JOINT LEGISLATIVE AUDIT AND REVIEW COMMISSION
OF THE VIRGINIA GENERAL ASSEMBLY

TECHNICAL REPORT:

The Cost of Competing in Standards of Quality Funding

REPORT OF THE
JOINT LEGISLATIVE AUDIT
AND REVIEW COMMISSION

TECHNICAL REPORT:
THE COST OF COMPETING IN STANDARDS OF QUALITY FUNDING

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

SENATE DOCUMENT NO. 8

COMMONWEALTH OF VIRGINIA
RICHMOND
1996

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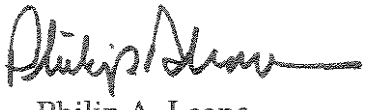
Preface

Most State funding for elementary and secondary education in Virginia is provided based on the State share of the costs for the Standards of Quality (SOQ). The SOQ are the State's minimum requirements for a high quality program in all school divisions across the Commonwealth. The SOQ have cost implications, and the State has a cost methodology to estimate the cost impact of the standards. The State also has a distribution methodology, to determine State and local responsibility for funding the SOQ.

The cost of competing was first proposed as a specific, operational factor in Virginia's education funding formula in the 1988 Joint Legislative Audit and Review Commission (JLARC) report, *Funding the Standards of Quality, Part II: SOQ Costs and Distribution*. As described in the 1988 JLARC report, the cost of competing refers to the idea that in ways beyond the control of school divisions, the price school divisions must pay for their personnel can be influenced by the need to compete in a regional labor market. The 1988 study proposed that the State recognize a higher cost of competing for school division personnel in Northern Virginia, as the State does for its own classified employees in Northern Virginia.

Item 15 of the 1995 Appropriation Act directs JLARC to examine the cost of competing for personnel in Northern Virginia school divisions. This study was requested to find alternative ways of refining the cost of competing adjustment to SOQ funding with a logical, objective rationale. This study examines the evidence indicating that a cost of competing adjustment is still needed, and the options available for refining the cost of competing adjustment and providing State funding for it.

We would like to express our appreciation for the assistance extended to us by the staff of the Department of Education in applying the current SOQ cost model to alternative cost and funding approaches identified by JLARC staff.



Philip A. Leone
Director

November 13, 1995

JLARC Report Summary

The cost of competing was first proposed as a specific, operational factor in Virginia's education funding formula in the 1988 Joint Legislative Audit and Review Commission (JLARC) report, *Funding the Standards of Quality, Part II: SOQ Costs and Distribution.* As described in the 1988 JLARC report, the cost of competing refers to the idea that in ways beyond the control of school divisions, the price school divisions must pay for their personnel can be influenced by the need to compete in a regional labor market. The 1988 study proposed that the State recognize a higher cost of competing for school division personnel in Northern Virginia, as the State does for its own classified employees in Northern Virginia.

Cost of competing adjustments have been included in Standards of Quality (SOQ) funding since 1988, although approaches for calculating the adjustments have been changing. This study, required by Item 15 of the 1995 Appropriation Act, updates and extends work regarding the cost of competing that was initiated in the 1988 JLARC study. Further, the study mandate also specifies that this study "shall compare professions that are directly competitive with the types of positions that are required to implement the Standards of Quality." Consequently, this study examines the evidence indicating that a cost of competing adjustment is still needed, and the options available for refining the cost of competing adjustment and providing State funding for it.

Cost of Competing Adjustment Is Still Needed

Four converging sets of indicators demonstrate the current need and appropriateness of a cost of competing adjustment in SOQ funding:

- Wage data from the Virginia Employment Commission show that there are different regional wage markets in Virginia, with the biggest difference being between Northern Virginia and the rest of the State.

- Regional consumer price index measures show that there are regional cost of living differences in Virginia, again with the biggest difference being between Northern Virginia and the rest of the State.

- Regional cost of competing differentials for decades have already been recognized as necessary and provided by State agencies for State classified employees in Northern Virginia.

- Other states, as well as Virginia, currently include regional education cost differences as a factor in public education funding.

Taken together, these four sets of indicators show that there still is a need for taking the regional cost of competing into account in SOQ funding.

Illustrative Options for Refining the Cost of Competing Adjustment

Two broad classes of options regarding the cost of competing adjustment are examined in this study: cost calculation options and State funding options. Cost calculation options focus on possible methodological approaches to the cost of competing differential calculation, regardless of the implications for SOQ funding. The State funding options focus on alternatives available to the State regarding how it could pay its share of the cost of competing adjustment, given that the differential has been objectively determined. By considering these two classes of options separately, the likelihood of funding concerns overriding the recognition and consideration of legitimate SOQ costs can be reduced.

Cost Calculation Options. Three main alternative approaches for estimating the cost of competing adjustment are examined in this study:

- The Linear Weighted Average approach attempts to summarize in a single number current State employee practices across all of its job classes with employees in Northern Virginia.

- The Virginia Community College System (VCCS) Policy approach applies the cost of competing differentials used by the VCCS in budgeting for Northern Virginia Community College.

- The Stratified Match approach attempts to match categories of school division positions more closely with selected comparable State classified positions that are provided a Northern Virginia cost of competing differential.

All three approaches have a key assumption in common: that the State should recognize Northern Virginia school division regional costs of competing in a way that is consistent with its own practices regarding its own employees in Northern Virginia. In other words, if the State already recognizes that in order to be competitive in hiring and retaining its own employees it has to recognize that the Northern Virginia job market requires higher salaries than other regions in the State, then it should also recognize that Northern Virginia school divisions face the same conditions as well. However, these three options provide different ways of implementing this assumption. This report discusses, for each of these three alternative approaches, its rationale and method of calculation, and then its advantages and disadvantages.

Illustrative State Funding Options. For any given cost of competing estimate, the State would also have to determine how to fund the cost of competing adjustment. The State has options available to it, other than arbitrarily deflating the cost estimate, that would deal more directly with the State funding issue if the estimate is perceived to be too expensive. Two types of illustrative State funding options are examined:

- funding the full cost of competing adjustment, and

- funding only at the level of the cost of competing that is recognized for teachers (that is, applying the teachers' differential to all other positions as well).

The background and rationale behind each State funding option is discussed in the report, along with its estimated SOQ cost impact and its advantages and disadvantages. Details on the cost impacts associated with each funding option on all affected individual school divisions are shown in Appendix E of the report.

Taking the three cost calculation options and the two State funding options together, six possible combinations of cost calculation and State funding options are available. Illustrative SOQ cost estimates that would correspond with each combination of cost calculation and State funding options were generated by Department of Education staff, using the current SOQ cost model (see table below). The current policy for funding the cost of competing adjustment corresponds to the shaded item in the table: using a "Fund Only at Teachers' Rate" option combined with a "Stratified Match" cost calculation approach. To illustrate, the table below indicates the added cost to the State of funding its full share of the Stratified Match cost approach would be approximately $5.9 million in Fiscal Year 1996. Further, to match the additional State funding, Northern Virginia localities minimum baseline SOQ expenditures would be required to increase by an additional $13.4 million.

In sum, this study found: (1) a cost of competing adjustment to SOQ funding is still needed and appropriate, especially because the State has to provide cost of competing differentials for its own employees in Northern Virginia; and (2) this adjustment could be refined by more carefully matching all categories of school division positions required to implement the SOQ with comparable State classified positions. While there is room for further refinement in the future, the Stratified Match calculation used in this study, fully funded, is a reasonable step in improving the cost of competing adjustment. This refinement would cost the State an additional $5.9 million, and require a higher minimum baseline expenditure of $13.4 million per year in Northern Virginia. But these additional costs would reflect more accurately the costs of implementing the SOQ in Northern Virginia school divisions.

Statewide FY 1996 SOQ Costs to State Government Under Alternative State Funding and Cost Calculation Options

	Cost Calculation Option		
State Funding Option	Linear Weighted Average	VCCS Policy	Stratified Match
Fund Full Cost of Competing Adjustment	$2,556,198,767	$2,547,788,389	$2,553,456,543
Fund Only at Teachers' Rate	$2,556,198,767	$2,545,104,605	$2,547,544,815

Note: Shaded area denotes current funding policy.

Source: Department of Education SOQ funding model runs, using FY 1995-96 funding estimates.

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I. Introduction

Most State funding for elementary and secondary education in Virginia is provided based on the State share of the costs for the Standards of Quality (SOQ). The SOQ are the State's minimum requirements for a high quality program in all school divisions across the Commonwealth. The SOQ have cost implications, and the State has a cost methodology to estimate the cost impact of the standards. The State also has a distribution methodology, to determine State and local responsibility for funding the SOQ.

The cost of competing was first proposed as a specific, operational factor in Virginia's education funding formula in the 1988 Joint Legislative Audit and Review Commission (JLARC) report, *Funding the Standards of Quality, Part II: SOQ Costs and Distribution*. As described in the 1988 JLARC report, the cost of competing refers to the idea that in ways beyond the control of school divisions, the price school divisions must pay for their personnel can be influenced by the need to compete in a regional labor market. The 1988 study proposed that the State recognize a higher cost of competing for school division personnel in Northern Virginia, as the State does for its own classified employees in Northern Virginia.

Cost of competing adjustments have been included in SOQ funding since 1988, although approaches for calculating the adjustments have been changing. This study updates and extends work regarding the cost of competing that was initiated in the 1988 JLARC study. This study examines the evidence indicating that a cost of competing adjustment is still needed, and the options available for refining the cost of competing adjustment and providing State funding for it.

CONCEPTUAL FRAMEWORK

The 1988 JLARC SOQ study set up the basic conceptual framework for considering the cost of competing in SOQ funding. As stated in the 1988 report, the funding system of the Standards of Quality can be designed to promote a number of different broad goals. JLARC staff identified many of these different goals, and determined that, within the constitutional and statutory framework in Virginia for the SOQ, two appear to be primary: pupil equity and tax equity.

Pupil equity is defined as the provision of the resources necessary for a meaningful foundation program of education for the pupils in all school divisions. The "meaningful foundation program" is defined by the SOQ, and the key to achieving pupil equity is to calculate accurately and fully the costs in each school division that can be attributed to the Standards. The cost of competing is one of the factors relating to pupil equity that were identified in the 1988 JLARC report.

The other primary goal, tax equity, entails ensuring that the proportion of resources required from local governments to fund an education program does not vary too greatly. It was assumed in the 1988 study, and is assumed in this study as well, that the cost of competing is not a tax equity issue, but rather a pupil equity issue.

Relationship Between Pupil Equity and Cost of Competing Adjustment

The 1988 SOQ study found that more could be done at that time to promote pupil equity. As the 1988 report states, a key aspect to promoting pupil equity in SOQ cost calculations is to recognize unique circumstances beyond local control that increase local costs. At the time of the study, JLARC staff found the current funding system to place too heavy a reliance on a single per-pupil cost for all localities in funding the SOQ. JLARC staff identified three factors for which local differences should be recognized:

- *SOQ Instructional Staffing Levels.* JLARC staff identified several school divisions requiring staffing levels higher than the quantified minimum SOQ required staffing levels, generally because of diseconomies of scale in sparsely-populated localities.

- *Pupil Transportation.* JLARC staff analysis indicated that two key factors largely beyond local control have an impact on costs: the number of pupils transported and land area. Given the major differences in the cost per pupil transported, pupil equity was found to be improved by grouping localities based on land area and pupils transported, and recognizing cost differences.

- *Cost of Competing in Regional Labor Markets.* JLARC staff examined data indicating differences in wages in regional job markets, especially in Northern Virginia. This factor raised equity concerns because competing in higher-cost regional wage markets is a factor beyond local control. JLARC staff concluded that adjusting for salary differences in Northern Virginia, as the State does for its own classified employees, would improve pupil equity by recognizing cost differences that are beyond local control.

Since 1988 these three factors have been adopted by the General Assembly in calculating the costs of funding the SOQ.

Cost of Competing is Not a Tax Equity Issue

Objections have been raised since the 1988 study that recognizing the cost of competing results in more State funding going to Northern Virginia localities rather than to other, less wealthy regions of the State. These objections, however, obscure the fundamental distinction between pupil equity and tax equity. Pupil equity is concerned with estimating the SOQ costs for a given class of pupils, regardless of the fiscal condition of the locality in which the pupils reside. Tax equity, on the other hand, is concerned with the resources the locality has to help pay for these costs. The key issue is that the 1988

JLARC study, and this study, assume that the legitimate costs of providing a foundation education program do not vary based primarily on the ability of the locality to generate revenues, but rather on pupil needs and the circumstances the local school division faces that are beyond local control. Therefore, the calculation of those costs should not be manipulated on the basis of local ability to pay.

SOQ Funding of the Cost of Competing

The cost of competing funding is the amount that the State decides to recognize for budgeting purposes; the actual Northern Virginia school division salaries are generally higher. This difference occurs because the cost of competing funding attempts to recognize costs that are beyond local control, but not additional costs due to local choice or aspiration. For example, in the 1993-94 school year the prevailing secondary teacher salary was $31,081. This prevailing salary figure is based on a measure of central tendency across all school divisions in the Commonwealth. It is the salary level assumed in budgeting SOQ funding for all school divisions except those in Northern Virginia. The State-recognized salary for Northern Virginia, with the cost of competing adjustment of 9.32 percent, at that time was $33,978. The actual salary of the average secondary teacher in Fairfax County was $42,398.

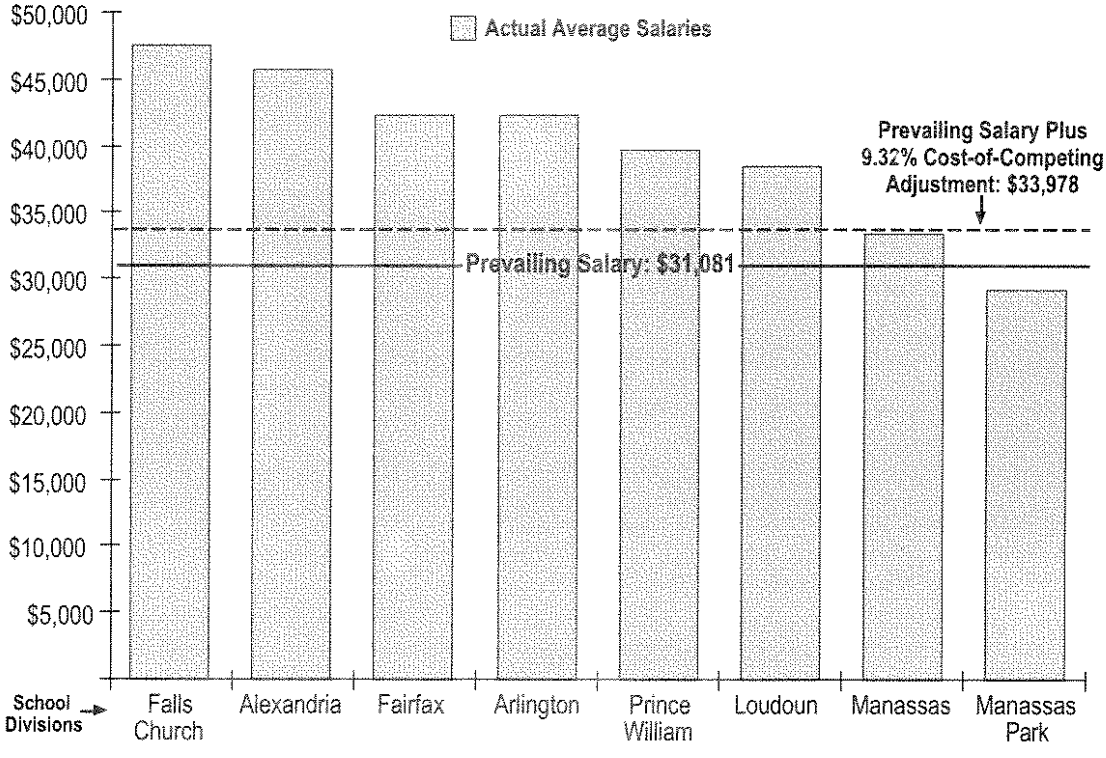
This example can be extended as well to other Northern Virginia school divisions. As shown in Figure 1, actual average secondary teacher salaries paid by most Northern Virginia school divisions are substantially higher than either the prevailing salary or the prevailing salary with a cost of competing adjustment. In contrast, the prevailing salary that is used as a statewide baseline is generally much lower than these actual salary levels because it is more reflective of the salaries paid in the vast majority of school divisions outside of Northern Virginia. The State seeks to treat school divisions equally when deriving the typical or prevailing salary that can be used as a baseline for SOQ funding. The prevailing salary is calculated using an averaging approach that gives the most weight in the calculation to the school divisions with salary levels that are nearer the median, and less weight to those at the high and low extremes.

