the Commissioner shall reduce the allocations made to each maintenance and construction purpose for programs approved by the General Assembly and projects or purposes authorized by the Highway and Transportatin Commission. The reductions for each account shall be equal to the proportion of total allocations from the highway fund for each purpose in relation to the total highway fund.

B. Whenever the State Highway and Transportation Commissioner makes the determination described in paragraph A, and before reductions are actually accomplished, the Commissioner shall lay such facts and explanations before the Governor, the House of Delegates Committee on Rodds and Internal Navigation, the Senate Committee on Transportation, the Joint Legislative Audit and Review Commission, and all of the members of the General Assembly.

C. In the event it is necessary to implement the provisions of paragraph A, the federal and nonstate sources of highway funding obtained by use of state matching funds shall be expended in accordance to the purpose for which they were obtained, notwithstanding other provisions of law.

D. Whenever it is necessary to reduce allocations under paragraph A of this section, the Commissioner of Highways and Transportation, at the first opportunity, shall use available funds to restore reduced allocations to their prereduction levels. Restorations shall be accomplished in the same proportions as reductions were initially made.

Proposed Bill No. 2.

A BILL to amend the Code of Virginia by adding a section numbered 33.1-23.02, to provide a definition of the term "maintenance."

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 33.1-23.02 as follows:

§ 33.1-23.02. Definition of the term "maintenance."—For the purpose of this title, unless otherwise explicitly provided, the term "maintenance" shall include ordinary maintenance, maintenance replacement, and any other categories of maintenace which may be

designated by the Commissioner.

Proposed Bill No. 3.

A BILL to amend the Code of Virginia by adding a section numbered 33.1-23.02, relating to allocations of funds for aid to public mass transit.

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 33.1-23.02 as follows:

§ 33.1-23.02. Allocations for aid to public mass transit.—After allocations under subsection A of § 33.1-23.1, but before any allocations under subsection B of § 33.1-23.1, an amount specified by the General Assembly in the Appropriation Act, or amendments thereto, equal to no less than three percent nor more than five percent of the Highway Maintenance and Construction Fund, exclusive of all federal or local aid, grants, and contributions, shall be allocated as aid to public mass transit. The precise amount shall be determined on the basis of (i) the needs of the Commonwealth's several public mass transit systems, (ii) the availability of funds, and (iii) the urgency of other highway maintenance and construction needs.

Proposed Bill No. 4.

A BILL to amend and reenact § 33.1-23.1 of the Code of Virginia, relating to allocation of funds for highway purposes.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.1 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.1. Allocation of funds among highway systems. A.—The State Highway and Transportation Commission shall allocate each year from all funds made available for highway purposes such amount as it deems reasonable and necessary for the maintenance of roads within the interstate system of highways, the primary system of ~~State~~ *state* highways, the secondary system of ~~State~~ *state* highways and for urban street payments made pursuant to §§ 33.1-41 and 33.1-43 and town street maintenance payments made pursuant to § 33.1-80, et seq. of this Code.

A1. Before allocation of any funds under subsection B of this section, the State Highway and Transportation Commission shall annually allocate, from funds available in the Highway Maintenance and Construction Fund, such an amount as it deems reasonable and necessary for the removal of snow from highways in the several highway systems. In the event that funds allocated for snow removal prove inadequate, the Commission shall transfer funds from those allocated for highway construction across the Commonwealth in order to provide for adequate snow removal. In the event that less than all the funds allocated therefor are expended on snow removal in any year, such funds shall be carried over to be used for snow removal in the following year.

B. After funds are set aside for administrative and general expenses and pursuant to other provisions in this title which provide for the disposition of funds prior to allocation for highway purposes, and after allocation is made pursuant to ~~subsection~~ *subsections* A *and A1* of this section, the State Highway and Transportation Commission shall allocate each year the remaining funds available for highway purposes, exclusive of federal funds

for the interstate system, among the several highway systems for construction first pursuant to § 33.1-23.1:1 and then as follows:

1. Fifty ~~per centum~~ *percent* of said remaining funds shall be allocated to the primary system of ~~State~~ *state* highways, including the arterial network, and to the interstate system as federal matching funds.

2. Twenty-five ~~per centum~~ *percent* of said remaining funds shall be allocated to urban highways for ~~State~~ *state* aid pursuant to § 33.1-44.

3. Twenty-five ~~per centum~~ *percent* of said remaining funds shall be allocated to the secondary system of ~~State~~ *state* highways; ~~provided,~~ however, ~~that~~ the total of the funds allocated to the secondary system for construction under this subsection and the funds allocated for maintenance of the secondary system under § 33.1-23.1 A shall not be less than twenty-eight ~~per centum~~ *percent* of funds available to the Highway and Transportation Commission for highway purposes, exclusive of federal funds for the interstate system.

Proposed Bill No. 5.

A BILL to amend and reenact § 33.1-23.1 of the Code of Virginia, relating to allocation of highway funds among the several highway systems.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.1 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.1. Allocation of funds among highway systems.—A. The State Highway and Transportation Commission shall allocate each year from all funds made available for highway purposes such amount as it deems reasonable and necessary for the maintenance of roads within the interstate system of highways, the primary system of ~~State~~ *state* highways, the secondary system of ~~State~~ *state* highways and for urban street payments made pursuant to §§ 33.1-41 and 33.1-43 and town street maintenance payments made pursuant to § 33.1-80, et seq. of this Code.

B. After funds are set aside for administrative and general expenses and pursuant to other provisions in this title which provide for the disposition of funds prior to allocation for highway purposes, and after allocation is made pursuant to subsection A of this section, the State Highway and Transportation Commission shall allocate each year the remaining funds available for highway purposes, exclusive of federal funds for the interstate system, among the several highway systems for construction first pursuant to § 33.1-23.1:1 and then as follows:

1. ~~Fifty~~ ~~per centum~~ *One-third* of said remaining funds shall be allocated to the primary system of ~~State~~ *state* highways, including the arterial network, and to the interstate system as federal matching funds.

2. ~~Twenty-five~~ ~~per centum~~ *One-third* of said remaining funds shall be allocated to urban highways for ~~State~~ *state* aid pursuant to § 33.1-44.

3. ~~Twenty-five~~ ~~per centum~~ *One-third* of said remaining funds shall be allocated to the secondary system of ~~State~~ *state* highways ; ~~provided, however, that~~ . *However,* the total of the funds allocated to the secondary system for construction under this subsection and the funds allocated for maintenance of the secondary system under § 33.1-23.1 A shall not be less than twenty-eight ~~per centum~~ *percent* of funds available to the Highway and Transportation Commission for highway purposes, exclusive of federal funds for the

interstate system.

Proposed Bill No. 6.

A BILL to amend and reenact § 33.1-23.1:1 of the Code of Virginia, relating to the unpaved secondary road fund.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.1:1 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.1:1. Unpaved secondary road fund created; allocations.—A. ~~B~~efore funds are allocated for distribution for highway construction pursuant to § 33.1-23.1 B 1, B 2, and B 3, a fund shall be established for the paving of nonsurface treated secondary roads which carry fifty vehicles or more per day ~~(V.P.D.)~~ . Such fund shall contain ~~three and three-fourths~~ *seven and six-tenths* percent of the total funds available for highway construction under § 33.1-23.1 B 1, B 2, and B 3.

B. Such funds shall be distributed to counties in the secondary system based on the ratio of nonsurface treated roads in each county carrying fifty *vehicles* or more ~~V.P.D.~~ *per day* to the total number of such nonsurface treated roads in the ~~State~~ *Commonwealth* for the paving of such ~~nonsurfaced~~ *nonsurface* treated secondary roads.

Proposed Bill No. 7.

A BILL to amend and reenact §§ 33.1-23.1 and 33.1-23.2 of the Code of Virginia and to amend the Code of Virginia by adding a section numbered 33.1-23.1:2, relating to allocation of highway construction funds.

Be it enacted by the General Assembly of Virginia:

1. That §§ 33.1-23.1 and 33.1-23.2 of the Code of Virginia are amended and reenacted and that the Code of Virginia is amended by adding a section numbered 33.1-23.1:2 as follows:

§ 33.1-23.1. Allocation of funds among highway systems. A.—The State Highway and Transportation Commission shall allocate each year from all funds made available for highway purposes such amount as it deems reasonable and necessary for the maintenance of roads within the interstate system of highways, the primary system of ~~State~~ *state* highways, the secondary system of ~~State~~ *state* highways and for urban street payments made pursuant to §§ 33.1-41 and 33.1-43 and town street maintenance payments made pursuant to § 33.1-80, et seq. of this Code.

B. After funds are set aside for administrative and general expenses and pursuant to other provisions in this title which provide for the disposition of funds prior to allocation for highway purposes, and after allocation is made pursuant to subsection A of this section, the State Highway and Transportation Commission shall allocate each year the remaining funds available for highway purposes ~~, exclusive of federal funds for the interstate system,~~ among the several highway systems for construction first pursuant to § *s* 33.1-23.1:1 *and 33.1-23.1:2* and then as follows:

1. Fifty ~~per centum~~ *percent* of ~~said~~ *the* remaining funds shall be allocated to the primary system of ~~State~~ *state* highways, including the arterial network ~~, and to the interstate system as federal matching funds~~ .

2. Twenty-five ~~per centum~~ *percent* of ~~said~~ *the* remaining funds shall be allocated to urban highways for ~~State~~ *state* aid pursuant to § 33.1-44.

3. Twenty-five ~~per centum~~ *percent* of ~~said~~ *the* remaining funds shall be allocated to the secondary system of ~~State~~ *state* highw s ; ~~provided, however, that~~ . *However,* the total of the funds allocated to the secondary system for construction under this subsection and the funds allocated for maintenance of the secondary system under § 33.1-23.1 A shall not be less than twenty-eight ~~per centum~~ *percent* of funds available to the Highway and Transportation Commission for highway purposes, exclusive of federal funds for the interstate system.

§ 33.1-23.2. Allocation of funds for primary system.—A. The State Highway and Transportation Commission shall allocate such funds as are available under §33.1-23.1 B 1 to the primary system of ~~State~~ *state* highways, including the arterial system, for construction and shall apportion such funds among the eight construction districts so that each construction district shall be allocated a share of such funds equal to the proportion that such construction district bears to the ~~State~~ *state* as a whole in terms of: area, population and primary road mileage, these factors weighted forty percent; and vehicle registration, weighted forty percent; and, lane mile need, weighted twenty percent.

B. ~~The Commission is hereby authorized to utilize as great a portion of such district funds as it deems necessary for federal interstate matching.~~

C. Notwithstanding subsection A of this section, the Commission may provide for exceptionally heavy expenditures for repairs or replacements made necessary by highway damage resulting from accidents, severe weather conditions, acts of God or vandalism.

D. Such funds allocated to the interstate and primary systems shall, as far as possible, be allotted prior to the commencement of the fiscal year and public announcement made of such allotment but the Commission shall not approve such allotment until after public hearing at which political subdivisions of the ~~State~~ *Commonwealth* and interested citizens may be heard.

In any case where any allotment of funds is made under this subsection to any county, all or a part of which subsequently is incorporated as or into a city or town, such allocation shall not be impaired thereby and the funds so allocated shall be expended as if such county or any part thereof had never become an incorporated city, but that portion of such city shall not be eligible to receive funds as a city during the same year it receives the funds allocated as a county or as any part of a county.

§ 33.1-23.1:2. Allocation of funds for interstate matching.—After making the allocations provided for in subsection A of § 33.1-23.1, but before making any allocations under subsection B of § 33.1-23.1, the State Highway and Transportation Commission shall allocate, from funds allocable under subsection B of § 33.1-23.1, such funds as it deems necessary for federal interstate matching.

Proposed Bill No. 8.

A BILL to amend the Code of Virginia by adding a section numbered 33.1-23.1:2, relating to financial aid to public mass transit.

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 33.1-23.1:2 as follows:

§ 33.1-23.1:2. Aid to public mass transit.—From the funds available to the State

Highway and Transportation Commission from the Highway Maintenance and Construction Fund for highway purposes, before any of such funds are allocated for any highway purposes under subsection B of § 33.1-23.1 there shall be allocated, as established by the General Assembly in the Appropriation Act, an amount for the financial assistance of mass transit. Such moneys may be paid by the commission to any governing body, transportation district commission, or public corporation. Out of these allocations, funds may be used to support a maximum of: (i) fifty percent of the nonfederal portion of rail capital costs and (ii) fifty percent of the nonfederal portion of bus capital costs. In addition, the Commission shall set aside an amount equal to one percent of the funds available for public transportation for experimental transit projects and one percent for ride sharing projects.

Any remaining funds shall be allocated for financial assistance to mass transit operating costs. Such allocations shall be on the basis of the number of passenger trips provided by the recipient of the aid in comparison with the number of passenger trips provided by all systems eligible for such aid.

Proposed Bill No. 9.

A BILL to amend and reenact §§ 33.1-23.1 and 33.1-23.4 of the Code of Virginia and to amend the Code of Virginia by adding a section numbered 33.1-23.1:2, relating to the special fund for bridge construction and replacement.

Be it enacted by the General Assembly of Virginia:

1. That §§ 33.1-23.1 and 33.1-23.4 of the Code of Virginia is amended and reenacted and that the Code of Virginia is amended by adding a section numbered 33.1-23.1:2 as follows:

§ 33.1-23.1. Allocation of funds among highway systems. A.—The State Highway and Transportation Commission shall allocate each year from all funds made available for highway purposes such amount as it deems reasonable and necessary for the maintenance of roads within the interstate system of highways, the primary system of ~~State~~ *state* highways, the secondary system of ~~State~~ *state* highways and for urban street payments made pursuant to §§ 33.1-41 and 33.1-43 and town street maintenance payments made pursuant to § 33.1-80, et seq. of this Code.

B. After funds are set aside for administrative and general expenses and pursuant to other provisions in this title which provide for the disposition of funds prior to allocation for highway purposes, and after allocation is made pursuant to subsection A of this section, the State Highway and Transportation Commission shall allocate each year the remaining funds available for highway purposes, exclusive of federal funds for the interstate system, among the several highway systems for construction first pursuant to § *s* 33.1-23.1:1 *and 33.1-23.1:2*, and then as follows:

1. Fifty ~~per centum~~ *percent* of said remaining funds shall be allocated to the primary system of ~~State~~ *state* highways, including the arterial network, and to the interstate system as federal matching funds.

