

**CALCULATION OF THE COST OF AN ADEQUATE EDUCATION IN
COLORADO USING THE PROFESSIONAL JUDGEMENT AND THE
SUCCESSFUL SCHOOL DISTRICT APPROACHES**

**Prepared for the
Colorado School Finance Project**

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Denver, Colorado
January 2003***

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EXECUTIVE SUMMARY

This report concludes a four-month study by Augenblick & Myers, Inc. (A&M) of the adequacy of school funding in Colorado for the Colorado School Finance Project (CSFP). The primary purpose of the study was to determine the funding level necessary for school districts to meet the requirements and expectations Colorado uses to hold school districts accountable. A&M agreed to undertake the following tasks as part of this study: (1) use two different approaches – the professional judgement approach and the successful school district approach – to calculate a base cost figure, the cost of educating a student with no special needs going to school in a district that faces no uncontrollable cost pressures; (2) meet with more than 50 people from around the state to identify resources needed to assist schools and school districts in meeting state objectives; and (3) estimate several adjustments to reflect the added costs of serving students with special education needs, students at risk of failure, and English language learners (ELL).

The underlying rationale for conducting a school funding adequacy study is to link education accountability to education funding. Many states are pursuing standards-based reform to improve schools. They have specified expectations of what students are supposed to know and be able to do, created statewide assessment procedures to determine how well schools and school districts are doing, and built accountability systems designed to inform the public about school and district progress, to reward schools that exceed expectations, and to provide a justification for state intervention if schools do not meet state standards. Unfortunately, few states have analyzed whether sufficient resources are available for all districts to meet state expectations.

Colorado has made an enormous effort over the last few years to create a strong accountability system but it is unclear whether school districts have the revenues they need in order to provide the educational services required. Other studies by the CSFP have suggested that the volume of revenue available across the state is insufficient to provide the same level of services that were provided in 1988-89, long before the state began building the new accountability system. While Amendment 23 is designed to restore school revenues to the equivalent of the 1988-89 level in a eight more years, after taking into consideration enrollment growth and inflation, the real question is whether districts have the resources they need now to meet the higher expectations that have emerged in recent years.

In addition to the state's interest in standards-based reform, the federal government recently adopted the No Child Left Behind Act of 2001 (NCLB, the Elementary and Secondary Education Act as reauthorized by Public Law 107-110 [H.R. 1]). NCLB is steeped in standards-based theory and requires states to set standards and measure student progress. But, like most states, it does not

assure the availability of adequate resources and threatens school districts with the possibility of losing federal support if sufficient progress is not made.

Another rationale for state interest in school finance adequacy is that they almost all use some form of a “foundation program” to allocate basic support, if not most support, to school districts. Under this approach, states set revenue targets for school districts and pay, as state aid, the difference between those targets and the amount of revenue districts generate given their relative wealth and state-set tax rates. The driving force in determining district revenue targets is the foundation level, an amount that is constant across all districts. In most states, the foundation level is determined politically, calculated as the figure that mathematically spends as much state aid as the legislature is willing to provide. Therefore, the figure has little or no meaning in relation either to the services districts are expected to provide or the performance levels they are expected to achieve. An adequate foundation program would incorporate a rational basis for setting the foundation level based on state service requirements and student performance expectations. Colorado’s foundation program may promote fiscal equity across the states school districts, students, and taxpayers but that does not mean that the system is adequate.

This study used two analytical methodologies to analyze adequacy – the professional judgement approach and the successful school district approach. The professional judgement approach is a modern version of what used to be called a “resource cost model,” or “market-basket,” approach that asked educators to specify the resource needs of high quality schools. Today, the approach asks educators to identify the resources they feel need to be in place in prototype schools in order for students to achieve a specific set of objectives. Once resources have been specified, prices are determined for the resources which, when applied to the resources, produce a hypothetical cost. Costs for elementary, middle, and high schools can be combined with district level costs to produce an overall cost per student.