The differences between these actual salaries in Northern Virginia and the prevailing salary level are attributable both to factors under local control and factors beyond local control. Factors under local control include the experience and education levels of teachers selected for employment, and local aspiration to pay higher salaries. Factors beyond local control include different regional wage markets. The cost of competing adjustment to the prevailing salary level is intended to recognize only regional wage differences that are beyond local control, and it does not recognize the differences attributable to local aspiration or choices. Consequently, it still does not cover substantial remaining differences in actual average salaries that are paid by these Northern Virginia school divisions.

Further, the SOQ funding that reflects the cost of competing is divided into State and local shares, based on a measure of local ability to pay called the Composite Index. Consequently, the State does not pay for the entire adjustment for the cost of

Figure 1

Actual Northern Virginia Secondary Teachers' Salaries Versus Statewide Prevailing Salary Level



Source: Department of Education, *Superintendent's Annual Report for Virginia*, 1993-94; Department of Education Office of Budget Services data.

competing, even when it recognizes its existence. For example, in Fiscal Year 1996, the total cost of funding a 9.32 percent cost of competing adjustment is estimated to be about $57 million. Of this amount, an estimated $17 million would be paid by the State, while the remaining $40 million would be paid by the Northern Virginia localities.

JLARC REVIEW OF COST OF COMPETING ADJUSTMENT

Item 15 of the 1995 Appropriation Act directs JLARC to examine the cost of competing for personnel in Northern Virginia school divisions (Appendix A). This study was requested to find alternative ways of refining the cost of competing adjustment to SOQ funding with a logical, objective rationale. Concern about the cost of competing calculation arose in recent years when the approaches have been changing, resulting in a general decline in the proposed cost of competing adjustment, which has ranged from a high of 12.89 percent to a low of 8 percent. Further, the study mandate states: "Specifically, the study shall compare professions that are directly competitive with the types of positions that are required to implement the Standards of Quality."

In 1994, the General Assembly mandated the Department of Personnel and Training (DPT) to study the cost of competing calculation. The language of the 1994 DPT study mandate is similar to that of the 1995 JLARC study mandate. DPT was directed by the study mandate to "conduct a study of the impact which the cost of competing for personnel in the Planning District 8 labor market has on school division salary costs and the availability of qualified applicants for instructional positions." Consequently, DPT staff contacted Northern Virginia school divisions by telephone, and found that instructional personnel turnover currently did not appear to be a problem at current salary levels. Further, they observed that Northern Virginia teacher salaries, on average, were 21.24 to 35.86 percent higher than teacher salaries paid in the rest of the State.

The DPT report did not address the fact that the statewide prevailing salaries recognized by State SOQ funding, with a cost of competing adjustment, are still generally lower than actual salaries paid in Northern Virginia. In other words, DPT staff found that turnover was not a concern at *actual* salary levels paid in Northern Virginia, but they did not address whether turnover would be a problem at *statewide prevailing* salary levels that are used in determining SOQ funding, and they did not explore alternative ways to refine the cost of competing adjustment in their final report. Consequently, a similar study mandate was given to JLARC in the 1995 General Assembly session.

Issues and Research Activities

The 1994 DPT study appears to have addressed the part of the study mandate concerning "the availability of qualified applicants for instructional positions." Therefore, the two remaining primary issues for this follow-up study are:

- Does the evidence indicate still that a cost of competing adjustment is needed?

- What alternative options are available for refining the cost of competing adjustment? (This issue would include an option that entails comparing job classes "that are directly competitive with the types of positions that are required to implement the Standards of Quality," as stated in the study mandate.)

Several research activities were conducted to address these two issues. Primary activities included: (1) collection and analysis of secondary data from the Virginia Employment Commission and the Department of Personnel and Training; (2) alternative SOQ cost calculations from Department of Education staff; and (3) other activities, such as document and literature reviews and structured interviews with education finance experts and staff from State agencies.

Analysis of Secondary Data. Two key sources of secondary data are examined in this study. One is the Virginia Employment Commission ES-202 annual average weekly wage data, to see whether the patterns of regional wage differences observed in the 1988 JLARC report are also observed using more recent data. The second is the Department of Personnel and Training's most recent Compensation Plan, which

specifies the levels of compensation for all State classified positions, including differentials for Northern Virginia. These data are used to define options for calculating the cost of competing which are consistent with current State policy.

Alternative Cost Calculations. JLARC staff identified several alternative cost and funding approaches, and requested Department of Education budget staff to apply the current SOQ cost model to these different scenarios. The SOQ cost model provided cost estimates that would correspond to various possible options relating to the cost of competing. The costs that are calculated and presented in this report reflect changes that have been made in calculating SOQ costs since the time of JLARC's previous reviews of the SOQ funding formula. For example, one change since that time is the exclusion of compensation costs for school division central office administrative personnel other than superintendents and assistant superintendents.

Other Research Activities. JLARC staff examined State documents relating to the SOQ, education finance literature, and indices of regional costs of living in Virginia. Further, JLARC staff conducted interviews with education finance experts regarding what other states are doing to recognize regional differentials in education costs. JLARC staff also interviewed staff from other State agencies, including the State Council of Higher Education for Virginia, the Virginia Community College System, the Department of Personnel and Training, and the Department of Education.

Report Organization

This report re-examines the need for a cost of competing adjustment to the SOQ funding formula, and examines some options available for refining the cost of competing adjustment and for funding it. Chapter I has provided the conceptual framework for considering the cost of competing in SOQ funding, and discussed the JLARC study mandate, primary study issues, and research activities. Chapter II focuses on the need for a cost of competing adjustment. Chapter III examines illustrative options available for addressing the cost of competing, including an examination of illustrative cost impacts and possible advantages and disadvantages of each option.

II. The Need for a Cost of Competing Adjustment in SOQ Funding

Several sets of indicators converge to demonstrate the current need and appropriateness of a cost of competing adjustment in SOQ funding. These sets of indicators include:

- wage data from the Virginia Employment Commission (VEC) indicating that there are different regional wage markets in Virginia;
- regional consumer price index measures indicating regional cost of living differences in Virginia;
- regional cost of competing differentials that for decades have already been recognized as necessary and provided by State agencies for State classified employees in Northern Virginia; and
- other states, as well as Virginia, that currently include regional education cost differences as a factor in public education funding.

Each set of indicators is examined in this chapter.

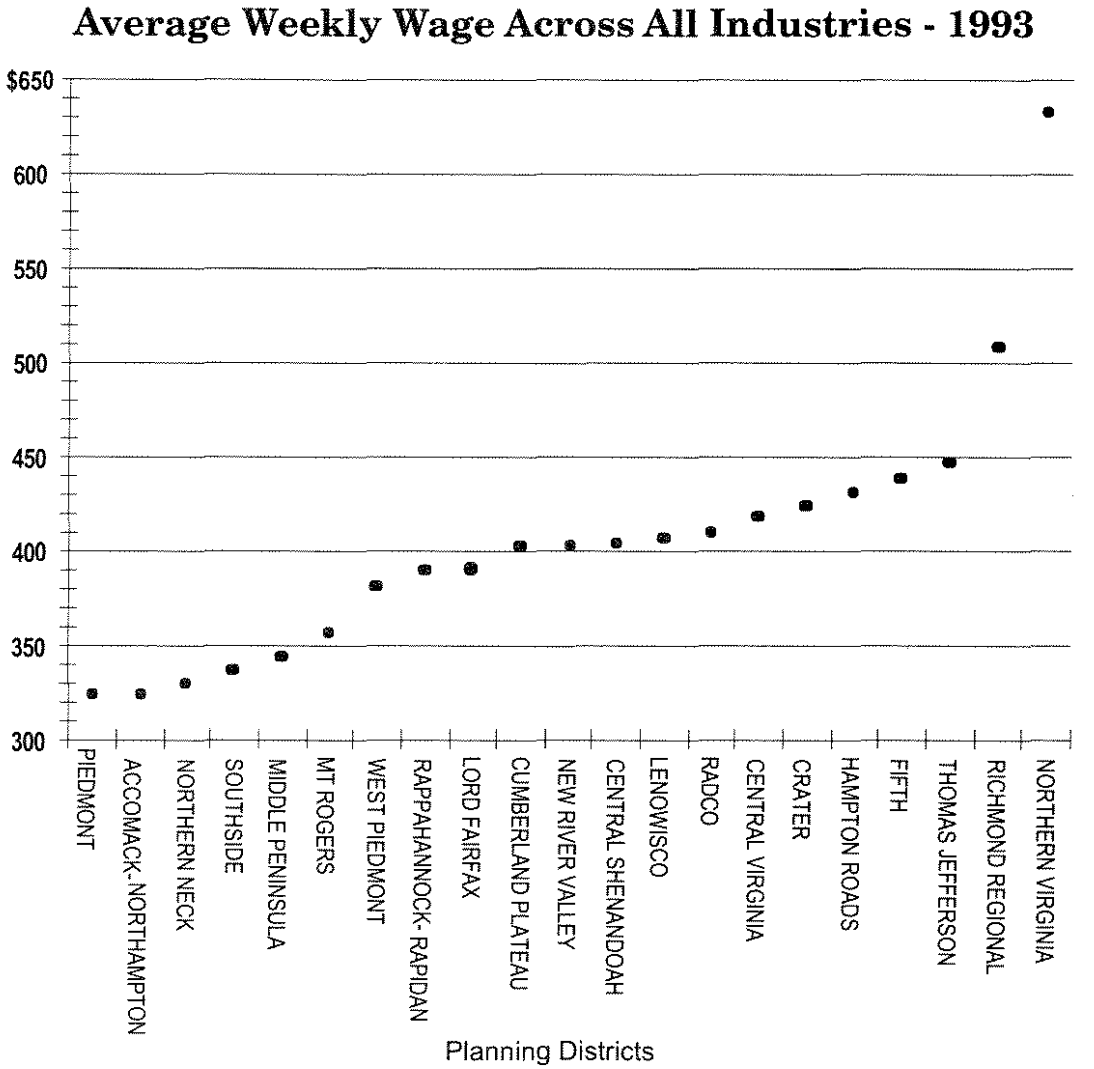
REGIONAL WAGE DIFFERENCES IN VIRGINIA

Average weekly wage data reported to the Virginia Employment Commission (VEC) indicate that the regional wage differences observed in the 1988 JLARC SOQ report still exist. These data show the average weekly wages per worker in the localities, based on employment and payroll information reported by the employers to the VEC, as required by law for unemployment insurance purposes. The most recent ES-202 Annual Average Weekly Wage data are from 1993.

Average weekly wage data were divided by Planning District Commission (PDC) jurisdiction as a way of defining different regional labor markets across the State. The pattern of average weekly wages by region is shown in Figure 2, using 1993 data. This pattern shows that there is a substantial discontinuity between average wages in the Northern Virginia planning district and the planning district with the next highest wage level. The Northern Virginia planning district (which includes Arlington, Fairfax, Loudoun, Prince William, Alexandria, Fairfax City, Falls Church, Manassas, and Manassas Park) has an average weekly wage which is 24 percent greater than the next highest planning district (Richmond City and surrounding areas). The Richmond Regional district was 14 percent higher than the next district.

The pattern shown in the 1993 VEC data is very similar to those shown in VEC data from previous years. A very similar pattern is shown in the 1988 JLARC SOQ

Figure 2



Source: Virginia Employment Commission ES-202 Annual Average Weekly Wage data.

report, using VEC data from 1985-1986. Further, when JLARC staff examined data from 1987 through 1992, the same basic pattern emerged. These findings indicate that the basic pattern of the largest discontinuity being between the Northern Virginia district and the rest of the State has remained stable over the years.

One limitation of the data sets used for the analysis shown in Figure 2 is that they do not provide a means to control for industrial sector or for occupations that may be competitive with the types of positions available in school divisions. The only data set that allows for regional wage differences to be observed while controlling for these factors comes from the VEC's Manufacturing Wage Survey of Selected Occupations. This particular data source focuses on one industrial sector — manufacturing — and provides average weekly or hourly wages of workers in specific occupations, which can be divided by planning district. Using data from the 1993 survey, JLARC staff examined 12 specific

types of positions which may be comparable in some respect to some of the jobs found in school divisions. These positions are: manager of administrative services; office manager/clerical supervisor; accountant and auditor; computer programmer; computer systems analyst; general office clerk; payroll and timekeeping clerk; receptionist/ switchboard operator; secretary; janitor/cleaner; electrician; and machinery mechanic.

For each type of position, the average weekly or hourly wage in each PDC was observed (although a PDC may have a missing value at times, because an insufficient number of manufacturing firms from that PDC would have responded to the VEC survey regarding that particular position). In general, across the twelve positions examined, average wages in the Northern Virginia planning district tended to be higher with greater consistency, compared to those of any other planning district. However, the differences between Northern Virginia average wages and the average wages in other planning districts did not appear to be as pronounced in magnitude, compared to the pattern seen in the data across all industries.

The results from the manufacturing sector data, however, may be less representative of Northern Virginia salaries in general compared to other planning districts. According to 1990 Census data, only six percent of Northern Virginia's workforce was employed in the manufacturing sector, when many other PDCs had much higher concentrations of their workforce in the manufacturing sector. For example, the West Piedmont planning district had 43 percent of its workforce in the manufacturing sector. In contrast, a far larger share of Northern Virginia's workforce (42 percent) was employed in professional and related services, or in public administration; only 18 percent of West Piedmont's workforce was employed in these sectors. Therefore, the pattern seen across all industries may not only reflect Northern Virginia average wages tending to be higher when controlling for industrial sector and occupation, but also the different mixes of industrial sectors and occupations in different planning districts as well.

INDICATORS OF REGIONAL COST OF LIVING DIFFERENCES

There are numerous measures of the cost of living. Perhaps the best-known indicator of the cost of living is the Consumer Price Index. The most relevant measure for comparing different regions within Virginia is the cost of living index developed for over 150 Metropolitan Statistical Areas (MSAs) and components of MSAs across the country.

This measure has been produced for the six largest MSAs in Virginia:

- Metropolitan Washington, D. C. (which includes Northern Virginia and surrounding localities: the counties of Arlington, Clark, Culpeper, Fairfax, Fauquier, King George, Loudoun, Prince William, Spotsylvania, Stafford, and Warren; and the cities of Alexandria, Fairfax City, Falls Church, Fredericksburg, Manassas, and Manassas Park),

- Hampton Roads (which includes: the counties of Gloucester, Isle of Wight, James City, Mathews, and York; and the cities of Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg),

- Richmond-Petersburg (which includes: the counties of Charles City, Chesterfield, Dinwiddie, Goochland, Hanover, Henrico, New Kent, Powhatan, Prince George; and the cities of Colonial Heights, Hopewell, Petersburg, and Richmond),

- Roanoke (which includes: the counties of Botetourt and Roanoke; and the cities of Roanoke and Salem),

- Lynchburg (which includes: the counties of Amherst, Bedford, and Campbell; and the cities of Bedford and Lynchburg), and

- Bristol (which is part of the larger Johnson City-Kingsport-Bristol TN-VA MSA, and includes: the counties of Scott and Washington; and the city of Bristol).

These areas cover less than one third of the land area of Virginia, but include over 73 percent of Virginia's population.