2. Twenty-five ~~per centum~~ *percent* of said remaining funds shall be allocated to urban highways for ~~State~~ *state* aid pursuant to § 33.1-44.

3. Twenty-five ~~per centum~~ *percent* of said remaining funds shall be allocated to the secondary system of state highways; ~~provided,~~ however, ~~that~~ the total of the funds allocated

to the secondary system for construction under this subsection and the funds allocated for maintenance of the secondary system under § 33.1-23.1 A shall not be less than twenty-eight ~~per centum~~ *percent* of funds available to the Highway and Transportation Commission for highway purposes, exclusive of federal funds for the interstate system.

§ 33.1-23.1:2. Special bridge fund created; allocations.—Before funds are allocated for highway construction pursuant to subsection B of § 33.1-23.1, a fund shall be established to provide for special bridge needs throughout the Commonwealth. This fund shall consist of all federal aid available for bridge construction and replacement and required state matching funds therefor.

Allocations shall be made by the State Highway and Transportation Commission from this fund to specific projects on the basis of (i) need as determined by inspections and surveys conducted by the Department of Highways and Transportation, and (ii) the volume of traffic per lane using the facility.

Allocation of funds from this fund to bridge replacement or construction shall not operate to reduce the amount of funds otherwise allocable to any district or locality.

§ 33.1-23.4. Allocation of funds within secondary system; special road fund.—A. From the funds allocated to the secondary system of ~~State~~ *state* highways pursuant to § 33.1-23.1 B 3 the State Highway and Transportation Commission shall set aside a sum not to exceed ~~two and one-half million dollars~~ *$2,500,000* annually to establish and maintain a special road ~~and bridge~~ fund from which the Commission may make allocations, by need, as determined by the Commission, for use in counties in the secondary system of ~~State~~ *state* highways for road ~~or bridge~~ construction or replacement.

B. After allocation pursuant to subsections A and D, each year an amount equal to that allocated to the secondary system for construction in fiscal year 1976-77 shall be set aside and distributed among the counties in the system in the same amounts as each such county received for that fiscal year; but, in the event the funds remaining after allocation under subsections A and D do not equal that available for such purposes in fiscal year 1976-77, each county's allocation for construction shall be diminished in proportion to the percentage of the shortfall of such amount.

C. The funds remaining after moneys are set aside under subsections A, B, and D shall be apportioned among the several counties in the secondary system by the State Highway and Transportation Commission so that each such county shall be allocated a share of such funds equal to the proportion that such county bears to the ~~State~~ *Commonwealth* as a whole in terms of area, population, secondary road mileage, vehicle registration and vehicle miles traveled, each factor given equal weight. The factor of secondary road mileage, as applied in this subsection, shall, in addition to actual mileage, be weighted to include one additional mile for each nonsurface treated mile in the secondary system which carries fifty to ninety-nine vehicles per day ~~(V.P.D.)~~ , and two additional miles for each nonsurface treated mile in the system which carries ~~one hundred~~ *100* or more vehicles per day.

D. Before allocating funds under subsection B of this section the Commission may provide for exceptionally heavy expenditures for repairs or replacements made necessary by highway damage resulting from accidents, severe weather conditions, ~~from~~ acts of God or vandalism.

Proposed Bill No. 10.

A BILL to amend and reenact § 33.1-23.2 of the Code of Virginia, relating to allocation of funds for primary highway construction.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.2 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.2. Allocation of funds for interstate system and primary system.—A. The State Highway and Transportation Commission shall allocate such funds as are available under §33.1-23.1 B 1 to the primary system of ~~State~~ *state* highways, including the arterial system, for construction and shall apportion such funds among the ~~eight~~ ~~construction~~ ~~districts~~ *territories of the several planning districts of the Commonwealth* so that each ~~construction~~ *planning* district shall be allocated a share of such funds equal to the proportion that such construction district bears to the ~~State~~ *Commonwealth* as a whole in terms of: area, population and primary road mileage, these factors weighted forty percent; and vehicle registration, weighted forty percent; and, lane mile need, weighted twenty percent.

B. The Commission is hereby authorized to utilize as great a portion of such district funds as it deems necessary for federal interstate matching.

C. Notwithstanding subsection A of this section, the Commission may provide for exceptionally heavy expenditures for repairs or replacements made necessary by highway damage resulting from accidents, severe weather conditions, acts of God or vandalism.

D. Such funds allocated to the interstate and primary systems shall, as far as possible, be allotted prior to the commencement of the fiscal year and public announcement made of such allotment but the Commission shall not approve such allotment until after public hearing at which political subdivisions of the ~~State~~ *Commonwealth* and interested citizens may be heard.

In any case where any allotment of funds is made under this subsection to any county, all or a part of which subsequently is incorporated as or into a city or town, such allocation shall not be impaired thereby and the funds so allocated shall be expended as if such county or any part thereof had never become an incorporated city, but that portion of such city shall not be eligible to receive funds as a city during the same year it receives the funds allocated as a county or as any part of a county.

Proposed Bill No. 11.

A BILL to amend and reenact § 33.1-23.2 of the Code of Virginia, relating to allocation of construction funds to primary highways.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.2 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.2. Allocation of funds for interstate system and primary system.—A. The State Highway and Transportation Commission shall allocate such funds as are available under § 33.1-23.1 B 1 to the primary system of ~~State~~ *state* highways, including the arterial system, for construction and shall apportion such funds among the eight construction districts so that each construction district shall be allocated a share of such funds equal to the proportion that such construction district bears to the ~~State~~ *Commonwealth* as a whole in terms of : ~~area,~~ population and primary road *lane* mileage, ~~these factors~~ *with population*

weighted ~~forty~~ *eighty* percent ; and ~~vehicle registration,~~ *primary road lane mileage* weighted ~~forty percent; and, lane mile need, weighted~~ twenty percent.

B. The Commission is hereby authorized to utilize as great a portion of such district funds as it deems necessary for federal interstate matching.

C. Notwithstanding subsection A of this section, the Commission may provide for exceptionally heavy expenditures for repairs or replacements made necessary by highway damage resulting from accidents, severe weather conditions, acts of God or vandalism.

D. Such funds allocated to the interstate and primary systems shall, as far as possible, be allotted prior to the commencement of the fiscal year and public announcement made of such allotment but the Commission shall not approve such allotment until after public hearing at which political subdivisions of the ~~State~~ *Commonwealth* and interested citizens may be heard.

In any case where any allotment of funds is made under this subsection to any county, all or a part of which subsequently is incorporated as or into a city or town, such allocation shall not be impaired thereby and the funds so allocated shall be expended as if such county or any part thereof had never become an incorporated city, but that portion of such city shall not be eligible to receive funds as a city during the same year it receives the funds allocated as a county or as any part of a county.

Proposed Bill No. 12.

A BILL to amend and reenact § 33.1-23.3 of the Code of Virginia, relating to allocation of urban system highway construction funds.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.3 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.3. Allocation of funds for urban highways.–Such funds as are allocated to urban highways pursuant to §33.1-23.1 B 2 shall be apportioned among the cities and towns of this ~~State~~ *Commonwealth* by the State Highway and Transportation Commission ~~taking into account statewide urban construction needs~~ *in such a manner that each city or town to which these funds are allocable receives the same proportion of total funds available as the population of that city or town bears to the total population of all cities and towns among which such funds are allocable . No allocation hereunder shall be made to any city of town which does not have an urban project or projects approved for construction by the Highway and Transportation Commission and in no case shall the allocation to any city or town exceed the total estimated value of the project or projects for which funds are allocated.* Such funds shall, as far as possible, be allotted prior to the commencement of the fiscal year and public announcement made of such allotment ; ~~but the Commission shall not approve such allotment until after public hearing at which political subdivisions of the State and interested citizens may be heard~~ .

Proposed Bill No. 13.

A BILL to amend and reenact § 33.1-23.4 of the Code of Virginia, relating to the special road and bridge fund and to allocation of funds within the secondary highway system.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.4 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.4. Allocation of funds within secondary system; special road and bridge fund.—A. From the funds allocated to the secondary system of ~~State~~ *state* highways pursuant to § 33.1-23.1 B 3 the State Highway and Transportation Commission shall set aside a sum not to exceed ~~two and one-half million dollars~~ *$2,500,000* annually to establish and maintain a special road and bridge fund from which the Commission may make allocations, by need, as determined by the Commission, for use in counties in the secondary system of ~~State~~ *state* highways for road or bridge construction or replacement.

B. ~~After allocation pursuant to subsections A and D, each year an amount equal to that allocated to the secondary system for construction in fiscal year 1976-77 shall be set aside and distributed among the counties in the system in the same amounts as each such county received for that fiscal year; but, in the event the funds remaining after allocation under subsections A and D do not equal that available for such purposes in fiscal year 1976-77, each county's allocation for construction shall be diminished in proportion to the percentage of the shortfall of such amount.~~

C. The funds remaining after moneys are set aside under subsections A , ~~B,~~ and D *of this section* shall be apportioned among the several counties in the secondary system by the State Highway and Transportation Commission so that each such county shall be allocated a share of such funds equal to the proportion that such county bears to the ~~State~~ *Commonwealth* as a whole in terms of area, population, secondary road mileage, vehicle registration and vehicle miles traveled, each factor given equal weight. The factor of secondary road mileage, as applied in this subsection, shall, in addition to actual mileage, be weighted to include one additional mile for each nonsurface treated mile in the secondary system which carries fifty to ninety-nine vehicles per day ~~(V.P.D.)~~ , and two additional miles for each nonsurface treated mile in the system which carries ~~one hundred~~ *100* or more vehicles per day.

D. Before allocating funds under subsection ~~B~~ *C* of this section , the Commission may provide for exceptionally heavy expenditures for repairs or replacements made necessary by highway damage resulting from accidents, severe weather conditions, from acts of God or vandalism.

Proposed Bill No. 14.

A BILL to amend and reenact § 33.1-23.4 of the Code of Virginia, relating to allocations of funds within the secondary system of state highways.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-23.4 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.4. Allocation of funds within secondary system; special road and bridge fund.—A. From the funds allocated to the secondary system of ~~State~~ *state* highways pursuant to § 33.1-23.1 B 3 the State Highway and Transportation Commission shall set aside a sum not to exceed ~~two and one-half million dollars~~ *$2,500,000* annually to establish and maintain a special road and bridge fund from which the Commission may make allocations, by need, as determined by the Commission, for use in counties in the secondary system of ~~State~~ *state* highways for road or bridge construction or replacement.

B. After allocation pursuant to subsections A and D, each year an amount equal to that allocated to the secondary system for construction in fiscal year 1976-77 shall be set aside

and distributed among the counties in the system in the same amounts as each such county received for that fiscal year; but, in the event the funds remaining after allocation under subsections A and D do not equal that available for such purposes in fiscal year 1976-77, each county's allocation for construction shall be diminished in proportion to the percentage of the shortfall of such amount.

C. The funds remaining after moneys are set aside under subsections A, B, and D shall be apportioned among the several counties in the secondary system by the State Highway and Transportation Commission so that each such county shall be allocated a share of such funds equal to the proportion that such county bears to the ~~State~~ *Commonwealth* as a whole in terms of area ; *and* population ; ~~secondary road mileage, vehicle registration and vehicle miles traveled, each factor given equal weight~~ *with population being weighted eighty percent, and area being weighted twenty percent* . ~~The factor of secondary road mileage, as applied in this subsection, shall, in addition to actual mileage, be weighted to include one additional mile for each nonsurface treated mile in the secondary system which carries fifty to ninety-nine vehicles per day (V.P.D.), and two additional miles for each nonsurface treated mile in the system which carries one hundred or more vehicles per day~~ *For the purpose of this section, "area" means the total land area of a county reduced by the area of any military reservations and state or national parks or forests within its boundaries and such other similar areas and facilities of five square miles in area or more, as may be provided by regulations of the Highway and Transportation Commission* .

D. Before allocating funds under subsection B of this section the Commission may provide for exceptionally heavy expenditures for repairs or replacements made necessary by highway damage resulting from accidents, severe weather conditions, from acts of God or vandalism.

Proposed Bill No. 15.

A BILL to amend and reenact §33.1-23.5 of the Code of Virginia, relating to highway fund payments to Arlington and Henrico Counties.

Be it enacted by the General Assembly of Virginia:

1. That §33.1-23.5 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-23.5. Funds for Arlington and Henrico.–Notwithstanding any other provision of law, ~~for fiscal year nineteen hundred seventy-six and thereafter~~ the Highway and Transportation Commission shall pay to the following counties which have withdrawn from the secondary system of ~~State~~ *state* highways under the provisions of §11 of Chapter 415 of the Acts of Assembly of 1932, and which have not elected to return, *for maintenance and administration,* to Henrico County an amount equal to ~~1.825 per centum of the net revenue available for highway purposes under Chapter 13 of Title 58 (§58-686 et seq.)~~ *$2,743 per lane-mile* for each fiscal year and to Arlington County an amount equal to ~~1.281 per centum of the net revenue available for highway purposes under said chapter~~ *$6,254 per lane-mile* for each fiscal year. ~~The allocations under this subsection shall be the only entitlements of Henrico and Arlington Counties with respect to the motor fuel tax levied under said chapter by virtue of having withdrawn from the secondary system. Further, notwithstanding any other provision of law to the contrary, the Commission shall, before~~

~~apportioning secondary funds derived from the nineteen hundred sixty-four and nineteen hundred sixty-six sessions of the General Assembly to the counties in the secondary system, pay to the counties which have withdrawn their roads from the secondary system a portion of such revenue equal to 1.825 per centum in the case of Henrico County and 1.281 per centum in the case of Arlington County. The entitlements of those counties from all other sources shall be computed as provided by law.~~ *These amounts shall be adjusted by the Commission annually to reflect maintenance funding increases or decreases for the state secondary highway system. Arlington County and Henrico County shall, in addition, each receive, for construction, an annual amount calculated in the same manner as payments for construction in the state secondary highway system are calculated.*

Payment of the funds shall be made in four equal sums in each quarter of the fiscal year, and shall be reduced, in the case of Arlington County, by the amount of federal aid urban funds credited to Arlington County, and, in the case of Henrico County, by the amount of federal aid secondary funds credited to Henrico County.

Proposed Bill No. 16.

A BILL to amend the Code of Virginia by adding a section numbered 33.1-41.1, and to repeal §§ 33.1-41, 33.1-43, and 33.1-80 of the Code of Virginia, relating to street maintenance payments to cities and certain towns.