Our cost estimates for 2001-2002 using this approach show a per pupil base cost that decreases as student enrollment increases, with a minimum level of \$6,815; the base cost rises slightly in districts with over 5,200 students to a level of \$6,951. The added cost of special education is about 115 percent more than the base cost per student with special education needs. Providing education services to students at-risk of failure requires between 26 and 56 percent over the base cost depending on the size of the district. Finally, educating ELL students costs 51 to 125 percent more than the base cost per ELL student depending on school district size.

The successful school district approach relies on a different logic than the professional judgement approach, seeking to infer a base cost figure from the actual basic spending of school districts determined to be successful because they meet whatever standards are used by a state to evaluate student and

school performance. Given the fact that the state was unable to identify which districts were successful at the time the study was being completed, we examined sets of both absolute standards and relative standards. The absolute standards measured current student achievement levels against state expectations. The relative standards measured improvement in performance over time as driven by NCLB requirements. By either measure, almost no districts could be identified as being successful. When we modified the expectations to find those districts that perform comparatively well, even if they do not actually meet the expectations the state appears to be putting in place, we determined that the base cost would be between \$4,768 and \$4,845 per student. Given the fact that higher performing districts spend more than lower performing ones, and given how far even the comparatively high performing districts are from meeting evolving state standards, we believe even the best districts will need to spend considerably more in order to fulfill state expectations.

I. INTRODUCTION

This report is the culmination of a seven month study by Augenblick & Myers, Inc. (A&M) to determine the cost of an “adequate” education in Colorado. For the purposes of this report, an adequate education in Colorado is one that fulfills a set of Colorado-specific state level “input” requirements and student performance expectations as well as a set of federal requirements and expectations related to both the reauthorization of the Elementary and Secondary School Act of 1965 (Public Law 107-110 known as No Child Left Behind or H.R. 1) and IDEA (Individuals with Disabilities Education Act). The work was undertaken for the Colorado School Finance Project (CSFP), a coalition that includes the Colorado Association of School Executives, the Colorado Education Association, and the Colorado School Boards Association (and the Colorado Board of Cooperative Education Services, BOCES). A&M used two methodologies in conducting the study: (1) the professional judgement approach and (2) the successful school district approach, which are the two most popular approaches being used in states at this time. The purpose of the report is to provide some background information about these approaches, to describe how they were implemented in Colorado, to show and compare the results of using these approaches, and to estimate any difference between the cost of adequacy and available revenues in 2001-02.

Colorado is like many other states in both pursuing a standards-based approach to improve elementary and secondary education and using a foundation formula approach to allocate the lion’s share of state aid for public schools. Under the standards-based approach to school improvement, states have actively been engaged in three activities: (1) setting student performance standards; (2) creating procedures to measure how well students are meeting those standards; and (3) building accountability systems for schools and school districts that provide information about how well they are performing and that have consequences depending upon that information. This is consistent with the activities being undertaken by the federal government under No Child Left Behind. One problem with this approach is that most states and the federal government do not know whether school districts have sufficient resources for them to fulfill state/federal expectations. Most states have not undertaken formal studies of the resource needs associated with their accountability systems, which has led to an interest in understanding the cost implications of state performance standards.

Almost all states use some form of a foundation program in allocating basic support or most support to school districts. Under this approach, states set revenue targets for school districts and pay, as state aid, the difference between those targets and the amount of revenue districts generate given their relative wealth and state-set tax rates. The driving force in determining district revenue targets is the foundation level, an amount that is constant across all districts. In most states, the foundation level

is determined politically, calculated as the figure that mathematically spends as much state aid as the legislature is willing to provide. Therefore, the figure has little or no meaning in relation either to the services districts are expected to provide or the performance levels they are expected to achieve.

Since Colorado has created an accountability system based on statewide tests and uses a foundation program to distribute state aid, it makes sense that a study of the adequacy of education funding be undertaken. In the absence of such an analysis, the only basis for determining how much revenue is needed by the public education system are comparisons with prior year revenues, comparisons with other states, marginal changes driven by newly required programs or services, or emerging cost pressures (such as rising insurance costs).