This cost of living index measures relative price levels for consumer goods and services in various areas of the U. S. for a mid-management standard of living. The national average equals 100, and each area's index is read as a percent of the national average. The index does not measure inflation, but compares prices at a single point in time, and it excludes taxes.

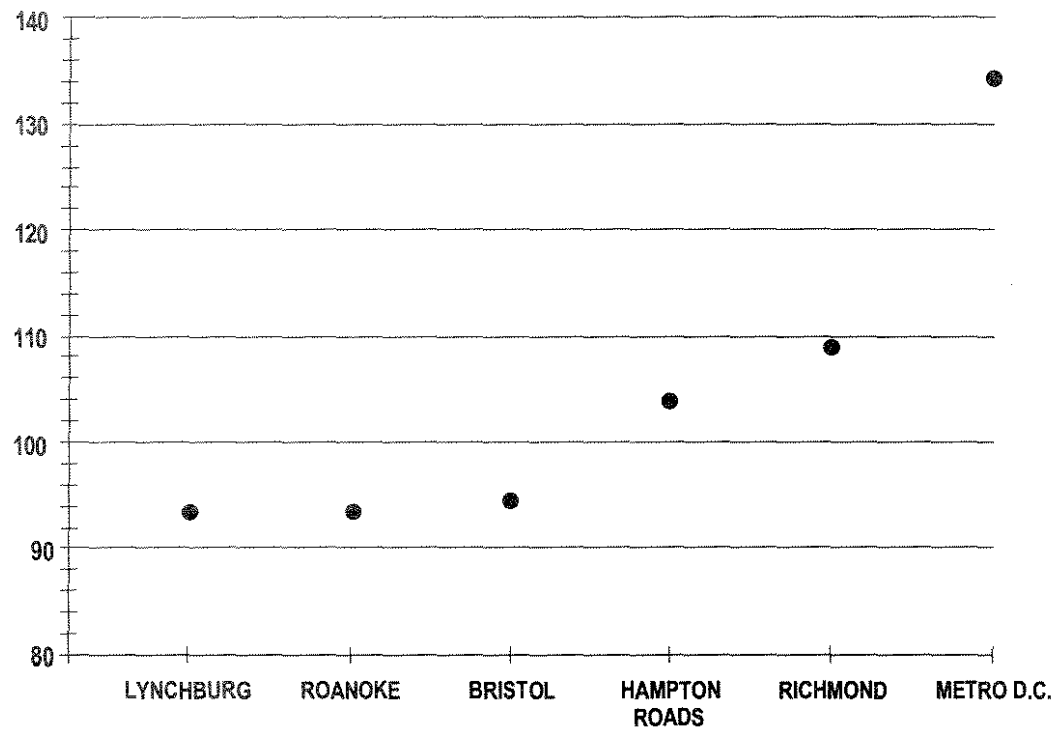
Figure 3 shows the cost of living index values for the six largest MSAs in Virginia. The data are from the third quarter, 1993. The pattern shown in Figure 3 is very similar to the pattern shown in Figure 2: the largest discontinuity occurs in the Virginia portion of the Metropolitan Washington D.C. MSA. The Metro D.C. MSA has a cost of living index that is 23.23 percent higher than the area with the next highest cost of living index (Richmond). In contrast, the Richmond area's cost of living index is only 4.81 percent higher than the area with the next highest cost of living index, which is Hampton Roads. As Figure 2 shows that Northern Virginia's average wages are substantially higher compared to the rest of the State, Figure 3 shows that Northern Virginia's cost of living is also substantially higher compared to other MSAs in the State.

REGIONAL COST OF COMPETING DIFFERENTIALS PROVIDED BY STATE AGENCIES

e has long recognized that it could not ignore regional wage differences
ıa, if it wished to remain competitive in hiring and retaining its own
ever, in the past, State recognition of regional wage differences was often

Figure 3

Cost of Living Index by Virginia Metropolitan Statistical Area



Source: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, 1994. U.S. Government Printing Office, Washington, D.C., 1994.

piecemeal and reactive to specific market and agency pressures. The State now takes a more comprehensive approach to providing cost of competing differentials to State employees, such as through DPT's periodic survey of salaries in Northern Virginia.

According to DPT, the Northern Virginia differential had its origin during World War II, when the concentration of defense efforts in the Northern Virginia and Hampton Roads areas created a competitive disadvantage that could only be met by paying higher wages. It was established as a temporary measure solely because of an inability to fill State jobs. At the end of the war the differential was abandoned.

During the post-war period, the federal government created wage levels in the metropolitan Washington, D.C. area that made it difficult for State and local governments to compete. By 1950 the General Assembly recognized this problem by authorizing Fairfax, Arlington, and Alexandria to supplement, with local funds, the salaries of State employees in their local health departments. Soon afterwards the differential was extended to probation and parole officers. In 1965, George Mason University asked and received authorization to pay a differential because of severe recruiting problems. Also in the 1960s, the Department of Highways and Transportation began providing a differential for construction inspectors and certain other members of highway field

services. This action went into effect after the federal government notified the Department of Highways and Transportation that it would lose funds unless it hired more inspectors in the Fairfax Residency. In the 1970s, the Virginia Community College System was paying a differential to faculty at Northern Virginia Community College, in recognition that the region had a higher cost of living, in comparison to the regions in which the other community colleges in the system were located.

The General Assembly has also reviewed the need for regional differentials over the years. In 1971, the General Assembly authorized a consulting firm to study competitiveness in various areas of the State. The consultant found that Northern Virginia was the only area to have a problem of sufficient magnitude to justify paying a differential. Consequently, the consultant recommended the establishment of a Northern Virginia differential, but only to respond to serious problems in recruiting and retaining qualified personnel. In 1974, the General Assembly directed the Virginia Advisory Legislative Council to study differentials. The resulting report concluded that a system of paying wage differentials based on competitive wage rates was equitable and should be retained.

With the practice of periodic salary surveys beginning in the 1970s, DPT has been applying regional differentials more comprehensively to State employees in Northern Virginia. The Northern Virginia differential is based on Northern Virginia salary survey data. The differential is not based on any measurement of the cost of living, but is related directly to the amount actually paid by public and private employers for similar work. Over time, the DPT salary surveys have included more State job classes and more private firms, local governments, and hospitals for comparison. The application of the differential has evolved now to covering approximately 740 State job classes, and including all agencies with State classified employees in the Northern Virginia area.

VIRGINIA AND OTHER STATES CURRENTLY INCLUDING REGIONAL COST DIFFERENTIALS IN PUBLIC EDUCATION FUNDING

The view that the costs of some education inputs vary by region is not new, nor is it unique to Virginia. For the 1988 SOQ study, JLARC staff conducted several workshops in different parts of the State to obtain input about SOQ funding issues. A key issue raised by many Northern Virginia participants during the workshops was that the State funding system should recognize higher regional costs of purchasing educational goods and services, costs which participants felt could be attributed to local market conditions beyond their control. Workshop participants emphasized that education of equal quality cannot be bought with equal expenditures throughout the State due to regional differences in the cost of living and in the competitiveness of local job markets.

This view also existed before the JLARC SOQ studies. In 1969 the Commission on the Constitutional Revision in Virginia noted: "Operating costs per capita are assumed to be uniform statewide which does not square with the facts." Staff for the 1972-73 Task Force on Financing the Standards of Quality commented: "It seems

plausible that costs for securing a quality education are not uniform throughout Virginia, even if adjustments are made for differences in students and geography."

Assessments of education costs in other states also suggest that costs for education inputs often vary by region. In California, prices have been found to vary by 20 percent, such that the highest cost districts were paying 20 percent more for the same quantity and quality of educational resources as the lowest cost districts. In Texas, prices of education inputs were found to vary by as much as 40 percent. Other states as well, such as Alaska, Florida, Missouri, and Ohio, have recognized in their education funding systems the regional variation in prices. The similarity from state to state of cost patterns across localities, and the stability over time of cost indices which measure price variations, suggest that the differences found are due to a consistent factor or set of factors beyond local control, and not just local preference.

Furthermore, assessments of education costs generally recognize that the vast majority of these costs are primarily personnel costs. For example, in a study of education costs in California, researchers found that "for the vast majority of districts, differences in educational costs were pretty much determined by differences in the costs of school personnel, since school personnel accounted for 85 percent of the average school district's budget." Likewise, a study from Oregon stated: "usually a board of education spends 75 percent to 80 percent of its operating budget for salaries and wages." In Virginia, compensation for personnel on average accounts for over 80 percent of SOQ funding. Consequently, in adjusting for regional price differences in education, the primary factor of most importance is personnel costs.

CONCLUSION

The four sets of indicators examined all converge to a conclusion regarding the cost of competing in SOQ funding. Because personnel costs constitute the bulk of SOQ costs, there is a need to take factors beyond local control affecting personnel costs into account. If adjustments in SOQ funding are not made for these factors, equity problems may arise. One of these factors beyond local control affecting education costs is regional wage differences. Recent VEC average wage data and cost of living index data show that Virginia continues to have major differences in regional wages and cost of living, with Northern Virginia being substantially higher than the rest of the State. These differences have long been recognized by State agencies in compensating State classified employees in Northern Virginia. Furthermore, State entities in the past have recognized regional differences in the costs of educational inputs, and there appears to be reason to believe these differences still exist. Virginia is not alone in recognizing cost of competing differences in funding education — other states do it as well. Taken together, then, these indicators show that there still is a need for taking the regional cost of competing into account in SOQ funding.

III. Illustrative Options for Addressing the Cost of Competing

Two broad classes of options regarding the cost of competing adjustment are examined: cost calculation options, and State funding options. Cost calculation options focus on possible methodological approaches to the cost of competing differential calculation, regardless of the implications for SOQ funding. The State funding options focus on alternatives available to the State regarding how it could pay its share of the cost of competing adjustment, given that the differential has been objectively determined. By considering these two classes of options separately, the likelihood of funding concerns overriding the recognition and consideration of legitimate SOQ costs can be reduced.

COST CALCULATION OPTIONS

Three main alternative approaches for estimating the cost of competing adjustment are examined. The first, the Linear Weighted Average approach, attempts to summarize in a single number current State employee practices across all of its job classes with employees in Northern Virginia. The second, the Virginia Community College System (VCCS) Policy approach, applies the cost of competing differentials used by the VCCS in budgeting for Northern Virginia Community College. The third, the Stratified Match approach, attempts to match categories of school division positions more closely with selected comparable State classified positions that are provided a Northern Virginia cost of competing differential. All three approaches have a key assumption in common: that the State should recognize Northern Virginia school division regional costs of competing in a way that is consistent with its own practices regarding its own employees in Northern Virginia. In other words, if the State already recognizes that in order to be competitive in hiring and retaining its own employees it has to recognize that the Northern Virginia job market requires higher salaries than other regions in the State, then it should also recognize that Northern Virginia school divisions face the same conditions as well. However, these three options provide different ways of implementing this assumption. For each of the three alternative approaches, the rationale and method of calculation are first discussed, followed by an examination of its advantages and disadvantages.

Linear Weighted Average Approach

This approach is essentially the same as that used in the 1988 SOQ study, but with more recent data. In the 1988 study, JLARC staff calculated a proposed cost of competing adjustment based on the State's wage differentials for State classified employees in Northern Virginia. These wage differentials are based on Department of Personnel and Training (DPT) salary surveys that are used to determine step differences between the salary ranges for Northern Virginia employees and the salary ranges for

employees in the rest of the State. To develop an adjustment summarizing State salary practices, the step differences defined by DPT for different job classes were converted into percentage increases. Using a linear weighted average, JLARC staff calculated a prevailing percentage difference across all job classes providing a Northern Virginia cost of competing differential. At that time, this percentage was 12.53. Using more recent data in 1995, this percentage is now 13.95.

Rationale, Data, and Calculations Used in Approach. DPT salary differentials for Northern Virginia are based on competitive job market rates in the area, not on the cost of living. The differentials are additions to the pay base. For example, employees in Northern Virginia are compensated at a base rate plus an additional amount, based on what occupational group their job class falls into. To illustrate, if secretaries are compensated on a statewide basis at grade four, then in Northern Virginia they will be compensated at a base level of grade four plus an eight step increase. Each step corresponds to approximately a 2.25 percent increase. The occupational groups and the corresponding increase for each group are shown in Exhibit 1.

Exhibit 1

DPT Occupational Groups and Differentials

Occupational Group	Cost of Competing Differential*
General Management and Administration	4 Steps
Data Processing	4 Steps
Applied Science and Engineering	4 Steps
Health Sciences	6 Steps
Secretary/Clerical	8 Steps
Trades/Technicians	8 Steps
Counseling/Therapy	10 Steps
Police	10 Steps
Custodial/Labor	12 Steps

*Each step represents an additional 2.25 percent above statewide salary ranges.

Source: Department of Personnel and Training, *1991 Northern Virginia Salary Survey*.

To determine the adequacy of the salary differentials, DPT conducts a survey periodically of Northern Virginia salaries. The specified step increases as well as the occupational groupings may be adjusted if they fail to accurately reflect the actual wage differences found from the survey. According to DPT, the primary consideration in defining the occupational groups is the similarity of duties and responsibilities.

The data for this calculation came from the 1995 *Commonwealth of Virginia Compensation Plan*, which contains two salary scales: one for employees in Northern Virginia and another for employees elsewhere in the State. The appropriate step increases for each job class have been incorporated into the Northern Virginia pay scale.

In this way, comparing the two salary scales provides a way of translating the step increase for a particular job class into an actual salary difference. There were 740 job classes for permanent employees which received a Northern Virginia differential.

The key objective of this approach is to translate step differentials for various DPT job classes into a single number, which represents the overall difference in compensation for State employees in Northern Virginia. This calculation can be summarized in four steps.

1. For each job class with a Northern Virginia differential, find the mid-point of the salary range the State pays Northern Virginia employees by adding the maximum and the minimum salary and dividing by two.

2. Find the corresponding mid-point of the salary range the State pays employees elsewhere in the State for the given job class.

3. Find the percent difference in the Northern Virginia midpoint (from Step 1) and the other corresponding midpoint (from Step 2).

4. Find the prevailing percent difference the State gives its employees in Northern Virginia across all 740 job classes. All job classes are included in this calculation, instead of determining "similar" occupations (which is attempted in the "Stratified Match" approach, as discussed below). For consistency with the methodology used elsewhere in the 1988 JLARC SOQ study to determine prevailing salary levels, a linear weighted average was used as the measure of central tendency to summarize the percent differences across the 740 job classes.

The linear weighted average is simply a type of weighted average. In contrast, a simple, unweighted average gives equal weight to every observation, regardless of whether that observation has an extremely high or low value, or else a value that is more "typical" by being closer to the middle of the distribution. A linear weighted average, on the other hand, gives more weight to observations that have values closer to the middle of the distribution (that is, that are closer to the median) and may be considered more representative of "typical" cases, and less weight to the observations that are at the high or low extremes. This measure is especially useful if the distribution of data is highly skewed. The reasons for using this particular measure of central tendency to represent prevailing SOQ costs are explained in more detail in the 1988 JLARC SOQ report.

Advantages and Disadvantages of Approach. This approach appears to have at least two advantages. One is its relative simplicity, compared to the other two cost approaches examined in this chapter. By summarizing State employee practices in Northern Virginia in a single number, this type of cost of competing adjustment is relatively easy to understand in its derivation, and relatively easy to replicate in future years and to include in the SOQ funding formula. The other advantage is that this approach is grounded in State personnel practices which are based on empirical data from the State salary surveys.

On the other hand, this approach has some disadvantages as well. One is that the adjustment under this approach reflects not only State positions that have counterparts in school divisions, but also those which do not and therefore should ideally be excluded in estimating regional costs of competing that are recognized for school divisions. Another disadvantage is that the approach used to summarize the data in a single number does not reflect how many people are in different job categories in the school divisions, or the magnitude of their salary levels. These two factors, combined with the cost of competing, affect the way in which school divisions incur the costs of meeting the SOQ. Finally, another disadvantage of this approach is that any changes or limitations in the DPT salary survey or resulting compensation practices will also unintentionally affect the cost of competing adjustment that is calculated.