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 33.1-41.1 as follows:

§ 33.1-41.1. Payments to cities and certain towns for maintenance of certain highways. –The State Highway and Transportation Commissioner, subject to the approval of the State Highway and Transportation Commission, shall make payments for maintenance of highways, as hereinafter provided, to: (i) all incorporated towns having more than 3,500 inhabitants according to the last preceding United States census; (ii) all incorporated towns which, according to evidence satisfactory to the State Highway and Transportation Commission, have attained a population of more than 3,500 since the last preceding United States census; (iii) all towns situated within one mile of the corporate limits of a city which had a population of more than 3,500 according to the United States census of 1930; and (iv) all cities operating under charters designating them as cities, regardless of their populations. Such payments, however, shall only be made if, in the opinion of the State Highway and Transportation Commission, such highways are maintained in accordance with the applicable standards of the State Highway and Transportation Commission.

No payments shall be made by the Commissioner to any such city or town unless the portion of the highway for which such payment is made either (a) has (i) an unrestricted right-of-way at least fifty feet wide and (ii) a hard-surface width of at least thirty feet; or (b) has (i) an unrestricted right-of-way at least eighty feet wide and (ii) has a hard-surface width of at least twenty-four feet and (iii) there are approved engineering plans for the ultimate construction of an additional hard-surface width of at least twenty-four feet within the same right-of-way; or (c) is (i) a cul-de-sac and (ii) has an unrestricted right-of-way at least forty feet wide and (iii) a turnaround that meets applicable standards of the State Highway and Transportation Commission; or (d) was eligible for such

payments under the laws of the Commonwealth in effect on January 1, 1984.

For the purpose of calculating allocations and making payments under this section, the Department shall divide affected highways into two categories, based on definitions established by the Federal Highway Administration: (i) principal and minor arterial roads, and (ii) collector roads and local streets. Payments to affected localities shall be based on the number of moving-lane-miles of highways or portions thereof available to peak-hour traffic in each category of highways in that locality. For the fiscal year 1985, payment to each city and town shall be an amount equal to $8,243 per moving-lane-mile for principal and minor arterials and $4,216 per moving-lane-mile for collector roads and local streets.

The Department of Highways and Transportation shall establish an index of statewide county maintenance allocations in the fiscal year 1985, and use changes in that index from year to year to calculate and put into effect changes in the base per-lane-mile rate payable under this section.

2. That §§ 33.1-41, 33.1-43, and 33.1-80 of the Code of Virginia are repealed.

Proposed Bill No. 17.

A BILL to amend and reenact § 33.1-221 of the Code of Virginia, relating to industrial and airport access roads.

Be it enacted by the General Assembly of Virginia:

1. That § 33.1-221 of the Code of Virginia is amended and reenacted as follows:

§ 33.1-221. Funds for access roads to industrial sites and airports; construction, maintenance, etc., of such roads.—(a) Notwithstanding any other provision of law, there shall be appropriated to the State Highway and Transportation Commission funds derived from taxes on motor fuels, fees and charges on motor vehicle registrations, road taxes or any other ~~State~~ *state* revenue allocated for highway purposes, which shall be used by the Commission for the purposes hereinafter specified, after deducting the costs of administration before any of such funds are distributed and allocated for any road or street purposes.

Such funds shall be expended by the Commission for constructing, reconstructing, maintaining or improving access roads within counties, cities and towns to industrial sites on which manufacturing, processing or other establishments will be built under firm contract or are already constructed and to publicly owned airports ; ~~in~~ . *In* the event there is no such establishment or airport already constructed , or for which the construction is under firm contract, a county, city, or town may guarantee to the Commission , by bond or other acceptable device , that such will occur and, should no establishment or airport acceptable to the Commission be constructed within the time limits of the bond, such bond shall be forfeited.

(b) In deciding whether or not to construct or improve any such access road, and in determining the nature of the road to be constructed, the Commission shall base its considerations on the cost thereof in relation to the volume and nature of the traffic to be generated as a result of developing the airport or the industrial establishment within the total industrial area. In any industrial park or airport, the total volume of traffic to be generated shall be taken into consideration in regard to the overall cost thereof. No such access road shall be constructed or improved on a privately owned plant site.

(c) Any access road constructed or improved under this section shall constitute a part of the secondary system of ~~State~~ *state* highways or the road system of the locality in which it is located and shall thereafter be constructed, reconstructed, maintained and improved as other roads in such system. *However, the Commission may provide for narrower pavement widths on access roads on which no parking will be permitted.*

Proposed Bill No. 18.

A BILL to amend the Code of Virginia by adding in Chapter 10 of Title 33.1 a section numbered 33.1-391.1, relating to state aid in support of public mass transit, experimental transit projects and ride-sharing.

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding in Chapter 10 of Title 33.1 a section numbered 33.1-391.1 as follows:

§ 33.1-391.1. Aid to public mass transit.—In order to reduce traffic congestion, prolong the useful life of roads and bridges, conserve scarce energy resources, promote the growth and economic viability of the Commonwealth's urban and urbanizing areas, and to enhance the mobility of those Virginians to whom private motor vehicle transportation is unavailable, the General Assembly declares it to be the policy of the Commonwealth to make moneys available from the Highway Maintenance and Construction Fund to localities and transportation districts for public mass transit capital acquisition, ride-sharing and experimental transit projects, and mass transit operating costs. Such funds shall be made available, through the Directorate of Public Transportation, as may be provided by law. However, funds shall be allocated to projects in other categories before the Directorate shall allocate any moneys as general operating assistance.

Proposed Resolution

Requesting the Virginia Department of Highways and Transportation to develop and implement a pavement management system.

WHEREAS, a pavement management system is used to collect and analyze data on highway pavement conditions and monitor changes over time; and

WHEREAS, a pavement management system can make possible the establishment of an objective pavement quality "trigger" for maintenance activities, without which the need for and most efficient timing of overlays and maintenance replacement work cannot be fixed with certainty; and

WHEREAS, the 1982 and 1983 Appropriations Acts (Item 649.3) required the Department of Highways and Transportation to develop and implement "...an up-to-date pavement management system which provides data on pavement and bridge conditions on all highway systems"; and

WHEREAS, such pavement management system was to have been developed by January 1, 1983, but is still incomplete; now, therefore, be it

RESOLVED by the Senate of Virginia, the House of Delegates concurring, That the Virginia Department of Highways and Transportation is requested to accelerate the development and implementation of a pavemenmt management system, as required by the 1982 and 1983 Appropriations Acts. In order that the General Assembly monitor the

Department's progress, the Commissioner of Highways and Transportation is requested periodically to report on the status of the pavement management system to the Senate Committee on Transportation, the Senate Committee on Finance, the House Committee on Roads and Internal Navigation, and the House Committee on Appropriations. The Department is further requested to ensure that sufficient priority will be given to the development of the pavement management system for that system to be in use in the budgeting process for the 1986-1988 biennium.

Official Use By Clerks	
Agreed to By The Senate	**Agreed to By The House of Delegates**
without amendment ☐	without amendment ☐
with amendment ☐	with amendment ☐
substitute ☐	substitute ☐
substitute w/amdt ☐	substitute w/amdt ☐
Date: _____	Date: _____
_____	_____
Clerk of the Senate	Clerk of the House of Delegates

LD0653101

HOUSE BILL NO. 82

Offered January 11, 1984

A BILL to amend the Code of Virginia by adding a section numbered 33.1-18.1, relating to the taking of traffic counts by the Department of Highways and Transportation.

Patrons--Ball, Manning, Putney, Bagley, R. M., Morrison, Callahan, and Quillen

---

Referred to the Committee on Roads and Internal Navigation

Be it enacted by the General Assembly of Virginia:

1. That the Code of Virginia is amended by adding a section numbered 33.1-18.1 as follows:

§ 33.1-18.1. Traffic counts to be made.--The Commissioner, either through the Department of Highways and Transportation or through contracts with the several planning district commissions, shall take counts of the traffic using the highways within the systems of highways in the Commonwealth. Such counts shall be taken at such locations and with such frequency as shall be necessary to supply statistically valid information on vehicle miles traveled, the direction and volume of traffic flow, the proportion of vehicle types comprising the traffic on each highway system, and such other factors as may prove necessary or desirable in performing appropriate allocations of funds to the several systems and localities.

Official Use By Clerks	
Passed By The House of Delegates	**Passed By The Senate**
without amendment ☐	without amendment ☐
with amendment ☐	with amendment ☐
substitute ☐	substitute ☐
substitute w/amdt ☐	substitute w/amdt ☐
Date: _____	Date: _____
_____	_____
Clerk of the House of Delegates	Clerk of the Senate

LD1000101

HOUSE BILL NO. 83

Offered January 11, 1984

A BILL to amend and reenact §§ 33.1-223.1 and 33.1-391 of the Code of Virginia, relating to data on public transit operations.

Patrons--Ball, Manning, Putney, Bagley, R. M., Morrison, Callahan, and Quillen

---

Referred to the Committee on Roads and Internal Navigation

Be it enacted by the General Assembly of Virginia:

1. That §§ 33.1-223.1 and 33.1-391 of the Code of Virginia are amended and reenacted as follows:

§ 33.1-223.1. Statements to be filed with Commission by transit systems.--Any transit system as defined in § 15.1-1344 which conducts its operations within the exclusive jurisdiction of any county, city or town or within the boundaries of any district as defined in § 15.1-1344, and any jurisdiction contiguous thereto, shall file annually with the State Highway *and Transportation* Commission such financial and other statistical data as the State Highway *and Transportation* Commission shall require in order to effectively administer the provisions of § 46.1-167 , *and shall file with the Directorate of Public Transportation, at such times as the Directorate shall require, such information as the Directorate shall require to carry out its duties under paragraph E of § 33.1-391* .

The provisions of this section shall not be construed so as to exempt any such transit system from any provision of law or regulation made pursuant to law which requires the filing of data with any other agency of the Commonwealth.

§ 33.1-391. Responsibilities of Directorate.--The Directorate shall have the following responsibilities:

A. Determine present and future needs for and economic feasibility of providing public transportation facilities and services in the Commonwealth;

B. Formulate and implement plans and programs for the improvement, development and coordination of public transportation facilities and services in the Commonwealth;

C. Develop criteria for the evaluation of public transportation plans and programs;

D. Investigate matters affecting the economic and efficient operation of public transportation activities;

E. Develop ~~appropriate~~ *uniform financial and operating* data on *all* public transportation activities in the Commonwealth *; develop specific methodologies for the collection of such data by public transit operators; regularly and systematically verify such data by means of financial audits and periodic field reviews;* and *develop* such other information as may be required to *allocate public transportation assistance or evaluate the performance and* improve the economy or efficiency of public operations in the Commonwealth;

F. Maintain liaison with state, local, district and federal agencies or other entities, private and public, having responsibilities for public transportation programs;

G. Administer grants from the Urban Mass Transit Administration and other agencies of the United States government for public transportation purposes with approval of the Commission and to comply with all conditions attendant thereto;

H. Administer state grants for public transportation purposes with approval of the Commission.

Official Use By Clerks	
Passed By The House of Delegates	**Passed By The Senate**
without amendment ☐	without amendment ☐
with amendment ☐	with amendment ☐
substitute ☐	substitute ☐
substitute w/amdt ☐	substitute w/amdt ☐
Date: _____	Date: _____
_____	_____
Clerk of the House of Delegates	Clerk of the Senate

APPENDIX C

AGENCY AND LOCAL GOVERNMENT RESPONSES TO THE DRAFT REPORT

As part of an extensive data validation process, the draft report of House Document No. 11 was distributed to members of the General Assembly, local governments, and other organizations for review and comments. The written responses are provided in this Appendix.

Appropriate technical corrections resulting from the written responses have been made in the final report. Page references in the responses relate to the draft report and may not correspond to page numbers in this final report.

COMMONWEALTH of VIRGINIA
DEPARTMENT OF HIGHWAYS & TRANSPORTATION
1221 EAST BROAD STREET
RICHMOND, 23219

December 9, 1983

Mr. Ray D. Pethtel
Director, Joint Legislative Audit
& Review Commission
910 Capitol Street, Suite 1100
Richmond, Virginia 23219

Dear Mr. Pethtel:

The Department has received your letter and exposure draft, dated December 1, 1983, Equity of the Current Provisions for Allocating Highway and Transportation Funds in Virginia. In furthering your efforts to prepare a document which presents a discussion of the public policy issues, we have many corrections and questions related to clarifying the information and alternative solutions presented in the exposure draft. Only two are discussed in this letter. A list of the other corrections, questions and clarifications is attached.

Before I begin with the substance of the report, I must state that these remarks are in no way to be construed as a comprehensive or complete review of the document. One week for review has not been adequate, especially in light of the fact that the JLARC staff spent two and one-half years compiling this report. We expect to continue to review and analyze the report in order to have a complete understanding of its contents. In order to conduct this analysis, we are requesting specific data be shared with the Department. Particularly, the Department requests the statistical analysis that is the basis of the recommendations relating to primary system allocations being based on planning districts including details of any data which were trimmed by the technique of residual analysis referred to in the interim report.

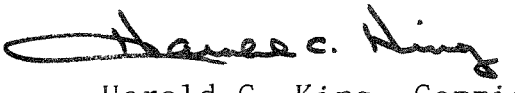
In our preliminary review of the report, the most serious error to date which appears to have been made relates to how the allocation process currently works and the calculation of unpaved road funds. On page 30, the first sentence of the first paragraph is incorrect. I refer you to §§33.1-23.1 and 33.1-23.1:1. Other funding items are taken off the top of the fund before the unpaved road funds

are calculated on the remaining funds. I strongly urge you to recalculate and verify for us Tables 5 through 7 which all appear to be erroneous. Several incorrect relationships are shown in Figure 3 depicting the current distribution of Highway Maintenance and Construction Funds. Attached is a copy of a corrected chart to replace your Figure 3 on page 13.

Omitted from the report is a discussion and analysis of what the financial effect of all the recommendations would be. As stated on page 3 of the introductory portion of the report, this is a "zero sum game." There are no more available highway maintenance and construction dollars. While some tables show large system gains of as much as $10 million dollars, this means that $10 million less revenue will be allocated in another portion of the formula. Has JLARC staff conducted any analysis to see which combinations of alternatives could be funded from existing sources and which additional ones would require new or additional revenue sources? Was any cost analysis of a package (or packages) with the 11 suggested elements from page 178 conducted? If this were done, we strongly urge this be made a part of the report.

Until the errors, omissions and clarifications are made and the Department receives the requested data and a revised report, we will be unable to complete our review of the issues and alternatives presented in this report.

Sincerely,

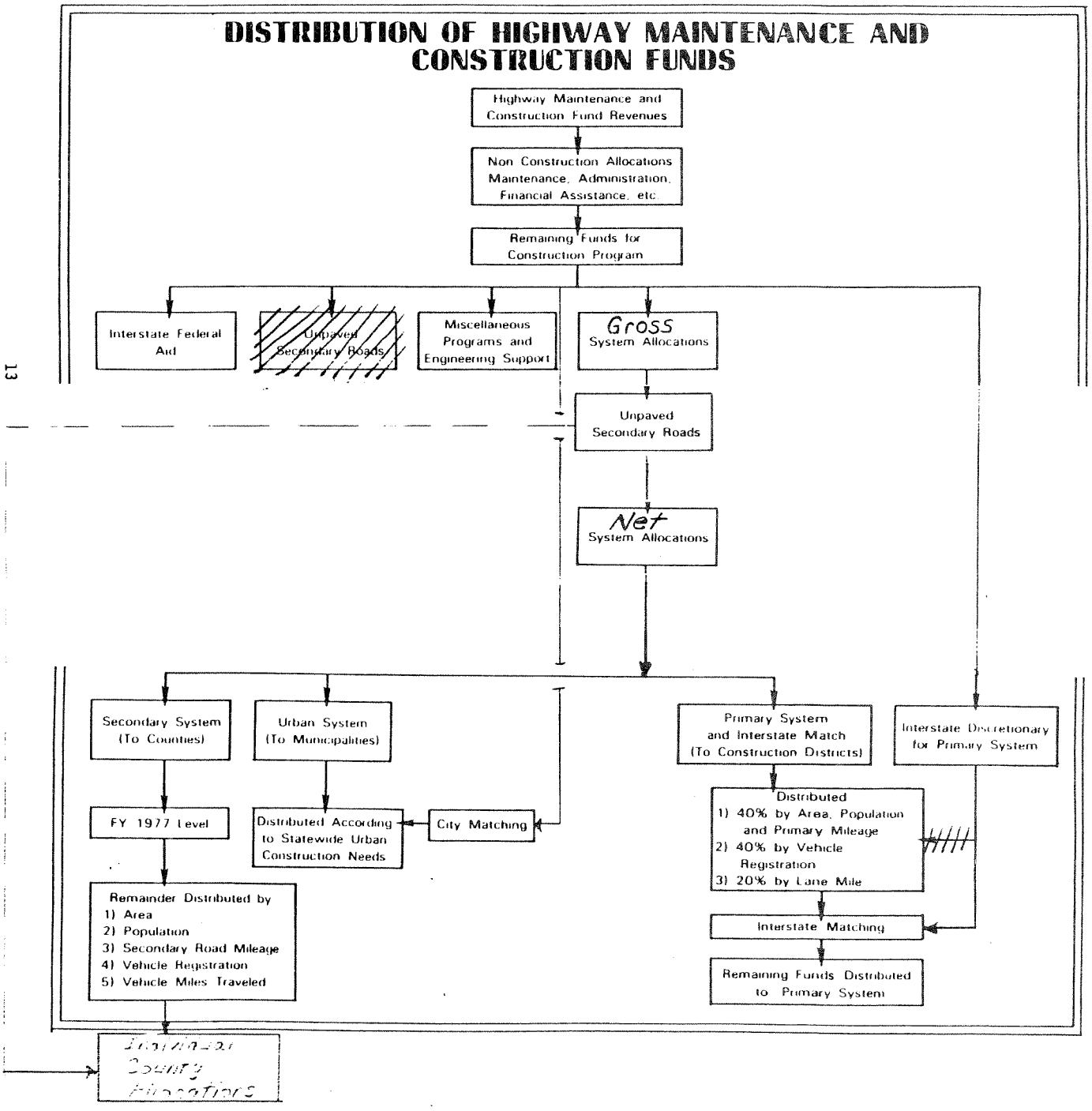


Harold C. King, Commissioner

Attachment

cc: The Honorable Andrew B. Fogarty

Figure 3


DISTRIBUTION OF HIGHWAY MAINTENANCE AND CONSTRUCTION FUNDS
Highway Maintenance and Construction Fund Revenues
Non Construction Allocations Maintenance, Administration, Financial Assistance, etc.
Remaining Funds for Construction Program
Interstate Federal Aid
Unpaved Secondary Roads
Miscellaneous Programs and Engineering Support
Gross System Allocations
Unpaved Secondary Roads
Net System Allocations
Secondary System (To Counties)
Urban System (To Municipalities)
Primary System and Interstate Match (To Construction Districts)
Interstate Discretionary for Primary System
FY 1977 Level
Distributed According to Statewide Urban Construction Needs
City Matching
Distributed
1) 40% by Area, Population and Primary Mileage
2) 40% by Vehicle Registration
3) 20% by Lane Mile
Remainder Distributed by
1) Area
2) Population
3) Secondary Road Mileage
4) Vehicle Registration
5) Vehicle Miles Traveled
Interstate Matching
Remaining Funds Distributed to Primary System

169

Attachment
December 9, 1983

VIRGINIA DEPARTMENT OF HIGHWAYS AND TRANSPORTATION
Error, Questions and Clarification
on the
JLARC Exposure Draft:
Equity of the Current Provisions for Allocating Highway and Transportation Funds in Virginia

Executive Summary, Pages i-iii, Report, Pages 2-6

1. Page iii, line 13: The reference to the Interstate System being "near completion" is incorrect in terms of dollars. While the majority of mileage has been completed, one billion dollars is necessary to complete the system which will take approximately six more years. This is contingent on funding availability.

2. Page iii, line 16: What "major goals" have been completed that made reassessment of allocation methods and procedures necessary? Is this a reference in part to the Interstate completion referenced above?

HIGHWAY CONSTRUCTION ALLOCATIONS, Pages iii-vii, Pages 11-75

System Allocations and Special Funds, Pages v-vii, Pages 26-38

3. Page v, second paragraph: Reference to "use of primary system funds in each district to match the interstate federal aid adversely affects several districts' primary system." It appears that there needs to be an acknowledgement that the interstate system was created by the General Assembly from the primary system. It is connected to, and a part of, the primary system because they serve similar needs.

4. Page vi, Recommendation 2: Please explain what appears to be an inconsistency between Recommendation 2 and the statement in the third paragraph which recommends that "the funding priority should be placed on unpaved roads with 100 vpd." Whose funding priorities should be based on the 100 vpd versus the suggested recommendation that the General Assembly continue the 50 vpd priority?

5. Page vii, Recommendation 2: Clarify on what basis the bridge funds should be allocated. Is the allocation to be based solely on the State bridge inspection system? Also, clarify whether or not the Highway and Transportation Commission could set priorities in the broadest sense to account for cost-effectiveness or other factors in allocating these funds. Note that state statutes require that local matching funds must be forthcoming from localities and, therefore, should be included as a part of any special bridge fund. The local funds have been omitted in this recommendation.

6. Page 14, second sentence: The reference that Appalachian Funds are primarily federal pass-through dollars is not correct. These funds are matched with state dollars.

7. Page 20, sentence on line 7: It is an erroneous statement that the 23 factors are available on an annual basis. Five of the 23 factors would have to be especially collected in the manner in which JLARC staff appeared to use the data. Is there any analysis of what it would cost to collect the data for these factors or what the manpower requirements would be? We would appreciate having this analysis.

8. Page 25, first paragraph: With respect to the regression analysis, how many "outliers" were "trimmed" from the analysis? Please forward the Department all statistical data and reports used in this analysis.

9. Page 28, second paragraph, last sentence: This statement is incomplete. Not only are funds available for the primary system construction allocation reduced, the amounts for urban and secondary constructions are also reduced.

Regular System Allocations, Pages vii-viii, Pages 37-39

10. Page 30, Tables 5-7 and Figure 3: As noted in the cover letter of December 9, 1983, the first sentence of the first paragraph, Tables 5-7 and figure 3 are all incorrect. The statements and calculations of what items come "off the top" seem in error. The amounts calculated for the unpaved road fund appear incorrect. Please verify all the tables.

11. Also, as discussed in the cover letter: Where is the analysis of the financial costs of funding the necessary 11 elements of a transportation formula as listed on page 178? What combinations or packages are "fundable" given currently available revenue?

12. Page vii, line 23: Reference is made to an assumption that the 50-25-25 proportions for the construction program were representative of needs on various systems. On what basis is this assumption made?

Secondary System Allocations, Pages viii-ix, Pages 39-56

13. Page viii, second paragraph, first sentence: This statement is incorrect inasmuch as the grandfather provision does not apply to all secondary allocations, but rather it applies to secondary construction allocations only. See §33.1-23.4 B of the Code of Virginia.

Urban System Allocations, Pages ix-x, Pages 57-64

14. Page ix, third paragraph: The Code section referenced is incomplete since §33.1-43 also establishes part of the urban system.

15. Page 62, Option a-1: Why was the Bridge funding taken off the top and then added to the Urban System one-third allocation?

Primary System Allocation, Pages x-xi, Pages 65-72

16. Page xi, Recommendation 9: Please clarify this recommendation. Is the recommendation intended to imply that construction district boundaries should be changed to be coterminous with a group of PDCs for "aggregation" purposes. If not, what portion of a PDC's allocation will be aggregated to a construction district when part of a PDC lies outside the boundary of an existing construction district? What role will PDCs have in the allocation process? Has analysis been completed to determine the expense of an accounting system such as may be needed to implement this recommendation? Please provide all analysis pertinent to this issue.

Allocations for the 1990's, Pages xii-xiii, Pages 73-75

17. Page xii, Recommendation 10: What data are you suggesting the General Assembly may want to mandate for collection? What cost analysis and manpower analysis have been performed to determine that such data collection would be cost-effective.

COUNTY MAINTENANCE ALLOCATIONS Pages xii-xvii, Pages 76-108

18. Pages xiv-xv, Recommendations 13 and 14: These two recommendations are conflicting. If Recommendation 13 states that the use of the Pavement Management System must begin for FY 86-88 Biennium, then the Department would not be capable of carrying out the provisions of Recommendation 14 because of the time required to perform Recommendation 13.

19. Page xvi, Recommendation 16: Further explain the meaning of the phrase "annually review the need". What is the JLARC staff expectation of what the Department would need to do to carry out this recommendation.

20. Page 77, second paragraph: It is incorrect to state that weigh stations are funded from the maintenance budget.

21. Page 79, Table 16 and last sentence on the page: An error appears to have occurred in the table that is inconsistent with the verbage. Are the dollars in the last column of the chart real or constant dollars? They appear to be real dollars but the text states they are constant.

22. Page 83, first paragraph: The first sentence is erroneous in that resurfacing is only one factor in determining maintenance replacement.

23. Page 83, last sentence on page: The word "negotiate" incorrectly describes the process for funding these projects.

24. Page 84, heading: This section appears to be incorrectly titled since this is a discussion of maintenance replacement funding.

25. Page 84, line 4(1): It is not accurate to state that the budgeting process restricts maintenance replacement funding.

26. Page 84, first paragraph (2): What standard or definition of "reasonable and necessary" did JLARC staff utilize to determine what is required by the General Assembly? Please forward any information you may have on this. Also, what are the "legislative priorities" for maintenance other than "reasonable and necessary"? What role is the Highway and Transportation Commission perceived to have, or proposed to have, in the budgetary process since the report is silent on this subject?

27. Page 91, quoted material: The quoted information is misused. JLARC staff has misinterpreted which priority list is referenced in the document. The priority twelve is for placing the Payment Management System on the master plan for the on-line interactive systems environment for the Department. The Pavement Management System development has been an Information System Division priority two since 1982, only after the priority one Human Resource Planning System development.

28. Page 93, second paragraph: This paragraph needs further explanation. What data were used to make the assumptions in this paragraph on how threshold ratings were selected. What information was used to document the statement that various elements were not used by the Department? What data shows that a backlog of resurfacing work exists?

Snow Removal Budgeting, Pages xvi-xvii, Pages 99-106

29. Page xvi, Recommendation 17: Since the Department does not employ a separate snow removal labor force but employs people for ordinary maintenance and ordinary maintenance cannot be performed when it snows, how does the JLARC staff recommendation for a separate budget item for snow removal remedy the manpower budget allocation problem associated with snow removal?

30. Page 99, first paragraph: The statement that JLARC staff has provided its findings on the Maintenance Management System in a separate letter is not correct. A telephone call made this week to the JLARC staff indicated that the earliest this would be provided would be December 9th or 12th. The Department has not received this report.

URBAN STREET PAYMENTS, Pages xvii-xxii, Pages 109-139

31. Page xvii, line 19: The word "payment" is incorrect here. At this point, these are still allocations.

Equity of Current Statutory Provisions, Pages xvii-xxii, Pages 116-130

32. Page xviii, second paragraph, (2): What data were used and what analysis was conducted to determine that "payment rates do not equitably reflect actual costs"? Please submit this information.

33. Page xix, first paragraph: What information was provided by resident engineers? Did every resident engineer provide data or were only selected ones requested to provide data? How was the information verified and used? Were the data gathered by the resident engineers compared with current budgets? Please provide us with copies of this data.

34. Page xxi, Recommendation 22: What method does JLARC staff propose should be used for annually adjusting payments to cities and towns? How would the base for the index be established? What mixtures should be in the base? Does every city receive a minimum?

35. Page xxii, Recommendation 23: The Code section referenced for amendment here is erroneous. The correct section which should be amended is §33.1-43. Otherwise, the two sections would be in conflict

36. Page xxiii, Recommendation 24: Explain the rationale for the different analytical treatment for Arlington and Henrico Counties? On what basis are Arlington and Henrico to be treated differently in light of a flat rate proposed for urban street payments? Explain how the budgets on page 145 for Arlington and Henrico counties were generated? Please provide copies of all data.

37. Page xxiii, Recommendation 24: What would be the base for adjusting the maintenance and administration per lane mile rate? It appears that construction payments would be run through the secondary allocation process. How will the federal aid match be handled since State and Federal funds are commingled at this point and the two localities operate under separate federal aid programs? Are the Arlington and Henrico dollars part of the one-third secondary construction allocation funds? How does the JLARC staff propose a "lump sum" payment be made to the localities? Does this refer to the timing of the payment, quarterly v. annually, or does it refer to "lumping" Maintenance and Construction funds into one payment?