VCCS Policy Approach

Through the Virginia Community College System (VCCS), the State currently provides cost of competing differentials to community colleges in Northern Virginia compared to community colleges elsewhere in Virginia. A reason for considering this alternative approach in this study is that job classes at community colleges in particular may be more comparable to school division job classes than State classified positions taken as a whole. Further, the State has had a policy of recognizing regional cost of competing differences at Northern Virginia community colleges long before the regional cost of competing was considered a factor in SOQ funding. The VCCS currently has a Northern Virginia differential of 8.0 percent for faculty positions. Non-faculty positions are State classified positions which, in aggregate, receive a Northern Virginia differential of 15.95 percent.

Rationale, Data and Calculations Used in Approach. It should be noted that the State also applies regional cost of competing differentials to another institution of higher education in Northern Virginia, besides Northern Virginia Community College: namely, George Mason University. Faculty positions at George Mason are provided an 8.5 percent cost of competing differential. Non-faculty positions are State classified positions, as with the community colleges. Although similar to the differentials applied by the VCCS to Northern Virginia Community College, the differentials applied to George Mason University positions were also considered, but not selected, as another alternative approach for full examination in this study. Appendix B discusses the reasons for using Northern Virginia Community College instead of George Mason University as a comparative benchmark for Northern Virginia school divisions.

Under this approach, faculty positions at Northern Virginia Community College would be considered analogous to instructional positions in Northern Virginia school divisions. Likewise, non-faculty support positions at Northern Virginia Community College would be considered analogous to non-instructional support positions in school divisions.

The cost of competing adjustment the VCCS gives to faculty at Northern Virginia Community College is 8.0 percent above what the VCCS budgets for faculty at

community colleges elsewhere in the State. According to VCCS staff, for several years prior to 1983, this salary differential had been an "unwritten practice" and varied from seven to ten percent. Then, in 1983, the State Board for Community Colleges approved the policy of providing the differential at 8.0 percent, and this policy has been in effect since that time. VCCS staff indicated that the 8.0 percent was not based on any empirical data, but rather was a policy decision. A comparable policy regarding SOQ funding that is consistent with existing VCCS policy would be to recognize an 8.0 percent cost of competing adjustment for instructional positions.

In aggregate, non-faculty employees at Northern Virginia Community College receive a 15.95 percent differential compared to their counterparts elsewhere in the State. Because non-faculty employees at Northern Virginia Community College could be considered analogous to non-instructional support personnel in school divisions under this approach, Northern Virginia school division non-instructional support staff would be provided the 15.95 percent differential. This aggregated 15.95 percent differential is based on data from the VCCS regarding 601 State classified employees at Northern Virginia Community College. Details on how this aggregated differential is derived from the VCCS data are in Appendix B.

Advantages and Disadvantages of Approach. The primary advantage of the VCCS approach is that it matches State practice in another educational setting. It can be argued that the type of staff employed by Northern Virginia school divisions should resemble more closely the type of staff employed at Northern Virginia Community College, compared to all State classified employees in Northern Virginia. Another advantage is that the derivation of the differentials for instructional and non-instructional support staff are relatively straightforward and simple.

There are at least two disadvantages to this approach. One is that there is no clear empirical basis for the 8.0 percent differential provided to faculty, that would be analogous to the empirical basis of differentials derived from DPT Northern Virginia salary survey data. Because the 8.0 percent differential is a policy decision, it can be argued that it is an arbitrary amount that has no real basis on actual differences in the cost of competing or the cost of living in Northern Virginia.

The second disadvantage is that this approach relies on rough analogies regarding staff mixes between Northern Virginia Community College and Northern Virginia school divisions, and these analogies may have their limits. For example, Northern Virginia Community College non-faculty staff may be involved far more extensively in some functions (such as publishing catalogues and printing public information advertising courses) that would not be covered as much by SOQ funding in school divisions. Yet community college staff involved in these functions would still have some bearing on the aggregate differential derived for non-faculty support staff, because it would be difficult to distinguish community college staff who are more involved in activities that are analogous to SOQ-funded activities from those who are not. In other words, the mix of support activities at a community college may be much different from the mix of support activities of a school division that are recognized under the SOQ.

Stratified Match Approach

In the 1988 SOQ report, JLARC staff suggested the use of a single, prevailing differential based on a linear weighted average as a simple, first step in establishing a cost of competing adjustment. JLARC staff also suggested that the approach to calculating the cost of competing adjustment could be refined in the future, by providing separate salary adjustments for different types of positions, based on DPT salary survey data. In this study, this suggested refinement is developed and examined further.

The Stratified Match approach is an attempt to reflect more closely the different types of school division personnel covered by SOQ funding with comparable State classified positions which get a Northern Virginia cost of competing adjustment. This approach also addresses the part of the study mandate which states: "Specifically, the study shall compare professions that are directly competitive with the types of positions that are required to implement the Standards of Quality."

Further, this approach attempts to take into account factors that directly affect total SOQ personnel costs: (1) the number of employees in school divisions in specific job categories; and (2) the relative size of salaries paid in these specific job categories. These two factors are taken into account when deriving an aggregate differential of 9.83 percent for instructional positions (such as teachers), and a separate aggregate differential of 24.61 percent for non-instructional support positions (such as custodial staff).

Rationale, Data and Calculations Used in Approach. Given that different types of State classified positions have various differentials, this approach summarizes the cost of competing adjustments into two separate, single numbers, where one is applied to all instructional positions, and the other is applied to all non-instructional support positions. The reasons why there is a need to take into consideration two key factors that affect total personnel costs can be illustrated as follows.

The number of employees in school divisions in specific job categories affects what type of cost of competing is most appropriate for the State to recognize. As already shown, the State gives varying Northern Virginia differentials to different occupational categories. For example, it gives a 4-step (or 9.32 percent) increase to professionals in administrative positions like accountants and engineers. The State gives a 6-step (14.30 percent) increase to employees in the health professions, like nurses. It gives an 8-step (19.51 percent) increase to clerical positions, like secretaries. The State gives a 10-step (24.95 percent) increase to police. And it gives a 12-step (30.64 percent) increase to laborers, like groundskeepers, and custodial staff. If State-employed groundskeepers in Northern Virginia get a 30.64 percent salary differential, it would make a difference whether school divisions in general employ many or few laborers (like groundskeepers), in proportion to all other non-instructional positions that are employed. If the typical school division employs many groundskeepers, the 30.64 percent differential should get more weight when determining the overall, aggregate differential applied to all non-instructional support positions. In contrast, if the typical school division employs few groundskeepers, the 30.64 percent differential should get less weight.

Likewise, the size of the typical salary has a bearing on how much weight should be given to 12-step, 10-step, 8-step, 6-step, and 4-step differentials. For instance, suppose a typical school division employs as many laborers (who get a 30.64 percent differential) as it does nurses (who get a 14.30 percent differential). Then the fact that a nurse typically is paid two or three times as much as a laborer should also have a bearing on how much weight the 30.64 differential gets, compared to the 14.30 percent differential, when deriving the overall, aggregate differential to be applied to all non-instructional support positions. Further, examination of the 1995 *Commonwealth of Virginia Compensation Plan* indicates that the larger differentials (for example, 30.64 percent) tend to be associated with the lower paying, lower-grade jobs (that is, Grades 1, 2, or 3). Smaller differentials (such as 9.32 percent) tend to be associated with the higher-paying, higher-grade jobs (for example, Grade 11 and up).

The approach to deriving aggregate cost of competing differentials under this option can be summarized in three steps.

1. Determine school division job categories and subcategories.

2. Match up State job classes (that have a Northern Virginia differential) with school division job subcategories.

3. Weight the differentials associated with the various subcategories, to come up with a single differential for instructional positions, and a separate single differential for non-instructional support positions.

Each of these three steps is discussed further in Appendix C.

Advantages and Disadvantages of Approach. The primary advantage of this approach is that it more closely reflects State practices that are relevant to school divisions. The differentials of only those State positions which may have some comparability to school division staff are included in this approach; those State positions which are not comparable are excluded from the calculations. Further, this approach pays far more attention to what services school division personnel are providing, so that the mix of staff (and their corresponding salary costs) in the school divisions are better reflected in the aggregated results. A final advantage of this approach is that it is strongly based on empirical data from the Department of Education and from the Department of Personnel and Training, so that it is less subject to being set at arbitrary levels.

This approach also has its potential disadvantages as well. One is that the matches of State classified positions to school division job categories may be subject to different interpretations, which could affect the final results. But it appears that even if different matches were assumed in many cases, these differences would not have so much impact on the final results. This situation occurs because, in most cases, most of the likely State classified positions that are similar to school division positions have the same differential. This condition is shown in greater detail in Appendix D.

Another potential disadvantage is that this approach is more data intensive, so that replication in future years of the cost of competing adjustment under this approach could require more staff time and effort, compared to the other approaches. However, if the matches used in this study were to be used in future years, then re-calculating the cost of competing adjustment would be simply a matter of updating the data in the spreadsheet in Appendix C (with the existing calculations in the spreadsheet left intact). This task does not appear to be complicated or burdensome.

Future refinement of this approach could entail:

- refining the definitions of the school division functions,
- collecting actual prevailing salary data for each of the school division function subcategories (rather than using midpoints of DPT salary scales for comparable State classified positions as proxies),
- reviewing the matches themselves between school division functions and State classified positions, and
- annually updating the cost of competing adjustment when DPT updates its annual *Commonwealth of Virginia Compensation Plan* and when DOE updates its Annual School Report.

ILLUSTRATIVE STATE FUNDING OPTIONS

For any given cost of competing estimate, the State would also have to determine how to fund the cost of competing adjustment. The State has options available to it, other than arbitrarily deflating the cost estimate, that would deal more directly with the State funding issue if the estimate is perceived to be too expensive. Two types of illustrative State funding options were examined:

- funding the full cost of competing adjustment, and
- funding only at the level of the cost of competing that is recognized for teachers (that is, applying the teachers' differential to all other positions as well).

Taking the three cost calculation options and the two State funding options together, six possible combinations of cost calculation and State funding options are available. Illustrative SOQ cost estimates that would correspond with each combination of cost calculation and State funding options were generated by Department of Education staff, using the current SOQ cost model. Table 1 shows the SOQ costs to the State government associated with each combination. Table 2 shows the corresponding SOQ costs that localities in aggregate would be required to pay, although it should be noted that the actual expenditure levels of Northern Virginia localities generally exceed those required to meet the SOQ under any scenario. The background and rationale behind each

Table 1

Statewide FY 1996 SOQ Costs to State Government Under Alternative State Funding and Cost Calculation Options

	Cost Calculation Option		
State Funding Option	Linear Weighted Average	VCCS Policy	Stratified Match
Fund Full Cost of Competing Adjustment	$2,556,198,767	$2,547,788,389	$2,553,456,543
Fund Only at Teachers' Teachers' Rate	$2,556,198,767	$2,545,104,605	$2,547,544,815

Note: Shaded area denotes current funding policy.

Source: Department of Education SOQ funding model runs, using FY 1995-96 funding estimates.

Table 2

Statewide FY 1996 SOQ Costs to Localities Under Alternative State Funding and Cost Calculation Options

	Cost Calculation Option		
State Funding Option	Linear Weighted Average	VCCS Policy	Stratified Match
Fund Full Cost of Competing Adjustment	$1,540,252,284	$1,520,958,389	$1,533,882,620
Fund Only at Teachers' Teachers' Rate	$1,540,252,284	$1,514,826,062	$1,520,466,080

Note: Shaded area denotes current funding policy.

Source: Department of Education SOQ funding model runs, using FY 1995-96 funding estimates.

State funding option is discussed below, along with its estimated SOQ cost impact and its advantages and disadvantages. Details on the cost impacts associated with each funding option on individual school divisions are shown in Appendix E.

Fund the Full Cost of Competing Adjustment

This option is simply to fund the full cost of competing adjustment, with no other changes to the SOQ funding formula to offset this cost to the State. JLARC staff used this

option, in combination with the Linear Weighted Average approach to calculate the cost of competing adjustment, in the 1988 SOQ study when it was first proposed that the State recognize the cost of competing as a factor in calculating SOQ funding costs. The cost of competing adjustment using the Linear Weighted Average approach is 13.96 percent for both instructional and non-instructional support positions. Using the VCCS Policy approach, it is 8.0 percent for instructional positions and 15.95 percent for non-instructional support positions. Finally, using the Stratified Match approach, it is 9.83 percent for instructional positions and 24.61 percent for non-instructional support positions.

Estimated SOQ Funding Impacts. To illustrate the impacts that various cost calculation and State funding options may have on SOQ costs, the Department of Education SOQ funding model was used to estimate costs under various scenarios. The SOQ funding estimates were for the 1995-96 school year. The State cost of the SOQ for the 1995-96 school year, under current State policy, is $2,547,544,815. As shown in Table 1, the State SOQ cost under the full funding option ranged from a high of $2,556,198,767 to a low of $2,547,788,389. Under this funding option: the Linear Weighted Average approach would cost the State approximately $8,653,000 more than the current policy; the VCCS Policy approach would cost the State approximately $244,000 more; and the Stratified Match approach would cost the State approximately $5,912,000 more than the current policy.

Likewise, required SOQ costs to localities would vary under different cost calculation and State funding options, although the actual expenditure levels of Northern Virginia school divisions generally exceed the SOQ costs under all scenarios. The local cost of the SOQ for the 1995-96 school year, under current State policy, is $1,520,466,080. As shown in Table 2, the local SOQ cost under the full funding option ranged from a high of $1,540,252,284 to a low of $1,520,958,389. Under this funding option: the Linear Weighted Average approach would require Northern Virginia localities to pay approximately $19,786,000 more than the current policy; the VCCS Policy approach would require these localities to pay approximately $493,000 more; and the Stratified Match approach would require these localities to pay approximately $13,417,000 more than under the current policy. Appendix E shows the estimated SOQ costs for individual localities.

Advantages and Disadvantages of Funding Option. The main advantage of the full funding option is that it is consistent with the intent of the General Assembly at the time the SOQ formula was revised in 1988: to fully fund the State share of accurately calculated SOQ costs. This option is also consistent with promoting the goal of pupil equity, as it was defined in the 1988 JLARC SOQ study. The main disadvantage of this option is that it would cost the State more money compared to current practice (ranging from approximately $244,000 to $8,653,000), and it would require Northern Virginia localities to pay more to meet estimated SOQ costs as well (ranging from approximately $466,000 to $19,786,000), although in reality they generally exceed these higher spending levels already.

Fund Only at Teachers' Rate

This funding option has been used by the State in recent years. The current approach to the cost of competing adjustment is to recognize the cost of competing differential applied to teachers (that is, 9.32 percent), and apply it to all other job categories in the school divisions as well. The rationale for this approach could be that the vast majority — approximately two-thirds — of school division employees are teachers. Therefore, if a single number were to be chosen as the cost of competing adjustment for all school division personnel, and that number were to be the median (or the most frequently occurring) of all the possible differentials that would apply to the various employees in school divisions, then that number would be the differential that is applied to teachers. Under the Linear Weighted Average approach, the same differential is applied to teachers and all other school division positions: 13.96 percent. Under the VCCS Policy approach, the differential applied to teachers is 8.0 percent. Under the Stratified Match approach, the differential applied to teachers is 9.32 percent.

Estimated SOQ Funding Impacts. Under this funding option, the Linear Weighted Average approach results are identical to those under the full funding option, because the same differential (13.96 percent) is applied to teachers and all other positions in either case. The State cost, then, is $2,556,198,767, or approximately $8,653,000 more than under the current policy. The corresponding SOQ cost to localities is $1,549,252,284, or an additional $19,786,204 compared to the current policy. Using the VCCS Policy approach, the State cost is $2,545,104,605, or approximately $2,440,000 less than under the current policy. The corresponding SOQ cost to localities is $1,514,826,062, or approximately $5,640,000 less than under the current policy. Using the Stratified Match approach, teachers have a differential of 9.32 percent. Therefore, applying this 9.32 percent differential to all school division positions is identical to current State policy, which has a State SOQ cost of $2,547,544,815 and a required local cost of $1,520,466,080. Again, Appendix E shows the SOQ costs for individual school divisions.