PUBLIC TRANSPORTATION ASSISTANCE, Pages xxiii-xxviii, Pages 149-176

38. Page 158, Table 27: The data have been updated since the Grefe report was completed. A copy of the updated information is attached.

39. Page xxv, line 14 and page 160: The statement that transit system performance is not measured is incorrect. Transit systems' performance has been measured and published since 1976 in statistical reports, although it was never intended to use this data in funding allocations. Also, on page 160, in the last paragraph, the first statement is incorrect inasmuch as the Public Transportation Division obtained a grant within several months of the publication of the 1981 JLARC staff report to finance a study of transit system performance evaluation in Virginia. This study is nearly complete and is referenced later in JLARC staff comments. The second statement is incorrect in that the FY 82 survey had been conducted and FY 82 data were available and provided to JLARC staff in February of 1983. Three systems were late in responding to our survey so the data were not complete until March.

40. Page 161, Recommendation 26: The recommendation that uniform financial data should be developed is redundant in that this is already being done in the Department. Clarification of the remainder of the recommendation is needed. Clarification is requested regarding JLARC staff's proposal for a program of systematic verification of data through periodic field reviews. Specifically, at what level of detail would the reviews be conducted, how often, and what resources would be required? Were other options considered?

41. Page 161, first sentence: It is stated that the financial data reported by VDHT did not conform to data collected by JLARC staff directly from the transit systems. We are interested in the reason for this inconsistency in the data and request a copy of the questions asked of the systems and the responses to determine whether the problem relates to differences in how the questions were structured or the information provided.

42. Page 162, last paragraph: The report states that "it does not appear from the (performance evaluation) study proposal, however, that the study will include recommendations on how the performance evaluations are to be used for improving transit management or for allocating transit resources." This statement is incorrect in that the study will include recommendations on how performance evaluations should be used.

43. Page 165, Recommendation 29: The recommendations suggest 3 to 5 percent of trust fund revenues be used for public transportation. How was the range derived? How does a percentage range improve predictability of funding? Please provide a copy of the analysis of this issue. Also, how can funding respond to increases in efficiency without an increase in total funds, or a reduction in funds from properties that have not increased but have held to a reasonable efficiency level.

44. Page 171, third paragraph: Regarding the use of operating expenses as a criteria for allocating funds, JLARC staff states "...its use, if not a direct incentive to increase costs, would be an indirect incentive not to operate in the most efficient manner." This statement is incorrect in that it pre-supposes that transit operators will spend more local money simply to access a proportionally much smaller increase in state aid.

45. Page 172, Recommendation 30: Why is there no discussion of allocation of public transportation funds based on need? Why are differences in localities not taken into consideration? Did JLARC staff survey other states to determine if and how performance measures have been used successfully for allocating financial assistance for public transportation? If so, the results of the survey are requested.

46. What evidence led to JLARC staff's conclusions concerning the split between funding capital grants, experimental grants, ridesharing grants, and operating assistance?

47. What policy or statewide objectives would be achieved by allocating operating assistance on the basis of each of the three alternatives proposed by JLARC staff? How would the factors proposed for each alternative address objectives?

48. What sort of funding distribution alternatives for public transportation did JLARC staff consider but reject or decide not to present in the report, and does JLARC staff have a specific alternative to propose?

49. What was the analytical basis for recommending general operating assistance for public transportation? What evidence suggests that this would be superior to the current funding program?

50. Please provide a detailed explanation and itemized listing of the factors used to develop tables 28, 29, and 30 as well as revised tables utilizing the data contained in the attachment to the memo.

51. What methods would JLARC staff recommend to minimize inequities that appear in tables 28, 29, and 30?

52. Please provide an explanation of proposed levels of state participation in expenses; i.e., operating expenses--state/local split, experimental projects, ridesharing projects.

53. Please provide clarification as to whether or not JLARC staff recommends state financial assistance for technical studies, and if so, how much, and from what source. At what level of state participation is financial assistance to be provided?

City Of Newport News

Virginia 23607

Office Of The City Manager

2400 Washington Avenue
(804) 247-8411

December 28, 1983

Mr. Gary T. Henry, Chairman
JLARC Advisory Network
Suite 1100, 910 Capital Street
Richmond, Virginia 23219

Dear Mr. Henry:

On behlaf of the City of Newport News, I would like to again commend the JLARC staff and commission on the quality of their work in reviewing the process for allocating highway and transportation funds in Virginia. JLARC has successfully addressed the many facets of this highly controversial and complex subject in its Final Report Briefing (dated December 12, 1983).

With respect to the specific recommendations of the Final Report, the City strongly supports the 100 percent population-based formula option (as shown on page 17) for distributing urban system highway construction funds to localities. The use of population as the sole formula factor will, in my opinion, avoid some of the data and definitional problems associated with the use of other factors such as "area" and "vehicle density." Moreover, it will provide an equitable basis for allocating funds because of the high correlation that population has with projected highway construction needs.

With regard to the urban maintenance payments, the City of Newport News is also in general agreement with the JLARC recommendations except in the following cases:

1) (Recommendation, page 26) In addition to the functional classifications of roads defined by FHWA, the City of Newport News believes that a separate maintenance payment category should be created for "bridges." It should be noted that JLARC has already recognized construction f ds for bridge replacement as a special need outside of the normal allocation process, but no similar provision or even separate allocation category has been established to allow for the extraordinary costs of urban bridge maintenance.

2) (First Recommendation, page 27) The City believes that payment rates for the different functional categories of urban streets should not be established on the same basis as for state maintenance on county roads. Higher street standards (e.g., curb and

gutter, storm sewer, street lights) are necessary in the more densely populated urban areas and consequently average city maintenance costs per lane mile are higher than costs per lane mile in rural county areas.

The following comments concerning public transportation assistance are also offered for your consideration:

1) (Recommendation, page 46) In light of the finding on page 45 that the financial needs of transit systems have shifted from capital to operating, is it appropriate to recommend that assistance for capital acquisition come "off the top" prior to any allocation for operating assistance? It is conceivable that a large capital request (i.e., by WMATA for rail equipment) could consume all of the available funds for a particular year and leave nothing for operating assistance, especially for the smaller transit systems. Either some cap on the amount of capital assistance coming "off the top" should be considered or else all transit assistance funds should be allocated by an appropriate formula.

2) (Funding Options, page 50) The results of the three operating assistance formula options for public transportation are highly inconsistent and suggest the need for a different approach. For example, the operating allocation for the Harrisonburg transit system varies from $8,459 (under Option PT-1) to $1,070,236 (under Option PT-2).

   A more desirable approach may be to recognize the widely different characteristics of transit properties throughout the state and to try to group them according to size and other system characteristics. For example, three categories (large urban, medium urban, and small urban/rural) could be established and a different formula (based upon system size and performance factors) used to allocate funds <u>within</u> each category. Some set of statutory limitations and annual General Assembly action could be used to allocate funds <u>among</u> these three categories.

Given the number of new recommendations not previously seen by members of the Advisory Network, I feel that it would be most appropriate to allow for a formal public hearing concerning the Final Report to be held (similar to that which was held for the Interim Report) in addition to this letter comment period. In this way, adequate time and opportunity will be provided to identify and deal with problem areas before submittal of these recommendations to the General Assembly.

The City of Newport News appreciates this opportunity to comment on the JLARC Final Report. Should you have any questions concerning these comments, please feel free to contact me.

Sincerely,

Randy W. Hildebrandt
Assistant City Manager

RWH:AAE:kds

cc: City Manager
Executive Director of
Pentran

City of Norfolk
Department of Public Works

JAN 6 1984

January 3, 1984

Mr. Glen S. Tittermary, Project Director
Joint Legislative Audit and Review Commission
910 Capitol Street
Richmond, Virginia 23219

Re: JLARC - Allocation of Highway and Transportation Funds in Virginia

Dear Mr. Tittermary:

At your briefing before the JLARC Commission on December 12, 1983, you issued a paper which outlined the provisions of your final report to be issued in January, 1984. You asked that comments be forwarded to your organization to be included in the briefing to be provided to the Commission at its meeting of January 10, 1984. The following is a summary of our evaluation of the data. For convenience, we have used the same headings that you used in your December 12th briefing.

INTERSTATE FUNDING - Endorse

UNPAVED ROADS ON SECONDARY SYSTEM - No comment

BRIDGE REPLACEMENT FUNDS - Endorse

REGULAR SYSTEM ALLOCATIONS - Endorse

SECONDARY SYSTEM HOLD-HARMLESS - No comment

SECONDARY SYSTEM FORMULA - No comment

URBAN SYSTEM FORMULA - We concur that the proposed distribution of urban funds by population (U-1 Final) is the most equitable of those which you have been studying. We continue to believe that a formula based on VMT should be developed as the most equitable for future implementation.

PRIMARY SYSTEM FORMULA - No comment

ADEQUACY OF DATA - Endorse the collection of traffic data as it is an essential element in planning for future highway needs.

ALLOCATIONS IN FUTURE - Endorse

URBAN STREET PAYMENTS - MAINTENANCE, PAYMENT CLASSES, Federal classification, generally are acceptable but establishment of categories of streets should be left to VDH&T as an administrative process. Otherwise, adjustments to the system can become overly burdensome. We recommend the three tier system.

7th Floor, City Hall Building • Norfolk, Virginia 23501

Re: JLARC - Allocation of Highway and Transportation Funds in Virginia

PAYMENT RATES - Single Statewide rates are endorsed as inequities have developed in the current system.

METHODS OF ADJUSTING PAYMENTS - Generally endorse. However, the methods of determining allocations for maintenance are critical to the ability of the City to provide an adequate street system for the traffic requirements in and through Norfolk. Any variations in this formula that would negatively impact our prevailing or future levels of support would be strenuously opposed as a drastic impact on our budget, system maintenance and urban street construction program.

URBAN PAYMENT STANDARDS - INDUSTRIAL ACCESS ROADS - Endorse

FUNDING OPTIONS - The three class option (USP-2) would compensate better for the increased cost of maintaining the high volume urban streets and would be preferred if this administrative proposal is adopted.

ARLINGTON - HENRICO - No comment

PUBLIC TRANSIT - CHANGING TRANSPORTATION NEEDS - Endorse

UNIFORM DATA FOR TRANSIT OPERATORS - To implement performance evaluation - Endorse

TRANSIT ALLOCATION - For good long term planning, it should be a fixed percentage which we recommend to be 3.5 to 4 percent of highway revenues.

FUNDING OPTIONS - BASIC PROGRAM - We endorse Formula PT-1.

COUNTY MAINTENANCE ALLOCATION - It is rare that all reasonable maintenance requests can be budgeted. Norfolk is currently on a 20 year resurfacing cycle due to a lack of funds. Continued restraint is advisable. See next item. Otherwise, no comment.

PAVEMENT MANAGEMENT SYSTEM - Suggest that General Assembly require the implementation of a pavement management system rather than "use part condition measures .... as a factor ..."

SNOW REMOVAL BUDGETING - No comment

We thank you for this opportunity to comment on your fine report.

Very truly yours,

Lawrence Gassman, P.E.
Director

COMMONWEALTH of VIRGINIA
COUNTY OF PRINCE WILLIAM
9250 Lee Avenue, Manassas, Virginia 22110 (703) 369-9200 Metro 631-1703

COUNTY EXECUTIVE
Robert S. Noe, Jr.

BOARD of COUNTY SUPERVISORS
Guy A. Guiffrē
John D. Jenkins
Donald E. Kidwell
Edwin C. King
G. Richard Pfitzner
Joseph D. Reading
Kathleen K. Seefeldt

January 3, 1984

Mr. Glen S. Tittermary
Project Director
Highway Allocations Study
910 Capitol Street, Suite 1100
Richmond, VA 23219

Dear Mr. Tittermary:

Prince William County wishes to applaud the Joint Legislative Audit and Review Commission and its staff for a thorough evaluation of Allocating Highway Construction Funds in Virginia. Your diligent research and exacting methodology have exposed flaws in the current highway allocation process that merit the immediate attention of the General Assembly. Prince William County endorses your recommendations for corrective legislation, particularly recommendation number 5 which would repeal the 1977 "hold harmless provision."

After reviewing JLARC's proposed formulas for the allocation of secondary system funds, the County has concluded that any of the three would represent an improvement over the distribution scheme currently in place. As your study points out, the most reliable indicator of secondary system needs is a formula that accurately measures local traffic. Option S-3, which is "strongly demand oriented," appears to do this especially well by balancing area (20 percent) with vehicle miles of travel on the secondary system (80 percent), thus yielding a multiple determination coefficient of .89.

Your recommendations for allocating both unpaved road and primary system funds also appear to be well-founded. In the case of primary allocations, Prince William County again has concluded that the proposed formulas are superior to the present method of fund distribution. The County does question, however, the utility of allocating these funds by planning district commissions, rather than by construction districts. The format used in Tables 14 (page 56) and 15 (page 58) for illustrating funding options P-1 and P-2 should be revised to include data for each construction district and locality, as well as for planning district commissions, in order to demonstrate more clearly the fiscal impact of recommendation No. 9. With this qualification, option P-2, which measures vehicle registration as opposed to population, seems to be the better of the two JLARC regression equations in that it offers a

a higher degree of accuracy with an R square of .89. In addition, it would be interesting to know the R square yielded by a third formula balancing vehicle miles of travel with lane mileage.

Prince William County was pleased to see the scope of the study expanded in the December 21 draft to include county maintenance funds, urban street payments, public transportation assistance, and aid for Arlington and Henrico Counties. Your analysis of these other major programs funded from the Highway Maintenance and Construction Fund has proved to be as enlightening as your review of highway construction allocations. The County has specific comments in two of these program areas.

First, regarding maintenance allocations, Prince William County is particularly cognizant of problems with current snow removal budgeting procedures. Recommendation No. 17, by providing "for the budgeting of snow removal as a separate maintenance item," promises to correct many of the existing problems.

Second, the County suggests that you add a new table (17-A) for "typical maintenance replacement expenditures exclusive of replacement work caused by weather damage." Table 17, which does not exclude expenditures for flood and water storm damage, appears upon cursory review to contradict your finding (paragraph 1, page 66) that "the general trend for maintenance replacement has been for expenditures to increase."