Advantages and Disadvantages of Funding Option. The main advantage of this funding option appears to be that it saves the State money (under the VCCS or the Stratified Match approaches), compared to the full funding option. Of course, this advantage to the State would be seen as a disadvantage to the local school divisions that would receive less funding as a result (and that would be paying for higher teacher salaries anyway).

One disadvantage to this funding option is that there is no need for the fundamental assumption behind it: that a single differential for some job category (whether in the form of a median or a mode) be applied to all school division job categories when adjusting for the cost of competing. As demonstrated with the VCCS Policy and the Stratified Match approaches, there are ways to aggregate various differentials into a single number that take relevant information into account rather than ignore it. A more serious disadvantage of this funding option is that it may result in the State actually not funding its full share of the SOQ costs, because the costs of competing for teachers appear to be lower than those of many other categories of school division personnel. This

downward bias seems to contradict the intent of the General Assembly to fully fund the State share of SOQ costs when it revised the SOQ funding formula in 1988.

CONCLUSION

In sum, this study found: (1) a cost of competing adjustment to SOQ funding is still needed and appropriate, especially because the State has to provide cost of competing differentials for its own employees in Northern Virginia; and (2) this adjustment could be refined by more carefully matching all categories of school division positions required to implement the SOQ with comparable State classified positions. While there is room for further refinement in the future, the Stratified Match calculation used in this study, fully funded, is a reasonable step in improving the cost of competing adjustment. This refinement would cost the State an additional $5.9 million, and require a higher minimum baseline expenditure of $13.4 million per year in SOQ funding in the Northern Virginia localities. But these additional costs would reflect more accurately the costs of implementing the SOQ in Northern Virginia school divisions.

Appendixes

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Appendix A

Item 15#4C — 1995 Appropriation Act

The Joint Legislative Audit and Review Commission, with the assistance of the Superintendent of Public Instruction, shall conduct a study of the impact which the cost of competing for personnel in the Planning District 8 labor market has on school division salary costs and the availability of qualified applicants for instructional positions. Specifically, the study shall compare professions that are directly competitive with the types of positions that are required to implement the Standards of Quality. The Department of Personnel and Training shall provide assistance in this review as may be requested. The results of this study shall be provided to the Chairmen of the Senate Finance and House Appropriations Committees no later than October 1, 1995.

Appendix B

Details on Rationale, Data, and Calculations Used in the VCCS Policy Approach

There are at least three reasons for using Northern Virginia Community College instead of George Mason University as a comparative benchmark for Northern Virginia school divisions. One is that faculty positions at George Mason generally have substantial research, as well as teaching, duties. In contrast, the duties of Northern Virginia Community College faculty focus far more on teaching, which makes them far more comparable to school division faculty duties.

A second reason is that the 8.5 percent cost of competing differential applied to George Mason faculty positions is based on comparisons made across the entire nation, and not on regions within Virginia. According to staff of the State Council of Higher Education for Virginia (SCHEV), faculty salaries for George Mason University are determined in two steps. The first step is to determine the base faculty salary of each senior institution of higher education in Virginia, in comparison to peer institutions selected for that particular institution. Every senior institution in Virginia has a peer group of approximately two dozen other institutions across the country, and faculty salaries in this peer group are used to determine the amount the State will budget for faculty salaries at each Virginia institution. The second step is to adjust this base faculty salary for any regional differences in cost of living. In 1987, SCHEV contracted a study to determine whether the peer group members were in localities with comparable costs of living at each Virginia senior institution. The study found that for most Virginia institutions, the peer group members generally came from settings with a comparable cost of living. The only exception was George Mason University. The study determined that George Mason's surroundings had a cost of living that was higher than those of its peer institutions in general, and that an 8.5 percent increase in faculty compensation would adjust for this difference in what an appropriate base salary should be. All of George Mason's peer institutions were outside of Virginia. Consequently, George Mason's faculty cost of competing differential, although empirically derived, cannot be as meaningfully used to represent Northern Virginia school divisions' regional cost of competing compared to other regions of the State.

The third reason is that George Mason University contracts out far more of its support services to the private sector compared to other higher education institutions. As a result, the mix of full-time State classified employees at George Mason is less "typical" compared to that of any other higher education institution in Virginia. Consequently, it is less clear how comparable non-faculty support positions at George Mason (in contrast to Northern Virginia Community College) may be to school division support positions.

In sum, compared to George Mason University, the situation of Northern Virginia Community College appears to be a "closer fit" to that of Northern Virginia school divisions. Extending this assumption, under this approach faculty positions at Northern Virginia Community College would be considered analogous to instructional

positions in Northern Virginia school divisions. Likewise, non-faculty support positions at Northern Virginia Community College would be considered analogous to non-instructional support positions in school divisions.

In aggregate, non-faculty employees at Northern Virginia Community College receive a 15.95 percent differential compared to their counterparts elsewhere in the State. This aggregated 15.95 percent differential is based on data from the VCCS regarding 601 State classified employees at Northern Virginia Community College. The VCCS data included the job title, grade, and number of employees in each position. The corresponding salary range and Northern Virginia differential for each position was determined from the 1995 *Commonwealth of Virginia Compensation Plan*. Because the differentials range from 4 steps to 12 steps for different types of positions, a method was needed to summarize these various differentials in a single number. Further, it was assumed that the differentials of job classes with more employees or with higher salary costs should receive more weight in this aggregated differential. Consequently, the weighting scheme for deriving this aggregated differential can be characterized as

$$\frac{\Sigma(n)(s)(d)}{\Sigma(n)(s)}$$

where:

n = number of employees in job class

s = salary level of job class

d = cost of competing differential of job class.

The spreadsheet in Exhibit 2 displays the data from the 601 non-faculty employees at Northern Virginia Community College and the calculation to derive an aggregated cost of competing. For each job class, the spreadsheet shows the job title, the number of employees, the step differential, the grade, the salary range and its midpoint. The salary level used was the midpoint of the salary range, because the actual prevailing salary of each job class was not known. The weight assigned to each job class differential is shown in the far right column (number of employees times the salary midpoint of the job class). The spreadsheet calculates the aggregated differential by summing the weighted job class differentials and dividing it by the sum of the weights.

EXHIBIT 2

NO. VA. COMMUNITY COLLEGE NON-FACULTY EMPLOYEES

Job Class	# of Empl.	Step Diff.	% Diff.	Grade	Min. Salary	Max. Salary	Midpt. Salary	# Empl. * Midpt sal* % Diff.	# Empl. * Midpt sal
Housekeeping worker	8	12	30.64%	1	10995	16788	13891.5	34050.84	111132
Grounds worker	12	12	30.64%	2	12020	18352	15186	55835.88	182232
Office services aide	10	8	19.51%	2	12020	18352	15186	29627.89	151860
Postal aide	2	8	19.51%	2	12020	18352	15186	5925.577	30372
Grounds worker sr	4	12	30.64%	3	13140	20062	16601	20346.19	66404
Housekeeping wkr sr	1	12	30.64%	3	13140	20062	16601	5086.546	16601
Institutional chauffeur	3	12	30.64%	3	13140	20062	16601	15259.64	49803
Trades/utililities wkr	10	8	19.51%	3	13140	20062	16601	32388.55	166010
Lab mechanic A	1	8	19.51%	4	14364	21932	18148	3540.675	18148
Office services asst	72	8	19.51%	4	14364	21932	18148	254928.6	1306656
Postal assistant	1	8	19.51%	4	14364	21932	18148	3540.675	18148
Secretary	25	8	19.51%	4	14364	21932	18148	88516.87	453700
Storekeeper	3	8	19.51%	4	14364	21932	18148	10622.02	54444
Fiscal assistant	14	8	19.51%	5	15703	23975	19839	54188.24	277746
Office services spec	25	8	19.51%	5	15703	23975	19839	96764.72	495975
Printing press oper A	2	8	19.51%	5	15703	23975	19839	7741.178	39678
Secretary senior	37	8	19.51%	5	15703	23975	19839	143211.8	734043
Computer oper. tech	1	4	9.32%	6	17166	26209	21687.5	2021.275	21687.5
Executive secretary	16	8	19.51%	6	17166	26209	21687.5	67699.7	347000
Fiscal tech	11	8	19.51%	6	17166	26209	21687.5	46543.54	238562.5
Instructional ctr tech	6	4	9.32%	6	17166	26209	21687.5	12127.65	130125
Lab mechanic B	8	8	19.51%	6	17166	26209	21687.5	33849.85	173500
Office services supv	4	8	19.51%	6	17166	26209	21687.5	16924.93	86750
Printing press oper B	1	8	19.51%	6	17166	26209	21687.5	4231.231	21687.5
Program support tech	26	8	19.51%	6	17166	26209	21687.5	110012	563875
Storekeeper sr	4	8	19.51%	6	17166	26209	21687.5	16924.93	86750
Trades/util. sr worker	2	8	19.51%	6	17166	26209	21687.5	8462.463	43375
Carpenter	6	8	19.51%	7	18765	28652	23708.5	27753.17	142251
Electrician	4	8	19.51%	7	18765	28652	23708.5	18502.11	94834
Enrollmr servs asst	1	4	9.32%	7	18765	28652	23708.5	2209.632	23708.5
Equipment repair tech	1	8	19.51%	7	18765	28652	23708.5	4625.528	23708.5
Graphic artist	1	4	9.32%	7	18765	28652	23708.5	2209.632	23708.5
Instructional asst	55	4	9.32%	7	18765	28652	23708.5	121529.8	1303968
Instructional ctr supv	5	4	9.32%	7	18765	28652	23708.5	11048.16	118542.5
Personnel assistant	4	4	9.32%	7	18765	28652	23708.5	8838.529	94834
Plumber/steamfitter	2	8	19.51%	7	18765	28652	23708.5	9251.057	47417
Prog support tech sr	3	8	19.51%	7	18765	28652	23708.5	13876.59	71125.5
Storekeeper supv	2	8	19.51%	7	18765	28652	23708.5	9251.057	47417
Student act bldg mgr	1	4	9.32%	7	18765	28652	23708.5	2209.632	23708.5
Television prod tech	2	4	9.32%	7	18765	28652	23708.5	4419.264	47417
Admin staff asst	1	4	9.32%	8	20514	31322	25918	2415.558	25918
Audio visual tech	6	4	9.32%	8	20514	31322	25918	14493.35	155508
Buyer	1	4	9.32%	8	20514	31322	25918	2415.558	25918
Computer oper tech	2	4	9.32%	8	20514	31322	25918	4831.115	51836
Engineering tech IV	1	8	19.51%	8	20514	31322	25918	5056.602	25918

Enrollmt servs spec	7	4	9.32%	8	20514	31322	25918	16908.9	181426
Equipmt repair tech sr	1	8	19.51%	8	20514	31322	25918	5056.602	25918
Fiscal tech senior	9	4	9.32%	8	20514	31322	25918	21740.02	233262
HVAC inst. & rep. tec	7	8	19.51%	8	20514	31322	25918	35396.21	181426
Lab mechanic C	13	8	19.51%	8	20514	31322	25918	65735.82	336934
Library assistant	20	4	9.32%	8	20514	31322	25918	48311.15	518360
Police officer	28	10	24.95%	8	20514	31322	25918	181063.1	725704
Printing svcs supv B	1	8	19.51%	8	20514	31322	25918	5056.602	25918
Public rltns asst spe	3	4	9.32%	8	20514	31322	25918	7246.673	77754
Pur & stores supv B	1	4	9.32%	8	20514	31322	25918	2415.558	25918
Student services spec	5	4	9.32%	8	20514	31322	25918	12077.79	129590
Television system tec	1	8	19.51%	8	20514	31322	25918	5056.602	25918
Accountant	4	4	9.32%	9	22426	34240	28333	10562.54	113332
Bldg construct. inspec	3	8	19.51%	9	22426	34240	28333	16583.3	84999
Bldg & grnds supv A	2	8	19.51%	9	22426	34240	28333	11055.54	56666
Buyer specialist	1	4	9.32%	9	22426	34240	28333	2640.636	28333
Computer netwk supp	7	4	9.32%	9	22426	34240	28333	18484.45	198331
Electronic tech	3	8	19.51%	9	22426	34240	28333	16583.3	84999
Extension ctr asst B	1	4	9.32%	9	22426	34240	28333	2640.636	28333
Graphic designer	1	4	9.32%	9	22426	34240	28333	2640.636	28333
HVAC inst.& rep. sr	2	8	19.51%	9	22426	34240	28333	11055.54	56666
Personnel analyst	1	4	9.32%	9	22426	34240	28333	2640.636	28333
Police sergeant	3	10	24.95%	9	22426	34240	28333	21207.25	84999
Statistical analyst	3	4	9.32%	9	22426	34240	28333	7921.907	84999
TV production spec A	1	4	9.32%	9	22426	34240	28333	2640.636	28333
Agency mgt analyst	6	4	9.32%	10	24515	37431	30973	17320.1	185838
Alumni prog analyst	1	4	9.32%	10	24515	37431	30973	2886.684	30973
Bldg & grnds supv B	2	8	19.51%	10	24515	37431	30973	12085.66	61946
Comp. netwk sup. tec	1	4	9.32%	10	24515	37431	30973	2886.684	30973
Electronic tech sr	2	8	19.51%	10	24515	37431	30973	12085.66	61946
Enrollmt servs coord	6	4	9.32%	10	24515	37431	30973	17320.1	185838
Graphic design supv	1	4	9.32%	10	24515	37431	30973	2886.684	30973
HVAC inst. & rep. sup	2	8	19.51%	10	24515	37431	30973	12085.66	61946
Police lieutenant	2	10	24.95%	10	24515	37431	30973	15455.53	61946
Programmer	3	4	9.32%	10	24515	37431	30973	8660.051	92919
TV production spec B	1	4	9.32%	10	24515	37431	30973	2886.684	30973
Accountant senior	1	4	9.32%	11	26800	40919	33859.5	3155.705	33859.5
Agency mgt analyst sr	1	4	9.32%	11	26800	40919	33859.5	3155.705	33859.5
Audio visual supv	1	4	9.32%	11	26800	40919	33859.5	3155.705	33859.5
Bldg & grnds supt A	1	4	9.32%	11	26800	40919	33859.5	3155.705	33859.5
Buyer senior	2	4	9.32%	11	26800	40919	33859.5	6311.411	67719
Personnel pract anlst	3	4	9.32%	11	26800	40919	33859.5	9467.116	101578.5
Police captain	1	10	24.95%	11	26800	40919	33859.5	8447.945	33859.5
Statistical analyst sr	1	4	9.32%	11	26800	40919	33859.5	3155.705	33859.5
Accounting mgr A	2	4	9.32%	12	29297	44732	37014.5	6899.503	74029
Business mgr B	5	4	9.32%	12	29297	44732	37014.5	17248.76	185072.5
Computer oper supv	1	4	9.32%	12	29297	44732	37014.5	3449.751	37014.5
Electrical engineer	1	4	9.32%	12	29297	44732	37014.5	3449.751	37014.5
Personnel pra anal sr	1	4	9.32%	12	29297	44732	37014.5	3449.751	37014.5
Programmer-analyst	3	4	9.32%	12	29297	44732	37014.5	10349.25	111043.5
Bldg & grnds dir A	1	4	9.32%	13	32027	48900	40463.5	3771.198	40463.5

Materiel mgt director	1	4	9.32%	13	32027	48900	40463.5	3771.198	40463.5
Safety engineer sr	1	4	9.32%	13	32027	48900	40463.5	3771.198	40463.5
Telecomm ntwk analy	1	4	9.32%	13	32027	48900	40463.5	3771.198	40463.5
Computer sys engr	3	4	9.32%	14	35012	53457	44234.5	12367.97	132703.5
Sr programmer-analys	2	4	9.32%	14	35012	53457	44234.5	8245.311	88469
Systems analyst	1	4	9.32%	15	38274	58439	48356.5	4506.826	48356.5
Accounting mgr C	1	4	9.32%	15	38274	58439	48356.5	4506.826	48356.5
Comp sys sr engr	1	4	9.32%	15	38274	58439	48356.5	4506.826	48356.5
Fiscal director B	1	4	9.32%	16	41841	63884	52862.5	4926.785	52862.5
Human resource dir	1	4	9.32%	16	41841	63884	52862.5	4926.785	52862.5
Prog-system dev supv	1	4	9.32%	16	41841	63884	52862.5	4926.785	52862.5
TOTAL	601							2233442	14005384
Aggregate Northern Virginia differential for non-faculty employees:							15.95%		
[Sum of (# employees * Midpoint salaries * % Differential)									
divided by sum of (# employees * Midpoint salaries)]									

Appendix C

Details on Rationale, Data, and Calculations Used in the Stratified Match Approach

This appendix has two main objectives in documenting several aspects concerning the Stratified Match approach to calculating a cost of competing adjustment. One is to describe in more detail an overview of the general approach used. The other is to describe the rationale and data sources for matches in each of the 42 subcategories of school division positions used in this approach.