Finally, in the area of public transportation, the County recommends caution in the establishment of an allocation formula "specified by statute." A statutory allocation formula would undoubtedly lend greater funding predictability to the State Assistance Program. At the same time, however, it would conceivably render the Program less flexible in responding to changing needs and priorities. Public transportation goals--federal, state, and local--are presently in a state of flux, and are not readily subject to quantification. For example, in the course of but a few years, public interest in both experimental public transit and ridesharing projects has risen substantially. A 1981 commuter study prepared for the Virginia Department of Highways and Transportation in response to House Joint Number Resolution 150 cited the following as its principal conclusion:

> ...regardless of urban area size or characteristics, ridesharing modes offer virtually the only feasible modal alternatives to the single-occupant auto for long-distance commuting.

> This conclusion applies generally to worktrips(sic) of more than 5 miles in length for most medium-sized urban areas and all small urban areas, and the work trips of more than ten miles for large urban areas.

Although the Legislature's first items of concern may continue to be capital acquisition and operating assistance for existing public transit systems, experimental and ridesharing projects deserve to receive more than the two percent of available public transportation funds recommended by JLARC. Under the JLARC proposal, the experimental public transit and ridesharing project funds could each receive a statewide annual appropriation as low as $196,072.35.

Prince William County appreciates JLARC's invitation for written comments and would like to reiterate its general support for those recommmendations in the study pertaining to highway construction and county maintenance allocations. The Commission and its staff are to be commended for their fine effort.

Very truly yours,

Robert S. Noe, Jr.

Attachment

COUNTY OF ALBEMARLE

OFFICE OF BOARD OF SUPERVISORS
401 McINTIRE ROAD
CHARLOTTESVILLE, VIRGINIA 22901-4596

January 4, 1984

Mr. Glen S. Tittermary, Project Director
Highway Allocations Study - JLARC
910 Capitol Street, Suite 1100
Richmond, Virginia 23219

Dear Mr. Tittermary:

Enclosed please find resolution adopted by the Albemarle County Board of Supervisors on January 3, 1984, in reference to JLARC's report on the Equity of Current Provisions for Allocating Highway Construction Funds in Virginia.

Very truly yours,

Lettie E. Neher

(Miss) Lettie E. Neher

len/

Enclosure

cc: Mr. Keith Mabe, Chief, Albemarle
County Department of Housing and Community Development

R E S O L U T I O N

WHEREAS, the 1982 Report of the Joint Legislative Audit and Review Commission on Equity of Current Provisions for Allocating Highway Construction Funds in Virginia found that the present allocation system for highway funds is not responsive to the needs of each of the highway systems in the Commonwealth and could result in inequitable allocations; and

WHEREAS, the Albemarle County Board of Supervisors has reviewed the Report and found that the recommendations represent a more equitable and responsive approach to the allocation of state highway construction funds;

NOW, THEREFORE, BE IT RESOLVED that the Albemarle County Board of Supervisors expresses its support for the following recommendations to the Joint Legislative Audit and Review Commission and members of the General Assembly representing Albemarle County:

(1) The General Assembly should amend the Code of Virginia to require that funds necessary to match Federal interstate aid be set aside from the total funds available for construction. Funds for the match should not be deducted from a district's primary allocation.

(2) The General Assembly should amend Section 33.1-23.1:1 of the Code of Virginia to increase the percentage of funds for unpaved roads from 3.75 percent, not to exceed 7.6 percent.

(3) In order to ensure the use of available Federal aid, the General Assembly should amend the Code of Virginia to provide for funding special bridge needs outside of the allocation process.

(4) The General Assembly should amend Section 33.1-23.1B of the Code of Virginia to adjust the proportion of funds provided to each system to one-third.

(5) The General Assembly should amend Section 33.1-23.4 of the Code of Virginia to end the use of the Fiscal Year 1977 allocations as an allocation requirement.

(6) The General Assembly should amend the current statutory formula for allocating secondary system funds and utilize Option S-3 which measures demands generated by non-residents as well as local residents.

(7) The General Assembly should amend the Code of Virginia to revise the current statutory formula for allocating primary system funds to include independent factors which are weighted in proportion to their relationship to construction needs.

(8) The Secretary of Transportation should ensure that a reassessment of highway construction allocations is made on a periodic basis as part of the Statewide Transportation Planning process.

(9) The General Assembly should amend Section 33.1-391E of the Code of Virginia to require the Directorate of Public Transportation to collect and report data which may be required for the allocation of public transportation assistance.

(10) The General Assembly should amend Section 33.1-23.1 of the Code of Virginia to establish a public transportation allocation and utilize Option PT-2 which provides some efficiency factor to gauge how well a system operates for each dollar of operating costs.

(11) In order to promote certain efficiency incentives, the General Assembly should adopt a formula for the purpose of allocating public transportation assistance.

AND, FURTHER RESOLVED that a copy of these recommendations be forwarded to the Joint Legislative Audit and Review Commission and members of the General Assembly representing Albemarle County.

* * * * *

I, Lettie E. Neher, do hereby certify that the foregoing writing is a true, correct copy of a resolution adopted by the Board of Supervisors of Albemarle County, Virginia, at an adjourned meeting held on January 3, 1984.

Lettie E Neher

Clerk, Board of County Supervisors

COMPOOL, Inc.
The Metropolitan Richmond Ridesharing Service
205 East Franklin Street, P.O. Box 12182, Richmond, Virginia 23241 (804) 643-RIDE

January 6, 1984

Mr. Glen S. Tittermary
Project Director, Highway Allocation Study
Joint Legislative Audit and Review Commission
910 Capitol Street
Suite 1100
Richmond, Virginia 23219

Dear Mr. Tittermary:

On behalf of COMPOOL's Board of Directors, I offer the following comments on each of the public transportation recommendations included in JLARC's draft report on the equity of current provisions for allocating highway construction funds in Virginia.

If the General Assembly rescinds its general prohibition on the use of State aid for operating assistance (Recommendation #25), then the allocation should be made only after meeting the capital needs of transit systems, administrative needs of ridesharing agencies and the needs of experimental projects. By funding capital, ridesharing, and experimental needs as first priority, the General Assembly would reaffirm its existing policies to: make full use of all available federal funds (capital); clearly establish the State's commitment to fostering more efficient and cost effective use of privately-owned vehicles (ridesharing); and, promote the development of innovative transit programs which improve productivity or reduce operating costs (experimental).

Three of the recommendations (#26, #27, #28) deal with the development and collection of financial and operating data for all public transit systems. The primary purpose for collecting this data is to improve performance and the provision of technical assistance. However, JLARC also suggests the General Assembly may wish to consider the use performance measures as part of public transportation allocation process. There are two important reasons why those measures should not be used to allocate funds.

One reason is local differences are totally neglected. Transit services and ridesharing programs reflect widely varying local objectives, virtually unique for each system, concerning areas and populations to be served, kinds and levels of service to be provided, the share of costs to be paid by riders, and the benefits to be obtained by providing transit and ridesharing services. As long as local governments are expected to carry the principal financial burden, they should be free to establish their own objectives.

Another reason is the difficulty and cost associated with obtaining verifiable data. Richard Grefe Associates, the VDH&T's consultant on the outlook for public transportation financing, concludes that an "important reason for avoiding using formulas based on performance measures is the high

staff cost and significant difficulty of ensuring reliable, uniform and accurate measurement of some operating indicators." The cost would not only include the cost to collect the data but also the cost to the State to certify the data.

The remaining JLARC recommendation (#29) addresses the major complaint of transit services and ridesharing agencies, the unpredictability of funding, by proposing the public transportation allocation be specified by statute. Transit and ridesharing services can be planned more efficiently and cost effectively by providing a stable and reliable source of funds. JLARC's recommendation that a range (3 to 5 percent) of revenues from State sources be allocated to public transportation would still permit local budgets to vary by as much as sixty-seven (67) percent from one year to the next. Establishing a flat percentage as is done for allocations to interstate, primary, and secondary systems would achieve the desired result of improving public transportation planning and operations.

Each of the three options proposed by JLARC for funding the public transportation programs specifies one percent of the public transportation budget be allocated for ridesharing administrative and promotional support. The one percent allocation is apparently arbitrary and neither adequately reflects needs nor recent expenditures. It also does not account for the additional ridesharing programs begun under the experimental projects program in Fiscal Year 1984 which must be funded under the ridesharing allocation in Fiscal Year 1985. I estimate $500,000 would be a more accurate funding level.

There are also other implications of not setting a flat percentage for the public transportation by statute. If the public transportation budget is slashed presumably so would ridesharing's budget. However, one of ridesharing's primary purposes is to supplement transit services. If transit services are reduced due to budget cutbacks then more carpool and vanpool assistance would be needed, not less.

If you have any questions, please call.

Sincerely,

Philip L. Winters

Philip L. Winters
President

mr

COMMONWEALTH OF VIRGINIA
COUNTY OF HENRICO

P. T. RUTLEDGE, JR.
Director of Public Works
County Engineer
(804) 747-4393

January 9, 1984

Mr. Glen S. Tittermary
Principal Legislative Analyst
Joint Legislative Audit and Review Commission
Commonwealth of Virginia
Suite 1100, 901 Capitol Street
Richmond, Virginia 23219

Dear Tittermary:

I wish to take this opportunity to express my appreciation on behalf of the Department of Public Works for your time and consideration in explanation and consideration of additional information involving the Chapter V, Arlington and Henrico Allocations of House Document No. 11 (Draft) of the Report on the Joint Legislative Audit and Review Commission on Equity of Current Provisions For Allocating Highway Construction Funds in Virginia to The Governor and The General Assembly of Virginia. As we have previously expressed, Henrico County is extremely concerned about any comparison between any other locality and this jurisdiction. While we welcome a comparison for any reason, we only ask the comparison be made on a fair and equitable basis. During our meeting on January 5, 1984, three areas were noted for discussion. The basis for this discussion was our concern that information had not been properly considered or evaluated in arriving at your conclusions. The areas were as follows:

The Reporting Of Actual Revenues Received By The Henrico County Department Of Public Works.

During our meeting, you indicated that you were aware of additional monies reported from the Highway Department and those corrections would be made. It is our understanding based upon our records of revenues received and conversations with the Highway Department, that the total amount of revenues received for the 1983-84 fiscal year would be:

Virginia Department of Highways and Transportation Budget	$ 7,993,300
1964-66 Acts	353,254
Federal Aid	384,320
TOTAL	$8,730,874.00

PARHAM AND HUNGARY SPRING ROADS/P. O. BOX 27032 RICHMOND, VIRGINIA 23273

The Amounts Reported For Administrative and Engineering Services For Henrico County As Well As Arlington County.

Our initial concern related to the fact that administrative and engineering costs for Arlington County amounted to 46 percent of their maintenance budget while Henrico County's administrative and engineering costs amounted to only 18 percent of the maintenance budget. In trying to determine the items of administrative cost which were noted in your evaluation, we were unable to find how you obtained the $1,458,220 figure for Henrico County. In our meeting of January 5, it was found that we apparently had not provided you sufficient information to evaluate our administrative and engineering costs. Documents for the 1983-84 fiscal year were provided which show the total breakdown of monies for the administration and engineering costs. It was your indication that these would be reviewed and the necessary additions added to the administrative costs for each division including Road Maintenance and Traffic Engineering.

The Maintenance Budget For Henrico County.

This area is of great concern and probably causes confusion to all individuals involved. In making a comparison, we realize that you must use another jurisdiction and that you must also use the Highway Department's costs. However, in selecting Chesterfield County as a basis, we do not feel that Henrico County is given fair and equitable consideration. Our basis for this is the type of function and various roadways within Henrico County's system when compared to Chesterfield County's secondary road system. As you are aware, maintenance costs will increase based upon functions of roadways and volumes of traffic on those roadways. In addition, maintenance costs will also increase based upon the actual development density of an area and the necessary requirements of roadway construction with that development.

During our meeting, we voiced our concern for what we felt was unfair maintenance comparison when using Chesterfield County's secondary roads system and portions of the Henrico County system which are four-lane divided and carry volumes in excess of 35,000 vehicles per day. In addition, development in Henrico County has required the provision of over 500 miles of curb and gutter and over 800,000 feet of storm sewer. This type of development, obviously, has not occurred on most of the secondary roads system in Chesterfield County. In addition, because of the density of development, the cost to provide normal maintenance services is probably greater on the entire Henrico County system than on the secondary system of Chesterfield County. This is also verified when you review the Highway Department's functional classification mileage for each type of roadway in Henrico County and Chesterfield County.

In order to make an appropriate comparison between the two jurisdictions, a portion of the primary mileage in Chesterfield County would have to be considered. We know that would be a most difficult task and which, in fact, could probably not be done. For those reasons, it would seem more appropriate and fair if Henrico County would be compared to a jurisdiction which is similar in type of development, development density and functionally classified roadways. Our

proposal is that a comparison be made to Fairfax County as you did with Arlington County. While we realize that the mileage of Fairfax County is much larger, the function of the roadways and the type of maintenance required of those roadways would be more similar to Henrico County than a comparision with Chesterfield County. If you are using a cost per mile for the maintenance activities, it would seem that a cost differential between Northern Virginia and Henrico County could then be used so that appropriate cost figures could be provided for Henrico County.

In adition to these items, we would also note that portions of Federal Aid Secondary monies which are credited to Henrico County and are administered by the Highway Department, are used for maintenance purposes. That, of course, could then increase the maintenance budget base if you are considering an actual maintenance cost in this manner. If you are considering maintenance costs based upon a cost per mile and maintenance activities then this, of course, would not have to be considered unless you consider levels of service for maintenance activities. This we feel is not an appropriate method for development of maintenance costs but do realize that you must look to a comparision of other Counties which are maintained by the Highway Department.

Based upon our review and the meeting of January 5, it is my understanding that you will be revising your revenue figures, that you will be reevaluating the administrative and engineering costs figures to include the information given to you during our meeting, and that you will be considering a comparison with Fairfax County and a cost reduction factor to properly reflect Henrico County's maintenance expenditures. If we may provide you any assistance or verification in any item during this period, please do not hesitate to contact us. As I am sure you are aware, we are extremely concerned about protecting the interests of Henrico County and its road system and insuring that this $250 million investment is not diminished by a potential reduction or inadequacy in future funding.

Once again, your continued cooperation and willingness to listen to our concerns is extremely appreciated.

Very truly yours,

P. T. Rutledge. Jr.

cc: The Honorable Robert B. Ball, Sr.