OVERVIEW OF GENERAL APPROACH

The general approach to deriving aggregate cost of competing differentials can be summarized in three steps.

1. Determine school division job categories and subcategories.

2. Match up State job classes (that have a Northern Virginia differential) with school division job subcategories.

3. Weight the differentials associated with the various subcategories, to come up with a single differential for all instructional positions, and a separate single differential for all non-instructional support positions.

School Division Job Categories and Subcategories

The most meaningful set of school division job subcategories that can be compared to State classified positions come from the Virginia Department of Education's (DOE) Annual School Report form, in which every school division reports the number of full time equivalent personnel positions. However, some categories and subcategories are not included because they are currently not covered by SOQ funding. Some of these excluded subcategories are: Homebound instructional; Administrative, admin.; Administrative, other professional; Administration, technical; and Administration, clerical. JLARC staff included the Administration subcategories in the SOQ funding formula in the 1988 SOQ study, but since that time they have been excluded from SOQ funding. Another category to which the SOQ cost of competing adjustment is not applied is Transportation, because the SOQ funding calculation for this area is determined separately from the rest of SOQ funding. Calculations used in this other part of the SOQ funding formula already reflect some of the higher regional costs of competing that show up in pupil transportation costs, so making an additional cost of competing adjustment for personnel costs in this specific category does not appear to be warranted.

In each of the subcategories, statewide totals for full-time equivalent positions were used as weights in deriving aggregate differentials. The reason for basing the weights on statewide totals, rather than totals from Northern Virginia school divisions alone, is that the entire SOQ funding formula is based on statewide "prevailing" practices or staffing levels, rather than practices or staffing levels that may be unique to Northern Virginia school divisions. After all, the cost of competing adjustment is a component of the broader SOQ funding formula, rather than a literal compensation policy intended to have a direct impact on Northern Virginia employees' paychecks. This broader SOQ funding formula relies heavily on the notion of prevailing statewide practices, rather than the practices of an individual school division. This reliance is intended to de-emphasize factors which an individual school division can manipulate, and thereby reduce the ability of an individual school division to manipulate the SOQ funding formula. In this way, the weights reflecting staffing levels in this cost of competing adjustment are more reflective of statewide prevailing practice than Northern Virginia prevailing practice. Consequently, the components of the cost of competing adjustment under this option are more consistent with the other components of the SOQ funding formula.

Match State Job Classes with School Division Subcategories

State job positions with a Northern Virginia differential were selected and sorted into the school division subcategories. The results of this sorting exercise are documented in Appendix D. In this sorting exercise, State job classes filled by non-faculty employees at Northern Virginia Community College were also included. In this exercise, a wide range of positions were considered for each category and subcategory, to be able to see how much the range of differentials would vary if the standards for "comparable positions" were broadened or narrowed. If broadening the comparisons substantially widened the range of differentials seen, then there may have been reason to suspect that keeping the comparisons narrow would arbitrarily affect the kind of differentials observed. On the other hand, if the differentials tended to remain uniform regardless of how broad the comparisons may be, then there was reason to have more confidence in the comparability and stability of the differential selected. In general, broadening the comparisons did not appear to widen substantially the range of differentials for most subcategories.

Weighting Subcategories to Derive Aggregate Differentials

The differentials associated with each subcategory were weighted by number of employees and by salary level, to derive a single aggregate differential for instructional positions, and a separate one for non-instructional support positions. Similar to that used in the VCCS Policy approach, the weighting scheme can be characterized as

$$\frac{\sum(n)(s)(d)}{\sum(n)(s)}$$

where:

n = number of employees in subcategory

s = salary level (either prevailing salary, if known, or midpoint of salary range)

d = cost of competing differential assigned to subcategory.

The components "n," "s," and "d" can be described further in more general terms here, but are discussed in more detail for each subcategory in the next section of this appendix. The number of employees in the subcategory ("n") are statewide totals reported to the Department of Education from the school divisions, as already discussed above. The data sources are either the *Superintendent's Annual Report*, a DOE publication, or Annual School Report data that were provided by DOE staff at the request of JLARC staff. The salary level ("s") is either (1) the prevailing salary used in SOQ funding that can be applied to a given subcategory if available, or (2) if the prevailing salary is not available for that subcategory, the midpoint of the salary range assigned to the subcategory. This assignment is based on the range of grades of State job classes that are used as comparators for the subcategory, as shown in Appendix D. The range is the minimum salary of the lowest grade and the maximum salary of the highest grade. These midpoints are intended to serve as rough proxies in the weighting scheme for the magnitude of prevailing salaries in these subcategories, which are not known directly. Finally, the differential ("d") for a given subcategory is determined by examining the comparator State positions listed in Appendix D, and determining which differential appears to be predominant in that subcategory. "Predominance" generally means that the vast majority of job classes listed for a given subcategory has the same differential.

RATIONALE AND DATA SOURCES FOR MATCHES IN SUBCATEGORIES

Forty-two job subcategories from DOE school division data were used to derive aggregate cost of competing differentials. The spreadsheet in Exhibit 3 displays the data entered for each element in each subcategory, and the calculations used to derive the aggregate differentials. This section describes, for each subcategory, the data sources and (if they are not obvious from the data sources) the rationales for determining the selected differential and the selected salary level. It also shows the weights used in deriving the aggregate differentials.

Instructional Positions

Elementary Teachers, Secondary Teachers, Elementary Assistant Principals, Secondary Assistant Principals, Elementary Principals, Secondary Principals, Teacher Aides. The "number of employees" in these categories are taken from the DOE's *Superintendent's Annual Report for Virginia* (pp. 78-79). A 4-step (9.32 percent) differential is applied to teachers, because the vast majority of comparable professional State classified positions receive a 4-step Northern Virginia adjustment (see

EXHIBIT 3

STRATIFIED MATCH APPROACH

School Division / Job Category	# of Empl.	Step Diff.	% Diff.	Grade Min	Grade Max	Salary Min.	Salary Max.	Midpt.	# Empl.* Midpt sal* % Diff.	# Empl.* Midpt sal
INSTRUCTIONAL POSITIONS										
Teachers - elem.	44985	4	9.32%					28776	120646315	1294488360
Teachers - secondary	30218	4	9.32%					31081	87533967	939205658
Asst principals - elem.	678	4	9.32%					40572	2563728.5	27507816
Asst principals - sec.	916	4	9.32%					44432	3793213.2	40699712
Principals - elem.	1270	4	9.32%					48071	5689875.8	61050170
Principals - sec.	526	4	9.32%					52449	2571217.8	27588174
Teacher aides	11209	4	9.32%					10121	10573194	113446289
Guidance counselors	3038	10	24.95%	9	9	22426	34240	28333	21475876	86075654
Media librarian	1795	4	9.32%	9	10	22426	37431	29929	5007834.7	53732132.5
TOTAL	94635								259855222	2643793965
Aggregate differential:										**9.83%**
NON-INSTRUCTIONAL SUPPORT POSITIONS										
Instructional Support										
Guidance admin.	88	4	9.32%	5	17	15703	69837	42770	350782.43	3763760
Guidance technical	48	4	9.32%					14556	65117.722	698688
Guidance clerical	395	8	19.51%					14556	1121750.9	5749620
Social worker admin.	21	4	9.32%	5	17	15703	69837	42770	83709.444	898170
Social worker instr.	186	10	24.95%	8	11	20514	40919	30717	1425460.6	5713269
Social worker other	258	10	24.95%	8	11	20514	40919	30717	1977251.8	7924857
Social worker clerical	64	8	19.51%					14556	181752.04	931584
Homebound admin.	4	4	9.32%	5	17	15703	69837	42770	15944.656	171080
Homebound clerical	5	8	19.51%					14556	14199.378	72780
Improvement admin.	649	4	9.32%	5	17	15703	69837	42770	2587020.4	27757730
Improvement instr.	1077	4	9.32%	TE	TE	25784	38677	32231	3235181.6	34712248.5
Improvement technica	382	4	9.32%					14556	518228.53	5560392
Improvement clerical	876	8	19.51%					14556	2487731	12751056
Media admin.	61	4	9.32%	5	17	15703	69837	42770	243156	2608970
Media instr.	150	4	9.32%	TE	TE	25784	38677	32231	450582.39	4834575
Media technical	332	4	9.32%					14556	450397.57	4832592
Media clerical	617	8	19.51%					14556	1752203.2	8981052
Princ. technical	328	4	9.32%					14556	444971.1	4774368
Princ. clerical	4173	8	19.51%					14556	11850801	60742188
TOTAL	9626								28905459	189715220
Category Differential										15.24%

Attendance & Health										
Administrative	62	4	9.32%					34161	197395.92	2117982
Other professional	914	10	24.95%	11	14	26800	53457	40129	9151023.5	36677449
School nurse	581	6	14.30%	11	17	26800	69837	48319	4014445.9	28073048.5
Technical	295	6	14.30%					15941	672471.09	4702595
Clerical	162	8	19.51%					15941	503834.43	2582442
TOTAL	2014								14539171	74153516.5
Category Differential										19.61%
Operations & Maintenance										
Administrative	149	4	9.32%	5	17	15703	69837	42770	593938.44	6372730
Other professional	150	10	24.95%					39242	1468631.9	5886300
Technical & Trades	2654	8	19.51%	4	11	18765	40919	29842	15452050	79200668
Clerical	218	8	19.51%					15583	662773.04	3397094
Service and Laborer	8592	12	30.64%	1	8	10995	31322	21159	55701630	181793832
TOTAL	11614								73285085	270277894
Category Differential										27.11%
Facilities										
Administrative	21	4	9.32%	5	17	15703	69837	42770	83709.444	898170
Other professional	91	8	19.51%	5	11	15703	40919	28311	502636.33	2576301
Clerical	18	8	19.51%					15583	54724.379	280494
TOTAL	130								641070.15	3754965
Category Differential										17.07%
ACROSS ALL NON-INSTRUCTIONAL POSITIONS:										
Instructional support	9626		15.24%						28905459	189715220
Attendance & health	2014		19.61%						14539171	74153516.5
Oper. & Maintenance	11614		27.11%						73285085	270277894
Facilities	130		17.07%						641070.15	3754965
Supt. & asst. supt.	263	4	9.32%					68713	1684265.6	18071519
TOTAL	14021								90149592	366257895
Aggregate Differential										**24.61%**

the "Teachers" list in Appendix D). Similarly, teacher aides receive a 4-step differential because all comparable State classified positions (shown in the "Teacher Aides" list in Appendix D) receive a 4-step Northern Virginia differential. Finally, the prevailing salaries for these various types of instructional positions computed by DOE staff for the 1993-94 school year are used as the salary weights.

Guidance Counselors. The number of employees is the statewide total reported by DOE from the 1993 Annual School Report data. The DOE 1993 Annual School Report numbers will be the data source for this item in all of the other remaining subcategories as well, unless specified otherwise. The differential of 10 steps is based on the fact that the only comparable State classified positions that could be found for this subcategory are "Vocational rehabilitation counselor" and "Vocational employment counselor." Both job classes have a Northern Virginia differential of 10 steps. Further, prevailing salaries of guidance counselors were not readily available. But both comparable State job classes are Grade 9, so the midpoint from the Grade 9 salary range was taken as a proxy.

Media Librarian. The State job class counterparts are Librarian A and Librarian B, which both have a 4 step differential. These two positions are Grades 9 and 10, which was used to define the salary range from which a salary midpoint was taken.

Instructional Support Positions

Guidance Administration. All administrative positions were assumed to be professional in nature, rather than clerical or technical (which are separate categories, as discussed below). Therefore, a wide variety of State classified administrative positions were pooled as shown on the "Professional Administration" list in Appendix D. Examination of the job classes listed on these pages shows that the predominant Northern Virginia differential in this category is 4 steps. Although DOE provided a prevailing salary for "Instructional professional" support personnel, the prevailing salary was not split out between administrative professionals and other professionals such as social workers. Therefore, a salary range midpoint was used. The "Professional Administration" list in Appendix D shows that the State job classes tended to range from grade 5 to grade 17, which were used to define the lower and upper ends of the salary range for administrative professionals. This wide grade and salary range also takes into account the fact that administrative positions may include high-level professional management positions, such as those which may include names such as "director" or "superintendent" in the job title. The resulting midpoint of the salary range for administrative professions is $42,770.

Guidance Technical. "Technical" positions in the Instructional Support category generally tend to be at the low end of "administrative professional" job series positions. Consequently, they were assigned a differential of 4 steps, to be consistent with the predominant differential found among "professional administration" job classes in Appendix D. DOE had calculated a prevailing salary for "Instructional technical/clerical

personnel." As a result, this prevailing salary was used for all technical personnel in the Instructional Support category.

Two assumptions were made in order to use DOE's prevailing salary estimate. One was that the salaries of "technical" employees within this category come from essentially the same distribution. (In other words, there are no major, systematic differences between "Guidance Technical," "Social Worker Technical," "Improvement Technical," "Media Technical," and "Principal Technical" staff salaries.) The other assumption is that there are no major differences in the distribution of "technical" and "clerical" staff salaries in this category. These assumptions appear to be appropriate: the main purpose of using the salary data in this spreadsheet is to use the prevailing salary as a proxy for the magnitude of salaries in the various subcategories. Such proxies are used as weights in coming up with an aggregate differential. They are not used to specify how much staff in the various subcategories are actually paid, so the high level of precision that would be needed for determining actual payrolls is not so necessary (though desirable, when the added cost of getting the higher quality data is low). In other words, the main goal is to distinguish high-paying positions from low-paying positions in order of magnitude; it is not necessary to worry as much about the differences among different low-paying positions in this weighting scheme.

Guidance Clerical. All clerical positions in the school divisions were assumed to be essentially office service, secretarial, postal assistance or program support in nature. Consequently, State classified positions in job series that had these names in the job titles were categorized as "clerical." Among all State classified positions in these series, the Northern Virginia differential was uniformly 8 steps (or 19.51 percent). Therefore, "Guidance clerical" positions were assigned an 8 step differential. As discussed above for "Guidance technical" salaries, similar assumptions were made in assuming that DOE's "Instructional technical/clerical" prevailing salary was appropriate for this subcategory.

Social Worker Administration. The same assumptions made for "Guidance administration" positions are made for this subcategory.

Social Worker Instructional. As shown on the "Instructional Support" list in Appendix D, the State has classified positions in the "social worker" job class and the "clinical social worker" series that would appear to be comparable to social worker positions in school divisions. All State classified social worker positions receive a 10 step (24.95 percent) differential. Consequently, a 10 step differential was assigned to this subcategory. The salary range for this subcategory was assumed to range from that of Grade 8 to Grade 11 positions, because the State "social worker" position is Grade 8, "clinical social worker" position is Grade 10, and the "clinical social worker supervisor" is Grade 11. The State "clinical social work director" position, which is Grade 13, is assumed to be more comparable to the "social worker administration" subcategory than this one. As a result, the midpoint of the assigned salary range is $30,717.