The City of Lynchburg, Virginia
CITY HALL, LYNCHBURG, VIRGINIA 24505

THE CITY OF SEVEN HILLS

CITY COUNCIL

January 9, 1984

Mr. Glen Tittermary
Project Director
Highway Allocations Study
910 Capitol Street, Suite 1100
Richmond, Virginia 23219

Dear Mr. Tittermary:

The Physical Development Committee of the Lynchburg City Council has reviewed the report on the equity of allocating highway funds and offer the following comments:

INTERSTATE ALLOCATIONS

The City is opposed to setting aside the matching funds for interstate construction. This would have an adverse impact on the urban system and on the primary system in areas with no interstate routes and areas which have completed the interstate construction.

BRIDGE REPLACEMENT

The City recognizes the need for a separate bridge replacement fund to relieve regular system allocations of high cost bridge projects. However, it will penalize Lynchburg for having a progressive bridge program and having replaced several of its worst bridges over the past few years. The exception is the Williams Viaduct Bridge which is beyond the funding capability of the City's highway allocation and will require Federal Bridge Discretionary funds. The current state bridge inspection program does not address all the factors necessary to determine the greatest need. For example, if traffic volumes are used, it should be based on volume per lane instead of total volume.

REGULAR SYSTEM ALLOCATIONS

The City agrees the proportion of needs are generally equal for the primary, secondary and urban systems and supports the recommendation to adjust the proportion of funds provided to each system to one-third.

URBAN SYSTEM FORMULA

The City supports the recommendation to establish a statutory formula for allocating urban system funds based on population.

PRIMARY SYSTEM FORMULA

The City recommends a formula based primarily on lane mileage. This appears to be the most equitable method to meet the needs of each area.

URBAN PAVEMENT STANDARDS

The City suggests the following additions to the JLARC recommendation:

> The General Assembly may wish to amend Section 33.1-221(B) of the Code of Virginia to allow the Highway and Transportation Commission to grant variances in the pavement width requirements for (existing and new) industrial access roads (and other types of streets) in cities and towns that qualify for urban street payments. The Commission should take into consideration the need for parking on (existing and new) industrial access roads (and other types of streets).

The City has existing industrial access roads constructed by the state with a 24' pavement width which do not qualify for maintenance payments. Also, there are several miles of arterial and collector streets with daily traffic volumes in the 3,000 - 13,000 range in addition to many local streets that do not meet the 30' pavement width requirement.

PUBLIC TRANSPORTATION ASSISTANCE

The City supports the current method used by VDH&T of allocating funds to transit systems and recommends the locality have the option of using the allocation for capital needs or operating costs.

If additional information is desired by the JLARC staff, please feel free to contact me.

Sincerely,

Joan W. MacCallum

Joan W. MacCallum
Council Member and
Chairperson of Physical
Development Committee

JWC/ld

The City of Lynchburg, Virginia

CITY HALL, LYNCHBURG, VIRGINIA 24505

THE CITY OF SEVEN HILLS

OFFICE OF THE MAYOR

January 9, 1984

Mr. Glen S. Tittermary
Project Director
Highway Allocation Study
910 Capitol Street, Suite 1100
Richmond, VA 23219

Dear Mr. Tittermary:

On Tuesday evening, January 9, the Lynchburg City Council will consider the attached resolution regarding the report of the Joint Legislative Audit and Review Commission (JLARC) regarding the allocation of highway funds. During past years, highway programs have penalized the City of Lynchburg as well as the Lynchburg Highway District for not having an Interstate route. The recommendation to set aside matching funding for Interstate Federal Aid would further decrease the amount of the funds for distribution to the urban and primary systems.

Your consideration of this serious concern is requested. A certified copy of the attached resolution will be forwarded to you following the January 9 Council meeting.

Sincerely,

Elliott L. Shearer

Elliott L. Shearer
Mayor

Attachment

WHEREAS, THE JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION HAS PREPARED A REPORT ON THE EQUITY OF CURRENT PROVISIONS FOR ALLOCATING HIGHWAY FUNDS IN VIRGINIA;

JAN 27 1984

WHEREAS, THE JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION REPORT INCLUDES RECOMMENDATIONS FOR THE ALLOCATION OF HIGHWAY FUNDS; AND

WHEREAS, THE CITY OF LYNCHBURG FEELS THAT SOME OF THE RECOMMENDATIONS IN THE REPORT WOULD RESULT IN AN UNFAIR ALLOCATION OF HIGHWAY FUNDS;

NOW, THEREFORE, BE IT RESOLVED THAT THE COUNCIL OF THE CITY OF LYNCHBURG OFFERS THE FOLLOWING RECOMMENDATIONS FOR THE ALLOCATION OF HIGHWAY FUNDS:

(A) FUNDS TO MATCH FEDERAL INTERSTATE AID SHOULD CONTINUE TO BE COUNTED AS PART OF THE DISTRICT'S PRIMARY SYSTEM ALLOCATION, AS IS CURRENT PRACTICE.

(B) THE PROPORTION OF FUNDS FOR THE PRIMARY, SECONDARY AND URBAN SYSTEMS SHOULD BE ADJUSTED TO ONE-THIRD FOR EACH SYSTEM.

(C) A STATUTORY FORMULA SHOULD BE ESTABLISHED TO ALLOCATE URBAN SYSTEM FUNDS BASED ON POPULATION.

(D) A FORMULA SHOULD BE ADOPTED TO ALLOCATE PRIMARY SYSTEM FUNDS BASED PRIMARILY ON LANE MILEAGE.

(E) THE HIGHWAY AND TRANSPORTATION COMMISSION SHOULD BE PERMITTED TO GRANT VARIANCES IN THE PAVEMENT WIDTH REQUIREMENTS FOR EXISTING, NEW INDUSTRIAL ACCESS ROADS AND FOR OTHER TYPES OF STREETS.

(F) LOCALITIES SHOULD BE ALLOWED THE OPTION OF USING PUBLIC TRANSPORTATION ASSISTANCE FUNDS FOR CAPITAL NEEDS OR FOR OPERATING COSTS.

ADOPTED: JANUARY 10, 1984

CERTIFIED: Sarah D. Stage
CLERK OF COUNCIL

1/5

✓CC: MR. GLEN S. TITTERMARY 1/26/84
R. A. BOOTH
L. H. TERRY

Northern Virginia
Transportation Commission

Arlington Executive Building ■ 2009 North 14th Street ■ Suite 300 ■ Arlington, Virginia 22201 ■ (703) 524-3322

January 9, 1983

Senator Hunter B. Andrews, Chairman
Delegate L. Cleves Manning, Vice Chairman
Joint Legislative Audit and Review Commission
910 Capitol Street
Richmond, Virginia 23219

Dear Senator Andrews and Delegate Manning:

The staff of the Joint Legislative and Audit Review Commission (JLARC) has made an excellent beginning in the review of Equity in the Allocation of Highway and Transportation funding. The Northern Virginia Transportation Commission comments will be confined to the findings and recommendations relating to public transportation with two exceptions:

- We are concerned about the adequacy of revenues from current state sources in implementing the recommended changes; and,

- We know that the Department of Highways and Transportation (VDH&T) has identified road construction needs far beyond the current resources. Road construction costs coupled with the forecast capital costs for transit replacements and system growth (growth best illustrated by the construction costs for the Metrorail system) require improvement in the joint State/Local process of setting priorities.

The JLARC staff has made an extensive review of public transportation in Virginia. It is not surprising that the findings are quite similar to a study of options for State and Local government financing of public transportation in Virginia, prepared for the Public Transportation Division (PTD) of VDH&T by Richard Grefe Associates (Grefe):

"o Public transportation services are an important part of the Commonwealth's transportation system.

"o Public transportation service levels have been cut to 'anorexic' levels because of funding issues, denying some Virginians basic mobility.

"o The public transportation infrastructure is reasonably well capitalized and will require periodic replacement throughout the decade (assuming adequate funding for Metrorail construction).

"o Ridesharing programs have had substantial impact on commuter travel and should be encouraged by established and ongoing funding programs.

"o Despite agressive cost management practices, transit operating costs will continue to increase, albeit at a slower pace than during the past 10 years.

"o With a reducing federal funding program and practical limits on user charges, greater financial pressures will be placed on local and, secondarily, on state government to fund critical public transportation services.

"o Virginia is in the middle rank of states in supporting public transportation, although it lags in granting taxing authority to local governments to support public transportation."

The JLARC staff interpretation of the Grefe study, as well as that data supplied by transit operators, is harsh and in several instances, of insufficient depth to be useful:

- The JLARC staff recommendation would establish a statutory range (of between 3 and 5 percent of state raised transportation revenues) as the appropriation of State Aid to Mass Transit. Current appropriations, (4.86 percent of these funds) are a part of the 1982 initiative by the General Assembly to improve transportation funding in the Commonwealth. We do not feel there is a requirement to establish a fixed percent of State revenues. However, if this course is deemed appropriate by the General Assembly then the amount should be not less than 5 percent. In the case of Northern Virginia a reduction in funding resulting from an appropriation of three percent would alter the stable and and reliable funding for Metro operations and will jeopardize the Federal commitment of Metrorail construction funding.

- The JLARC staff recommends that State Assistance to Mass Transit be appropriated categorically; first, for capital costs, and separately administered for operating expenses on the basis of a performance-driven allocation. This recommendation does not adequately address the objectives of the State Transportation Plan and may well be adverse to those interests. We believe further study of these matters is appropriate with special attention to the following issues:

    - The block grant of funds in the current appropriation is effective in that it requires transit operators to make the best use of limited resources, particularly in maintaining existing service and facilities;

- oo Performance measures as developed by the VDH&T staff, consultant and public transit technical staff were intended to assist management in providing more effective service delivery. The performance measures were not developed with the intention of driving funds allocations. They do not address such system variances as: hours of service, frequency, topography, the extent of subruban service or regional variations in the cost of living;

- oo Beyond available financial data, operating data is not auditable without a quantam leap upward in the level of effort by both transit operators and state officials in order to assure accurate and consistent reporting;

- oo The JLARC staff recommendations do not adequately address the central question of equity: Several options appear to provide 100% funding for some local systems while other systems would suffer a decrease in current State Aid to Mass Transit.

- oo In all instances the report has a significant inconsistency in recommending that new capital have a higher priority than maintaining existing systems.

- oo The JLARC staff ignored the needs-based allocation recommended in the Grefe study, "The State should alter its method of allocating assistance among transit systems to make a system's share of the funds distributed proportional to that system's share of the total current costs of all transit systems statewide. This approach appears most closely related to needs and offers the important advantage of neutrality toward local choices about whether to raise revenues from fares or from local taxes."

The Public Transportation Division has worked hard in support of overall transportation policy and has worked well with local officials in furthering the fundamental and distinct interests that the State has in the future of public transportation. The transit performance reporting system developed for the Public Transportation Division is designed to provide accountability in the delivery of service and in the expense of public funds.

We look forward to working with the General Assembly in the review of

the 1984-85 budget and in sustaining the current initiatives.

With best wishes for the New Year.

Sincerely,

Chuck Beatley

Charles E. Beatley, Jr.
Chairman

cc: Northern Virginia Delegation to the General Assembly
Secretary of Transportation, Andrew Fogarty
Members of the Highway and Transportation Commission
Director of Rail and Public Transportation

CHRISTIANSBURG
VA.

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NOVEMBER 10, 1792

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Town of Christiansburg, Virginia

10 January 1984

OFFICE OF: Town Manager

Mr. Glen S. Tittermary
Project Director, Highway Allocations Study
910 Capitol Street
Suite 1100
Richmond, VA 23219

Re: Report on the JLARC Study for
Allocating Highway Funds

Dear Mr. Tittermary:

I have not been able to review the above referenced report as thoroughly as I would like due to time constraints, however, there are several subjects in the report which I think warrant comment.

PART IV URBAN STREET PAYMENTS

Under Study Approach on page 87 the statement is made: "The JLARC analysis focused on maintenance because urban construction and reconstruction needs are addressed in the analysis of urban construction allocations."

I question the accuracy or completness of this approach. As you know, the urban street maintenance payments are intended for use by the localities in the maintenance, construction and reconstruction of the "other streets" as well as the primary extensions and thoroughfares in a locality. The questionnaire which we received in September 1982 entitled "Highway Allocations Study Response Form", seemed to address those projects and needs of those streets designated as thoroughfares in our Thoroughfare Plan. It appears that JLARC has used the results of that questionnaire to compile the table on Page B-8 of the Report, entitled Highway Construction Needs (Locality Assessment) and therefore it is assumed that no weight was given to construction and reconstruction needs of those "other streets." If this be the case, then consideration should be given also to construction and reconstruction and not just maintenance in the Urban Street Payment formula(s) which are proposed.

URBAN PAVEMENT STANDARDS

The Industrial Access Program (pp 97).

I am not sure I understand the Report's recommendation regarding Industrial Access Road pavement width. I am of the opinion that Industrial Access Roads within cities and towns be constructed in all cases to standards that would qualify them for urban Street Payments since the municipality will be responsible for those roads.

It is my understanding that present statutes require that Industrial Access Roads within Town's be considered as part of a county's annual Industrial Access Road Allocation regardless of whether the Town is part of the urban System or not. Towns over 3500 are therefore required to obtain the County's approval for access roads within the Town. I suggest that consideration be given to amending this statute to allow Town's over 3500 population to receive Industrial Access Road funds separately from the County.

I donot intend that my comments be construed as being critical of the JLARC report, but merely as suggestions for further consideration.

Sincerely yours,

John E. Lemley
Town Manager

JEL:igb

cc: Mr. Michael Amyx, Virginia Municipal League

JAN 19 1984

COMMONWEALTH *of* VIRGINIA
DEPARTMENT OF HIGHWAYS & TRANSPORTATION
1221 EAST BROAD STREET
RICHMOND, 23219

January 19, 1984

Honorable Hunter B. Andrews
Chairman
Joint Legislative Audit and
Review Commission
General Assembly Building
Room 613
Capitol Square
Richmond, Virginia 23219

Dear Senator Andrews:

I am attaching for your information a copy of a resolution adopted unanimously this morning by the Highway and Transportation Commission in support of Senate Joint Resolution 20.

The members of this commission share the belief of the Joint Legislative Audit and Review Commission that there is much benefit to be derived from more extensive public discussion of the proposed changes in highway and public transit fund allocation procedures.