Social Worker Other. The same assumptions described above for the "social worker instructional" subcategory are made for this subcategory.

Social Worker Clerical. The same assumptions made for the "guidance clerical" subcategory apply to this subcategory.

Homebound Administration, Improvement Administration, and Media Administration. The same assumptions made for "guidance administration" are made for these subcategories.

Homebound Clerical, Improvement Clerical, Media Clerical, and Principal Clerical. The same assumptions made for "guidance clerical" are made for these subcategories.

Improvement Instructional. According to the DOE's Annual School Report General Instructions, staff in this subcategory are involved in "[a]ctivities primarily for assisting instructional staff in planning, developing, and evaluating the process of providing learning experiences for students. These activities include curriculum development, techniques of instruction, child development and understanding, staff training, etc." These job duties appear to be closely related to those of teachers. Therefore, this subcategory was assigned the same Northern Virginia differential as that which predominates State classified jobs that are comparable to teachers: 4 steps, or 9.32 percent. For this subcategory, the salary range was assumed to match DPT's salary ranges for academic teachers and vocational teachers. The midpoint of this salary range is $32,231.

Improvement Technical, Media Technical, and Principal Technical. The same assumptions made for "guidance technical" are made for these subcategories.

Media Instructional. Positions in this subcategory are assumed to focus primarily on the use of library and other media resources as aids in teaching. Therefore, the same assumptions made for the "improvement instructional" subcategory are made for this subcategory.

Attendance and Health

Attendance and Health Administration. According to DOE's Annual School Report General Instructions, attendance and health services consist of those activities which have as their primary purpose the promotion and improvement of children's attendance at school, including activities in the field of physical and mental health, such as medicine, dentistry, psychology, psychiatry, nursing services, and speech/audiology services. Attendance services are assumed to be included in this subcategory. The same assumption for applying a 4-step (9.32 percent) differential to other administrative positions applies to this subcategory. DOE staff estimated the prevailing salary for "attendance & health administrative personnel" to be $34,161.

Attendance and Health — Oher Professional. This subcategory is assumed to consist primarily of professionals providing psychological services or speech/audiology services. As the "Attendance and Health" list in Appendix D indicates, the State has

several comparable classified positions: a speech pathologist series, audiologist, and psychologist series. The vast majority of these positions get a Northern Virginia differential of 10 steps (24.95 percent), so the same differential is assigned to this subcategory. The majority of these professional positions range from grade 11 to grade 14. The psychology management series ("psychology supervisor" and "psychology director") were assumed to be more administrative in nature, so the higher job grades corresponding to these positions are not reflected in the salary range assumed for this subcategory. The midpoint of the assumed salary range for this subcategory is $40,129.

Attendance and Health — School Nurse. As shown on the "School Nurse" section of the "Attendance and Health" list in Appendix D, all State classified positions for nurses are given a 6 step (14.30 percent) Northern Virginia differential. Therefore, a 6 step differential is assigned to this subcategory. Because school nurses are most comparable to public health nurses and public health nurse consultants, which range from Grade 11 to Grade 17, the resulting midpoint of the corresponding salary range is $48,319.

Attendance and Health — Technical. In this subcategory, technical positions are assumed to fall at the lower end of professional job series (as "assistants" or "technicians") in the administrative, other professional, and school nurse areas. Further, school nurses are assumed to have more uniquely technical support than administrative or other professionals. Consequently, this subcategory is assumed to have the same differential as that applied to the school nurse subcategory: 6 steps, or 14.30 percent. DOE staff calculate the prevailing salary for "attendance and health technical/clerical personnel" to be approximately $15,941. Using assumptions similar to those applied to instructional support technical/clerical personnel, this prevailing salary is assumed to be appropriate for this subcategory.

Attendance and Health — Clerical. The same assumptions made for clerical staff in the instructional support category are made for this subcategory. The DOE prevailing salary for "attendance and health technical/clerical personnel" of $15,941 is used for this subcategory.

Operations and Maintenance

Operations and Maintenance — Administration. The same assumptions were made for this category as with administrative positions in the instructional support category. A 4-step differential is assumed, with an assumed salary ranging from that of grade 5 to grade 17 resulting in a salary range midpoint of $42,770.

Operations and Maintenance — Other Professional. Operations and maintenance services include not only building and grounds services and equipment maintenance services, but security services as well. The other professional positions in this subcategory are assumed to be primarily in the security and law enforcement area, because the skilled positions in building and grounds services and equipment maintenance services are included in the "technical and trades" subcategory. This assumption

is also based on the fact that in the higher education area, community colleges employ substantial numbers of police officers. According to the "Operations and Maintenance Services" list in Appendix D, the State provides employees classified as police officers a 10 step (24.95 percent) Northern Virginia differential. Therefore, this subcategory is assumed to have a 10 step differential as well. Further, DOE staff calculated the prevailing salary for "operations and maintenance professional personnel" to be $39,242, which is the salary level assumed for this subcategory.

Operations and Maintenance — Technical and Trades. The "technical" and "trades" subcategories were combined because they appeared to overlap substantially (that is, it was difficult to distinguish whether some job series belonged in the "trades" subcategory and not in the "technician" subcategory, and vice versa). As shown on the "Operations and Maintenance Services" list of Appendix D, comparable State classified positions in the "technical and trades" subcategory all had a Northern Virginia differential of 8 steps (19.51 percent). Further, these positions tended to range from grade 4 to grade 11. Consequently, the salary level for this subcategory is assumed to range from $18,765 to $40,919; the corresponding midpoint is $29,842.

Operations and Maintenance — Clerical. As with other clerical subcategories, this subcategory was assigned an 8-step (19.51 percent) differential. DOE staff estimated the prevailing salary for "operation and maintenance technical/clerical personnel" to be $15,582, which was applied to this subcategory. It was not applied to the "operations and maintenance technical" staff because this subcategory was combined with "trades" personnel.

Operations and Maintenance — Service and Labor. The subcategories of "service" personnel and "labor" were also combined because of similarities and overlap. For example, custodial staff are classified by DOE in the Annual School Report as "service" positions, when it has much in common with "labor" positions such as groundskeepers. Consequently, because the majority of service positions are assumed to be housekeeping positions (rather than storekeeper positions), the "service and labor" subcategory was assigned a differential of 12 steps (30.64 percent). This differential corresponds to that applied to State classified positions in the housekeeping series and the grounds worker series (see the "Operations and Maintenance Services" list in Appendix D). Further, positions in these series range from grade 1 to grade 8. This range was used to define the salary range for this subcategory. The midpoint of this salary range is $21,159.

Facilities

Facilities — Administrative. The same assumptions regarding the differential and salary that were applied to administrative positions in the instructional support and operations and maintenance categories were applied to this subcategory. This subcategory was also assumed to include higher-level (that is, grade 12 and up) professional staff concerned with acquiring land and buildings; remodeling buildings; constructing buildings and additions to buildings; initially installing or extending service

systems and other built-in equipment; and improving sites. As shown on the "Facilities" list in Appendix D, higher-level professional State classified positions all have a 4-step differential, and range from grade 12 to grade 14, which is consistent with this subcategory.

Facilities — Other Professional. This subcategory is assumed to include staff comparable to State classified positions such as "building construction inspector" and the engineering technician series. These positions are given an 8-step (19.51 percent) Northern Virginia differential, and range from grade 5 to grade 11. The midpoint of the corresponding salary range assigned to this subcategory is $28,311.

Facilities — Clerical. The same assumptions regarding the differential for clerical staff in other categories were applied to this subcategory. DOE staff did not calculate a prevailing salary for clerical/technical staff in this category. However, the prevailing salaries for clerical/technical staff in other categories were very similar in magnitude: $14,556, $15,583, and $15,941. Therefore, the middle value (which is also the value applied to clerical staff in the operations and maintenance category) was applied to this subcategory.

Superintendent and Assistant Superintendent

In addition to the subcategories listed above, SOQ funding also covers recognized SOQ costs for superintendents and assistant superintendents. Therefore, these positions should also be included in deriving an aggregated cost of competing adjustment for non-instructional support staff. The "number of employees" in this category is taken from DOE's *Superintendent's Annual Report for Virginia* (p. 70). A 4-step (9.32 percent) differential is assigned to this category because it is the differential applied to other professional administrative positions in the other categories. The salary weight is based on the prevailing salaries of school division superintendents and assistant superintendents, as reported by DOE staff: $74,996 and $62,430, respectively, which is averaged to $68,713.

Appendix D

Matching School Division Job Categories with State Classified Positions

The following lists document the Department of Personnel and Training (DPT) job classes with a Northern Virginia cost of competing differential that were selected for comparison with school division positions. The number of steps in the differential (under "Step Diff") and the grade for each State job class are shown. The school division job categories are based on school division functions described in the instructions to the Department of Education's (DOE) Annual School Report. The State classified positions are from DPT's 1995 *Commonwealth of Virginia Compensation Plan.*

These lists also include State classified positions at Northern Virginia Community College. There are 601 non-faculty employees at that institution.

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TEACHERS

Class #	Job class	Step diff	Grade
33065	Academic teachers	4	TE
32021	Librarian A	4	9
32022	Librarian B	4	10
32042	Historian B	4	9
32051	Archivist A	4	8
33012	Technical instruction coordinator	4	12
33021	Training and development coordinator	4	11
33022	Training and development coordinator senior	4	12
31022	Education associate specialist	4	14
31023	Education principal specialist	4	16
34031	Research specialist	4	8
34032	Research specialist senior	4	9
34033	Research specialist advanced	4	11
35051	Health educator	4	8
35052	Health educator senior	4	10
35061	Health education supervisor	4	12
36291	History education coordinator	4	9
47302	Visually handicapped instructor	10	9
47312	Visually handicapped orientation & mobility instructor	10	9
47321	Visually handicapped education coordinator	4	11
47324	Visually handicapped education trainee	10	9
47325	Visually handicapped education specialist	10	11

OTHER PROFESSIONAL POSITIONS

Class #	Job class	Step diff	Grade
52025	Electrical engineer	4	12
52014	Environmental engineer	4	12
52015	Environmental engineer senior	4	13
52016	Environmental engineer consultant	4	14
52017	Environmental technical services administrator	4	15
52241	Safety engineer	4	12
52242	Safety engineer senior		4
13			
52243	Safety engineer supervisor	4	14
15042	Programmer	4	10
15043	Programmer/analyst		4
12			
15044	Senior programmer analyst	4	14
15045	Systems analyst	4	15
15046	Programming/systems development supervisor	4	16
15051	Computer systems engineer	4	14
15052	Computer systems senior engineer	4	15
15053	Computer center lead engineer	4	16
15054	Computer systems chief engineer	4	17
15063	Data processing manager	4	17
15064	Data processing director	4	18
15067	Data base analyst	4	15
15068	Data base administrator	4	16
15069	Data base administrator senior	4	17
15073	Computer operations supervisor	4	12
15081	Computer network support technician	4	9
15082	Computer network support technician senior	4	10
23414	Accountant	4	9
23415	Accountant senior	4	11
23416	Accounting manager A	4	12
23417	Accounting manager B	4	14
23418	Accounting manager C	4	15

Class #	Job class	Step diff	Grade
23421	Business manager A	4	10
23422	Business manager B	4	12
23423	Business manager C	4	14
23441	Auditor - internal	4	11
23442	Auditor senior - internal	4	13
23444	Audit director - internal	4	18
23445	Audit supervisor - internal	4	15
23445	Audit manager senior - internal	4	17
23451	Auditor - external	4	11
23452	Auditor senior - external	4	12

TEACHER AIDES

Class #	Job class	Step diff	Grade
34093	Instructional assistant	4	7
34051	Instructional center technician	4	6
34052	Instructional center supervisor	4	7
31111	Extension center assistant A	4	7
31112	Extension center assistant B	4	9
32012	Library assistant	4	8

INSTRUCTIONAL POSITIONS — SUPPORT

According to instructions in the DOE Annual School Report, this category includes guidance counselors and librarians, which are included in the Instructional Positions category in SOQ funding calculations. Guidance services involve counseling with students and parents; consulting with other staff members on learning problems; evaluating the abilities of students; assisting students as they make their own educational and career plans and choices; assisting students in personal and social development; providing referral assistance; and working with other staff members in planning and conducting guidance programs for students. Librarian activities are concerned with the use of all teaching and learning resources, including hardware, and content materials.

Class #	Job class	Sep diff	Grade
47023	Vocational rehabilitation counselor	10	9
47025	Vocational employment counselor	10	9
32021	Librarian A	4	9
32022	Librarian B	4	10

INSTRUCTIONAL SUPPORT

According to instructions in the DOE Annual School Report, this category includes job positions designed to assess and improve the well-being of students and to supplement the teaching process. It includes school social worker services and homebound instruction support. It also involves job positions designed to assist the instructional staff with the content and process of providing learning experiences for students. It includes services such as curriculum development, staff training, and media services (that is, services in support of librarians).

Class #	Job class	Step diff	Grade
SOCIAL WORKER SUBCATEGORY			
45103	Social worker	10	8
45112	Clinical social worker	10	10
45113	Clinical social work supervisor	10	11
45114	Clinical social work director	10	13
GUIDANCE, HOMEBOUND, IMPROVEMENT AND MEDIA TECHNICAL			
34051	Instructional center technician	4	6
34052	Instructional center supervisor	4	7
31111	Extension center assistant A	4	7
31112	Extension center assistant B	4	9
32012	Library assistant	4	8

CLERICAL

Class #	Job class	Step diff	Grade
11023	Office services aide	8	2
11024	Office services assistant	8	4
11025	Office services specialist	8	5
11026	Office services supervisor	8	6
11027	Office services supervisor senior	8	7
11035	Secretary	8	4
11036	Secretary senior	8	5
11037	Executive secretary	8	6
11038	Executive secretary senior	8	7
11045	Program support technician	8	6
11046	Program support tech senior	8	7
11066	Postal aide	8	2
11067	Postal assistant	8	4

FACILITIES

According to instructions in the DOE Annual School Report, this category includes job positions concerned with acquiring land and buildings; remodeling buildings; constructing buildings and additions to buildings; initially installing or extending service systems and other built-in equipment; and improving sites. Activities include: site acquisitions, site improvements, and acquiring architecture and engineering services.

Class #	Job class	Step diff	Grade
52221	Capital outlay project engineer	4	13
52222	Capital outlay program manager	4	14
61411	Building construction inspector	8	9
52025	Electrical engineer	4	12
52241	Safety engineer	4	12
35131	Telecommunications network analyst	4	13
54021	Engineering technician I	8	5
54022	Engineering technician II	8	6
54023	Engineering technician III	8	7
54024	Engineering technician IV	8	8
54025	Engineering technician V	8	9
54026	Engineering technician VI	8	10
54027	Engineering technician VII	8	11

OPERATIONS AND MAINTENANCE SERVICES

According to instructions in the DOE Annual School Report, job positions in this category are concerned with keeping the physical plant open, comfortable, and safe for use, and keeping the grounds, buildings, and equipment in effective working condition and state of repair. Activities focus on maintaining safety in buildings, on the grounds, and in the vicinity of schools. Activities include: keeping the physical plant clean and ready for daily use (such as operating the heating, lighting, and ventilating systems, and repairing and replacing facilities and equipment); grounds services (such as snow removal, landscaping, and grounds maintenance); equipment services (such as servicing and repairing furniture, machines, and movable equipment); vehicle services, other than pupil transportation vehicles (such as maintaining general purpose vehicles such as trucks, tractors, graders, and staff vehicles); security services; and warehousing and distributing services.