With highest personal regards, I remain

Sincerely,

Harold C. King, Commissioner

Attachment
cc: Members, Joint Legislative Audit and Review Commission
Honorable Andrew B. Fogarty
Mr. Ray Pethtel

Moved by Mr. Vaughan, seconded by Mr. Brydges, that

WHEREAS, the staff of the Joint Legislative Audit and Review Commission has conducted a lengthy and comprehensive study of the statutes and procedures which govern the allocation of highway and public transportation funds; and

WHEREAS, the conclusions of the staff report became available for review in an exposure draft report dated December 1, 1983, and have been published in draft form as House Document No. 11 for the 1984 session of the General Assembly; and

WHEREAS, the report proposes extensive changes in the allocation statutes and procedures which should be considered carefully by all who may be affected by such changes prior to their being acted upon; and

WHEREAS, members of the Highway and Transportation Commission believe an additional period of time for review of the report would permit broader public understanding and more thorough deliberation by local governing bodies and others of all the issues involved in such changes; and

WHEREAS, such additional time would also permit further study to include medium- and long-range financial analyses of the proposed changes;

NOW, THEREFORE, BE IT RESOLVED, that the Highway and Transportation Commission respectfully requests deferral of decisions on recommendations contained in the JLARC staff report to allow further discussion and consideration of the report in its entirety, and believes the public interest would be best served through such deferral; and

BE IT FURTHER RESOLVED, that the Highway and Transportation Commission supports Senate Joint Resolution No. 20, which requests the appointment of a joint subcommittee of General Assembly members to review the JLARC staff recommendations concerning such financing changes.

MOTION CARRIED

1/19/84

PATRICK COUNTY BOARD OF SUPERVISORS

TELEPHONE (703) 694-6094 — P. O. Box 466

STUART, VIRGINIA 24171

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ROSCOE F. EPPERSON - Vice-Chairman
JOHN H. CASSELL, JR.

JOHN E. HYLTON
J. CORNELIUS STOVALL
EDWARD M. TURNER, JR.
County Administrator

January 23, 1984

Mr. Glenn S. Tittermary
Project Director
Highway Allocations Study
910 Capitol Street, Suite 1100
Richmond, Virginia 23219

Dear Mr. Tittermary:

The Patrick County Board of Supervisors has reviewed the Report of the JLARC on Equity of Current Provisions for Allocating Highway Construction Funds in Virginia to the Governor and the General Assembly of Virginia, dated December 21, 1983. The delay in the review and forwarding the Board's comments to the Commission resulted from a majority of the Board being new members and the time necessary for these members to familarize themselves with the contents of the Report.

The Board after a careful review of the recommendations of the Commission feels that any of the proposed options for changing the existing formula for allocations to secondary roads in rural counties of which Patrick County is one, would be detrimental to the county's secondary road program. Patrick County has made considerable progress in improving the county secondary roads for the past few years under the existing allocations. The Board believes that under present allocations, most of the county's secondary roads could be improved either by surface treating those that are eligible, and grading, draining, and stabilizing within the next five (5) years those with a traffic count of under 50 vehicles per day. Under the options listed in the Report, it would require another five (5) years or a total of 10 years to bring the county's secondary roads up to the minimum standards.

The Board has concluded that the proposed allocations recommended in the report favor urban counties to the disadvantage of rural counties which have always lagged far behind urban counties in secondary road improvements. Therefore, the Board desires to go on record as opposing any changes to the existing allocations for secondary roads in rural, less populated counties.

Sincerely,

Edward M. Turner, Jr.
County Administrator

EMT JR/rhh

COMMONWEALTH of VIRGINIA
DEPARTMENT OF HIGHWAYS & TRANSPORTATION
1221 EAST BROAD STREET
RICHMOND, 23219

May 14, 1984

Equity of Current Provisions
for Allocating Highway and
Transportation Funds in
Virginia - April 27, 1984

Mr. Ray D. Pethtel, Director
Joint Legislative Audit and
Review Commission
910 Capitol Street, Suite 1100
Richmond, Virginia 23219

Dear Mr. Pethtel:

The subject report and your letter of May 2, 1984, were delivered to this office on May 3, 1984. Every effort has been made to review the report; however, due to the compressed schedule and the significant amount of new information, our comments are limited to those of an editorial nature and to the areas of the report for which we must have your base data and technical reports in order to make a comprehensive review.

As you may be aware, the Department has very serious concerns with the policy implications of a number of your recommendations, and we will develop a position for presentation to the SJR 20 Subcommittee.

The following is submitted for your consideration:

Page 1, last paragraph

The estimates of state revenue are developed by the Division of Motor Vehicles under the direction of the Secretary of Transportation, not the Virginia Department of Highways and Transportation.

Page 2

Last sentence of first full paragraph contradicts last sentence in first full paragraph on page 136.

Page 10, second paragraph

Coal haul road funds are not federal pass throughs as stated.

Pages 10-12

This explanation of the current allocation process is so simplistic as to be invalid.

Page 13

Table 1 should be modified to reflect that construction needs are expressed in 1982 dollars.

Pages 13-14, last paragraph

While the needs list may indeed be valid, we do not believe that the high correlation with the factors is a basis for the conclusion that the needs estimates are valid.

Page 15, Table 2

The term "vehicles per lane mile" typically refers to traffic density. The factors used in the JLARC analysis are vehicle registration divided by system lane miles.

Page 18, paragraph 3

Dr. Gary Allen of our Research Council on April 11, 1984 requested a listing of the outliers. We still need this listing and the balance of the information he requested for our analysis.

Page 20, last full paragraph

The primary programs in all construction districts, with the exception of the Lynchburg District primary program, have been severely impacted at one time or another with the construction of the system.

Page 20, last paragraph continued at top of Page 21

The syntax of this paragraph is very misleading. It is assumed Suffolk District allocation for Interstate match

is to FY 1990, whereas Richmond and Fredericksburg Districts are to FY 1988. We are unable to verify the percentage for the Richmond District, and the method used to calculate the percentage for the Suffolk District is technically incorrect.

Page 25, part of first paragraph

It is a fact that the Department furnished JLARC staff an estimate of $1.5 million possible loss in Federal Bridge Replacement funds for an earlier report. The loss of funds is still present; however, steps have been taken to minimize that possibility.

Page 26, third paragraph

The Federal Bridge Program requires that a minimum of 15 and not more than 35 percent of the bridge funds be spent on a non-federal system with the balance on a federal system. This is quite different from the statement in your report.

Pages 28-29, last paragraph and top of page

Secondary System outside the old city limits in the City of Suffolk not referenced.

Page 44, first paragraph

There appears to be an error in the number of centerline miles in the Urban System under provisions of Sections 33.1-41 and 43.

DHT records for maintenance payments under these sections show 8,301 miles as of June 30, 1983.

Page 44, fourth paragraph

The thoroughfare plans in municipalities by Commission policy are the basis for Department participation in urban projects.

Pages 44-45

The preconstruction process for urban projects is misleading.

Page 49

The Cities of Abingdon and Covington have approved urban projects.

Page 51, third full paragraph

The finding that a greater number of factors correlated with need would not be sufficient in and of itself for altering the current allocation base. The Department will have a detailed analysis of this matter for presentation to the SJR 20 Subcommittee.

Page 54

In evaluating this data, we are unable to determine the municipal populations included for distribution of funds to the PDCs. It appears certain municipal populations were arbitrarily selected for inclusion in the PDC totals. The Draft report does not set forth the methodology for the selection process. This is inconsistent with proposed legislation in SJR 20 which addresses population of the state as a whole.

The receipt of this information is critical to our evaluation.

Page 54

The allocation under this option to Richmond Regional is not correct.

Page 57, fourth paragraph

We can find no basis in the report for the statement that the lack of vehicle travel data represents a serious shortcoming. Most traffic and transportation engineers consider vehicle miles of travel data of little utility for the costs incurred.

Page 59, recommendation (11)

We can find no basis in the report for the recommendation for improved planning methodology. More detail is needed as to shortcomings of existing processes.

Pages 61-82

This is substantially new data which will be addressed at a later date, after our analysis is completed.

Page 88, third paragraph

There appears to be no documentation that the changes adopted by the General Assembly in 1979 to the procedure for the allocation of urban street payments were superior or more equitable than those used previously.

Page 88

On April 11 we requested, through Dr. Gary Allen, the following from Mr. Tittermary:

a. A clarification on the weighting of the sample data before calculating base rates, i.e., what was the rationale for the weighting of the cost data and how was it done? (p. 88, April 27 Exposure Draft)

b. A listing of the termini and facility names of each city street segment sampled and their centerline and lane-mile length stratified by the four functional classes and two administrative classes.

We have received no response, but would like this information.

In addition to the above information, the following additional information is requested:

a. In the instruction packet on estimating urban highway maintenance costs, resident engineers were instructed to indicate in which years over the next 20 years each surface replacement activity would be necessary and what the cost will be. On page 88 of the Exposure Draft, it was stated that "annual maintenance replacement cost was derived using a 12-year replacement cycle." Exactly how was this done for the 20-year period? An example would be helpful.

b. Regarding traffic services cost estimation, for the purposes of the JLARC estimation of Urban Maintenance Costs, what is the definition of "Traffic Signal" or "Number of Traffic Signals"?

Page 89

The discussion of the existing administrative classification for urban streets includes no mention of the Highway and Transportation Commission policy which permits, upon local initiative, the transfer of streets from the "other" category to the "primary" classification.

Page 93, second complete paragraph

It would appear that the only solution to this possibility would be the use of county adjustment factors as compared to the statewide rates you propose.

Page 95, recommendation 22

The JLARC proposal relates to the 1983 base for payments in 1984 as reflected in this recommendation. This is inconsistent with the language that appears in SJR 20.

The Department has concern for the JLARC recommendation for city street payment rates and the use of functional classification. A thorough analysis of this issue will be developed by the Department upon receipt of the aforementioned data.

Page 113, first paragraph

There are currently 23 public transportation systems in Virginia, not 19, as cited in the report. Also, 17 systems serve smaller cities, towns, and rural areas, not 13, as cited in the report.

Page 113, third full paragraph

Nowhere else in the document does JLARC staff express concern for the gap between transportation needs and anticipated program levels. For example, Table 1 on page 13 clearly

identifies $16,300,400,989 to $17,230,128,759 in highway construction needs on all systems in 1982 dollars, yet your report does not address the gap between the verified needs and anticipated revenue.

Page 114, second paragraph

The $2.5 million appropriation to WMATA in 1972-74 should be identified as a general fund appropriation.

Page 114

The third paragraph implies that transit operating expenditures had at some time prior to the 1974-76 biennium been eligible for state assistance under the public transportation program administered by the Highway and Transportation Commission. Of course, such is not the case.

Page 115, first paragraph

The cost of fuels, tires and maintenance parts and supplies are eligible for state reimbursement, in addition to capital and administrative costs. The words "through 1982" should be added to the last sentence, after the word "intent."

Page 115, third paragraph

Ridesharing administrative costs are supported up to 80 percent of the cost borne by the locality, rather than the 50 percent cited in the report.

Page 115, fourth paragraph

Certain wages and salaries are currently eligible for state funding under the administrative grant program.

Page 116, paragraph 5

I believe it would be more appropriate to indicate that the $35,000,000 for the Metro parking lots, pursuant to the agreement between VDH&T and NVTC, had been paid.

Further, the entire presentation on this page relates to the Spring of 1981, a period when construction allocations for the Primary, Secondary, and Urban Systems were reduced and the prognosis advanced by the Department that federal funds could not be matched in FY-84. Contrary to the implications of JLARC, the $24.6 million budget proposal represented level funding despite cuts in all construction programs.

Page 118, first paragraph

The text indicates that Table 31 projects only minor capital needs throughout the remainder of this decade. Table 31 only shows projected data for 1985 and 1986.

Page 118, second paragraph

The Surface Transportation Assistance Act of 1982 contained a section known as the Public Transportation Act. They are not discrete acts.

Page 118, second paragraph

The revised administrative language states that no federal operating assistance shall be made available for FY-89, not FY-85.

Page 119

What analysis has been done to support the recommendation that highway user funds should be used to support transit operating costs above and beyond those already permitted? A study developed by the Department suggested that local governments be given the authority to impose other taxes for transit purposes. (Reference: Report by Richard Grefe and Associates)

In the entire discussion of public transit, the JLARC staff has not acknowledged that the operation and management of public transit systems in the Commonwealth has long been the function of local governments or transportation district commissions with little state intrusion.

Page 121, recommendation 27

Suggest that any recommendation require the Department of Highways and Transportation to perform a function as opposed to a single position within the organization.

Page 122, paragraph 3

The entire discussion of the stability of funding has application to all transportation programs.

Page 125

The reference to unlinked passenger trips as a factor which promotes increased ridership is invalid. It is a recordation procedure and not related to promotion of public transportation.

Page 135

JLARC has inconsistently applied the effects of their recommendations as well as the revised revenue estimate throughout the table. For example:

1. The projections for Urban Assistance Payments have not been revised to reflect the July 1, 1984 salary regrade nor have they been revised to reflect JLARC's recommendation with regard to the reduction in county maintenance. These revisions should be made since the projections for Urban Assistance Payments are a function of the maintenance allocation.

2. The projections shown for Arlington and Henrico Counties do not reflect the JLARC recommendation with regard to reducing the maintenance allocations nor do they reflect the revised revenue estimate.

3. Public Transportation Assistance projections do not reflect the new revenue estimate. The amounts shown are still 5 percent of the previous revenue estimate.

4. Under construction, the $70 million increase for FY-85 is misleading since $45 million is Interstate Discretionary funds, which are not available for distribution to the systems under the allocation formula.

5. The amounts shown for Urban Assistance Payments are based on an inflated 1983 base rate for payment in 1985. This is inconsistent with proposed legislation in SJR 20, which indicates the 1983 base rate will be used for payment in FY-85.

The revised projects for Urban Assistance Payments and Arlington and Henrico Counties as a result of the revised revenue estimate and regrade were furnished by Mr. Mabry to you under letter dated April 23, 1984.

As indicated in the opening paragraph, the aforementioned relates to our very cursory review of your latest draft. More detailed analyses are under way, and we will be in a position to share the results with the SJR 20 Subcommittee after the Highway and Transportation Commission has been briefed.

With best regards,

Sincerely,

Harold C. King, Commissioner

cc: Honorable L. Cleaves Manning
Honorable Charles L. Waddell
Honorable Donald A. McGlothlin, Sr.
Honorable Andrew B. Fogarty

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