Class #	Job class	Step diff	Grade
TRADES & TECHNICAL			
61111	Locksmith	8	6
61112	Locksmith senior	8	7
61301	Carpenter assistant	8	4
61302	Carpenter	8	7
61303	Carpenter senior	8	8
61304	Carpenter supervisor	8	9
61351	HVAC installation & repair assistant	8	6
61352	HVAC installation & repair technician	8	8
61353	HVAC installation & repair senior technician	8	9
61354	HVAC installation & repair supervisor	8	10
61371	Electrician assistant	8	4
61372	Electrician	8	7
61373	Electrician senior	8	8
61381	Trades/utilities worker	8	3
61382	Trades/utilities senior worker	8	6
61383	Trades/utilities lead worker	8	7
61384	Trades/utilities mechanic	8	9
61402	Painter	8	6
61403	Painter lead	8	7
61431	Boiler operator assistant	8	4
61432	Boiler operator	8	6

Class #	Job class	Step diff	Grade
61441	Power plant mechanic	8	7
61502	Plumber/steamfitter	8	7
61503	Plumber/steamfitter lead worker	8	8
61504	Plumber/steamfitter supervisor	8	9
61081	Laboratory mechanic A	8	4
61082	Laboratory mechanic B	8	6
61083	Laboratory mechanic C	8	8
63181	Equipment repair technician	8	7
63182	Equipment repair technician senior	8	8
63183	Equipment repair supervisor	8	9
63184	Equipment repair manager	8	10
63185	Equipment repair manager senior	8	11
55011	Electronic technician	8	9
55012	Electronic technician senior	8	10
55013	Electronic technician supervisor	8	11
SERVICE			
64082	Storekeeper	8	4
64083	Storekeeper	8	6
64084	Storekeeper	8	7
62031	Housekeeping worker	12	1
62032	Housekeeping lead worker	12	2
62033	Housekeeping worker senior	12	3
62041	Housekeeping supervisor	12	4
62042	Housekeeping supervisor senior	12	6
62043	Housekeeping manager	12	8
LABORER			
62151	Grounds worker	12	2
62152	Grounds worker senior	12	3
62153	Grounds lead worker	12	6
62154	Grounds supervisor	12	8
OTHER PROFESSIONAL			
76041	Police officer	10	8
76051	Police sergeant	10	9

Class #	Job class	Step diff	Grade
76052	Police lieutenant	10	10
76053	Police captain	10	11
ADMINISTRATIVE POSITIONS			
61281	Building and grounds supervisor A	8	9
61282	Building and grounds supervisor B	8	10
61283	Building and grounds superintendent A	4	11
61284	Building and grounds superintendent B	4	12
61285	Building and grounds director A	4	13
61286	Building and grounds director B	4	14
61287	Building and grounds director C	4	15
61463	Power plant superintendent senior	4	12
34101	Student activities building manager	4	7

ATTENDANCE AND HEALTH

Attendance and Health Services consist of those activities which have as their primary purpose the promotion and improvement of children's attendance at school. It includes various activities in the field of physical and mental health, such as medicine, dentistry, psychology, psychiatry and nursing services. It also includes speech and audiology services.

Class #	Job class	Step diff	Grade
SCHOOL NURSE			
42011	Public health nurse	6	11
42012	Public health nurse senior	6	12
42021	Public health nurse supervisor	6	13
42022	Public health nurse manager	6	14
42023	Public health nurse manager senior	6	15
42051	Certified nurse practitioner	6	14
42052	Certified nurse practitioner senior	6	15
42061	Public health nurse consultant	6	15
42062	Public health nurse coordinator	6	16
42063	Public health nurse director	6	17
42141	Registered nurse	6	11
42142	Registered nurse clinician A	6	12
42143	Registered nurse clinician B	6	13
42144	Registered nurse coordinator	6	14
42145	Registered nurse manager A	6	16
42146	Registered nurse manager B	6	17
42147	Registered clinical nurse specialist	6	16
44051	Practical nurse A	6	6
44052	Practical nurse B	6	7
OTHER PROFESSIONAL			
43031	Speech pathologist	10	11
43032	Speech pathologist supervisor	10	12
41081	Audiologist	6	11
45021	Psychologist assistant	10	7

Class #	Job class	Step diff	Grade
45051	Psychologist	10	11
45052	Psychologist senior	10	14
45061	Psychology supervisor	10	15
45062	Psychology director	10	16
34011	Enrollment services assistant	4	7
34012	Enrollment services specialist	4	8
34013	Enrollment services coordinator	4	10
TECHNICAL			
44181	Corrections nurse technician	6	7
44191	Nursing assistant	6	4

PROFESSIONAL ADMINISTRATION

Services provided by staff in these positions include: information services; personnel; planning; fiscal; purchasing; and data processing.

Class #	Job class	Step diff	Grade
12071	Administrative staff assistant	4	8
12072	Administrative staff specialist	4	10
15011	Data processing installation & repair technician	8	8
15012	Data processing installation & repair technician senior	8	10
15013	Data processing installation & repair supervisor	8	12
15042	Computer programmer	4	10
15043	Programmer/analyst	4	12
15044	Senior programmer/analyst	4	14
15045	Systems analyst	4	15
15046	Programming/systems development supervisor	4	16
15051	Computer systems engineer	4	14
15052	Computer systems senior engineer	4	15
15053	Computer center lead engineer	4	16
15054	Computer systems chief engineer	4	17
15055	Data processing documentation technician	4	6
15063	Data processing manager	4	17
15064	Data processing director	4	18
15067	Data base analyst	4	15
15068	Data base administrator	4	16
15069	Data base administrator senior	4	17
15071	Computer operations technician	4	6
15072	Computer operations technician senior	4	8
15073	Computer operations supervisor	4	12
15081	Computer network support technician	4	9
15082	Computer network support technician senior	4	10
21101	Administrative support manager assistant — field	4	10
21102	Administrative support manager — field	4	11
21103	Administrative support manager senior — field	4	12
21104	Administrative support coordinator — field	4	13
21284	Statistical analyst	4	9
21285	Statistical analyst senior	4	11

Class #	Job class	Step diff	Grade
21385	Agency management analyst	4	10
21386	Agency management analyst senior	4	11
21387	Agency management lead analyst	4	13
21421	Administrative procedures specialist	4	8
22011	Hospital administrative assistant A	4	8
22012	Hospital administrative assistant B	4	9
22026	Grants program administrative supervisor	4	12
22027	Grants program administrative manager	4	14
22041	Human services program supervisor	4	14
22042	Human services program manager	4	15
22071	Grants specialist	4	9
22072	Grants administrator	4	10
22102	MHMR facility administrator A	4	14
22104	MHMR facility administrator B	4	15
22105	MHMR facility director	4	19
22112	Mental hospital reimbursement representative	4	8
22113	Mental hospital reimbursement supervisor A	4	10
22114	Mental hospital reimbursement supervisor B	4	11
22152	Training center assistant program manager	10	10
22153	Training center program manager	10	11
22221	Human services field manager	4	13
22222	Human services field manager senior	4	14
22223	Human services field director	4	15
22224	Human services field supervisor	4	12
22271	Human services program specialist	4	11
22272	Human services program coordinator	4	12
22273	Human services program consultant	4	13
23402	Fiscal director A	4	14
23403	Fiscal director B	4	16
23411	Fiscal assistant	8	5
23412	Fiscal technician	8	6
23413	Fiscal technician senior	4	8

Class #	Job class	Step diff	Grade
23414	Accountant	4	9
23415	Accountant senior	4	11
23416	Accounting manager A	4	12
23417	Accounting manager B	4	14
23418	Accounting manager C	4	15
23421	Business manager A	4	10
23422	Business manager B	4	12
23423	Business manager C	4	14
23431	Budget analyst	4	10
23432	Budget analyst senior	4	12
23433	Budget manager	4	14
23441	Auditor - internal	4	11
23442	Auditor senior - internal	4	13
23444	Audit director - internal	4	18
23445	Audit supervisor - internal	4	15
23445	Audit manager senior - internal	4	17
23451	Auditor - external	4	11
23452	Auditor senior - external	4	12
26021	Purchase & stores supervisor A	4	6
26022	Purchase & stores supervisor B	4	8
26024	Purchase & stores director A	4	12
26101	Buyer	4	8
26102	Buyer specialist	4	9
26103	Buyer senior	4	11
26104	Buyer manager	4	13
26121	Materiel management technician	4	8
26122	Materiel management supervisor	4	10
26124	Materiel management director	4	13
26125	Materiel management director senior	4	16
27304	Human resource director	4	16
27311	Human resource field officer	4	12
27312	Human resource field manager	4	14
27313	Human resource field manager senior	4	15
27321	Personnel assistant	8	7
27322	Personnel analyst	4	9

Class #	Job class	Step diff	Grade
27323	Personnel practices analyst	4	11
27324	Personnel practices analyst senior	4	12
27325	Personnel practices supervisor	4	13
27326	Personnel practices manager	4	15
27351	Equal employment opportunity analyst	4	11
27361	Employment supervisor	4	11
27371	Classification & compensation analyst	4	11
27372	Classification & compensation analyst senior	4	12
27373	Classification & compensation supervisor	4	13
35251	Public relations assistant specialist	4	8
35252	Public relations specialist	4	10
35253	Public relations coordinator	4	12
35254	Public relations manager	4	14
34082	Student services specialist	4	10
35311	Alumni program coordinator	4	10
OTHER ADMINISTRATIVE/TECHNICAL SUPPORT			
61156	Printing press operator A	8	5
61157	Printing press operator B	8	6
61184	Printing services supervisor A	8	7
61185	Printing services supervisor B	8	8
35071	Graphic artist	4	7
35072	Graphic designer	4	9
35021	TV production technician	4	7
35022	TV production specialist	4	9
35212	Television system technician	8	8
34041	Audio visual technician	4	8
34042	Audio visual supervisor	4	11

Appendix E

FY 1996 SOQ School Division Costs Under Alternative State Funding and Cost Calculation Options

Under the options presented in this report, only the SOQ costs of the Northern Virginia school divisions are affected. The costs of school divisions outside Northern Virginia do not change across the different alternatives. Therefore, only Northern Virginia school division costs are reported on the next two pages.

STATE FUNDING OPTION: FULL FUNDING, FY 1996

Cost Calculation Option: Linear Weighted Average Approach

School Division	Total Cost	State Cost	Local Cost
Arlington	$ 72,429,795	$ 23,196,964	$ 49,232,831
Fairfax County	540,391,713	190,948,146	349,443,566
Loudoun County	76,810,646	22,342,240	54,468,406
Prince William Co.	181,162,894	112,152,871	69,010,023
Alexandria	41,839,836	12,801,871	29,037,964
Fairfax City	9,824,232	3,099,812	6,724,419
Falls Church	5,858,193	1,707,122	4,151,071
Manassas	21,569,281	11,564,853	10,004,427
Manassas Park	7,110,826	5,087,964	2,022,861

Cost Calculation Option: VCCS Policy Approach

School Division	Total Cost	State Cost	Local Cost
Arlington	$ 70,160,080	22,743,021	47,417,059
Fairfax County	524,890,327	187,120,854	337,769,472
Loudoun County	74,604,246	21,900,959	52,703,287
Prince William Co.	176,020,534	109,259,265	66,761,268
Alexandria	40,570,109	12,547,927	28,022,183
Fairfax City	9,551,560	3,045,278	6,506,281
Falls Church	5,681,924	1,671,869	4,010,055
Manassas	20,924,852	11,264,678	9,660,174
Manassas Park	6,890,081	4,937,616	1,952,465

Cost Calculation Option: Stratified Match Approach

School Division	Total Cost	State Cost	Local Cost
Arlington	$ 71,603,260	$ 23,031,657	$ 48,571,603
Fairfax County	535,327,395	189,697,767	345,629,628
Loudoun County	76,076,757	22,195,461	53,881,296
Prince William Co.	179,544,878	111,242,414	68,302,464
Alexandria	41,402,394	12,714,384	28,688,010
Fairfax City	9,745,550	3,084,076	6,661,474
Falls Church	5,798,875	1,695,257	4,103,618
Manassas	21,356,481	11,465,733	9,890,748
Manassas Park	7,029,937	5,032,871	1,997,066

STATE FUNDING OPTION: TEACHERS' RATES ONLY, FY 1996

Cost Calculation Option: Linear Weighted Average Approach

School Division	Total Cost	State Cost	Local Cost
Arlington	$ 72,429,795	$ 23,196,964	$ 49,232,831
Fairfax County	540,391,713	190,948,146	349,443,566
Loudoun County	76,810,646	22,342,240	54,468,406
Prince William Co.	181,162,894	112,152,871	69,010,023
Alexandria	41,839,836	12,801,871	29,037,964
Fairfax City	9,824,232	3,099,812	6,724,419
Falls Church	5,858,193	1,707,122	4,151,071
Manassas	21,569,281	11,564,853	10,004,427
Manassas Park	7,110,826	5,087,964	2,022,861

Cost Calculation Option: VCCS Policy Approach

School Division	Total Cost	State Cost	Local Cost
Arlington	$ 69,536,409	$ 22,618,287	$ 46,918,122
Fairfax County	519,854,002	185,877,386	333,976,616
Loudoun County	73,893,173	21,758,745	52,134,429
Prince William Co.	174,365,896	108,328,201	66,037,695
Alexandria	40,195,397	12,472,985	27,722,413
Fairfax City	9,456,515	3,026,269	6,430,246
Falls Church	5,625,313	1,660,547	3,964,766
Manassas	20,724,219	11,171,223	9,552,996
Manassas Park	6,826,106	4,894,042	1,932,064

Cost Calculation Option: Stratified Match Approach

School Division	Total Cost	State Cost	Local Cost
Arlington	$ 70,203,779	$ 22,751,762	$ 47,452,017
Fairfax County	524,448,901	187,011,868	337,437,033
Loudoun County	74,521,499	21,884,410	52,637,089
Prince William Co.	175,825,746	109,149,659	66,676,088
Alexandria	40,545,822	12,543,069	28,002,753
Fairfax City	9,538,808	3,042,728	6,496,080
Falls Church	5,675,877	1,670,659	4,005,218
Manassas	20,907,315	11,256,511	9,650,804
Manassas Park	6,889,513	4,937,229	1,952,283

Appendix F

Agency Responses

As part of an extensive data validation process, State agencies involved in a JLARC assessment effort are given an opportunity to comment on an exposure draft of the report. Appropriate technical corrections resulting from the written comments have been made in this final version of the report.

This appendix contains the responses of the Secretary of Education and the Department of Education.

COMMONWEALTH of VIRGINIA

Office of the Governor

George Allen
Governor

Beverly H. Sgro
Secretary of Education

September 7, 1995

Mr. Phillip A. Leone
Director
Joint Legislative Audit and Review Commission
Suite 1100, General Assembly Building
Capitol Square
Richmond, Virginia 23219

Dear Mr. Leone:

Thank you for providing me a copy of an exposure draft of your technical report, The Cost of Competing in Standards of Quality Funding. While I have no substantive comments on the exposure draft, I will forward it to the Governor's Commission on Champion Schools, for their information and review. I look forward to receipt of the final report.

Again, thanks for giving me the opportunity to review this report.

Sincerely,

Beverly H. Sgro

BHS/srd
c: Mr. Randolph A. Beales
Executive Director
Governor's Commission on Champion Schools

092195

COMMONWEALTH of VIRGINIA

DEPARTMENT OF EDUCATION
P.O. Box 2120
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WILLIAM C. BOSHER, JR.
Superintendent of Public Instruction

Office: (804) 225-2023
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September 13, 1995

Mr. Philip A. Leone, Director
Joint Legislative Audit and Review Commisssion
General Assembly Building, Suite 1100
Capitol Square
Richmond, Virginia 23219

Dear ~~Mr. Leone~~ Phil

We received two copies of your technical report, The Cost of Competing in Standards of Quality Funding. Our staff has reviewed this report and verified the information contained in the report which we had provided to you.

I would like to thank you for giving us the opportunity to review this document before it is released for distribution.

Sincerely,

William C. Bosher, Jr.

WCBJr:jbr

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