Other states have been analyzing the adequacy of education funding. In some states, this work has been sponsored by state legislatures while in others it has been undertaken by governors, state education agencies, or coalitions of educators. In some cases, cost analysis is required as a result of litigation finding that current levels of support violate state constitutional provisions. For example, Ohio and Wyoming analyzed the cost of an adequate education in order to assure that state aid was “cost-based” (the cost of meeting state requirements) or not the result of “residual budgeting” (that is, the situation where state aid is determined by available revenues and competing demands for state aid rather than by state education standards and student performance expectations). In 2002, Maryland enacted a new school finance system that used formula parameters calculated as part of a study undertaken for a legislatively sponsored committee (the Thornton Commission, which worked in 2000-2001). Mississippi’s existing funding system was based on the work of a legislative study (1994). A legislative advisory group undertook an adequacy analysis in 2000. Kansas completed a legislative study in May of 2002. Oregon’s analysis was stimulated by the governor (1999), while studies in South Carolina (2000) and Montana (2002) were sponsored by state school boards associations. The Indiana State Teachers Association completed its cost analysis in 2002, while an organization sponsored by the teacher’s association in Wisconsin finished their work in 2001. A study in Nebraska in 2002 was sponsored by group of education organizations. Finally, an ongoing study in Missouri is being undertaken by a coalition of education groups stimulated by a large city civic group.

These studies are using calculation procedures based on two popular approaches that have evolved over the past few years: (1) the professional judgement model or (2) the successful school district model. These two approaches are among the four approaches that academics and policymakers have been examining in recent years (the other two approaches include one based on the cost of whole-school reform models and one based on statistical analysis of school district performance and expenditure data – New Jersey used the whole-school model in determining the cost of education in its 29 special needs districts while no state has used the statistical model as yet).

The professional judgement approach is a modern version of what used to be called a “resource cost model,” or “market-basket”, approach that asked educators to specify the resource needs of high quality schools. Today, the approach asks educators to identify the resources they feel need to be in place in prototype schools in order for students to achieve a specific set of objectives. Once resources have been specified, prices are determined for the resources which, when applied to the resources, produces a hypothetical cost. Costs for elementary, middle, and high schools can be combined with district level costs to produce an overall cost per student. The district level costs include those expenditures that are in addition to school site expenditures, such as district administration, or those expenditures that cannot be disaggregated to school sites, such as plant maintenance and operation. When undertaken carefully, the approach can be used to distinguish costs of special, high-cost programs from basic services, allowing the user to determine a base cost, or foundation level, as well as adjustments to the base.

The successful school district approach relies on a different logic than the professional judgement approach, seeking to infer a base cost figure from the actual spending of school districts determined to be successful because they meet whatever standards are used by a state to evaluate student and school performance. Using this approach, a set of school districts are selected from among all school districts that meet a variety of criteria related to their level of success in meeting state standards, their normalcy in terms of socio-economic characteristics such as district wealth or proportion of pupils from low income families, and their efficiency in terms of spending. Once districts have been selected, their basic spending (excluding spending for capital purposes, transportation, special education, other special programs, and any service funded by federal revenue) is examined to determine a base cost level. While this approach is best used to determine a base cost figure, it may be possible to use the approach to determine adjustments to the base cost if a sufficient number of cases can be found with varying levels of special needs to determine the relationship between the proportion of pupils with those needs and the excess spending associated with serving those pupils.

The following chapters will discuss how other states examine issues of adequacy and how the standard for defining an adequate education was set for purposes of this study. It will also explain in more detail how the professional judgement and the successful school district approaches were used to study adequacy in Colorado. Finally, the report will conclude with a discussion of how the adequacy figures can be used to calculate the parameters that are needed to operationalize a school finance formula.

II. ALTERNATIVE APPROACHES TO CALCULATING A BASE COST LEVEL AND APPROPRIATE ADJUSTMENTS

Many states today use the “foundation program” approach as the mathematical procedure to allocate state aid to school districts. This approach, developed several decades ago, has proven to be a useful way to equalize the distribution of funding based on the relative wealth of school districts when the program includes a significant portion of all school district spending. Colorado is using the foundation program as the basis of allocating most state aid to school districts.

Under the foundation program, the state sets a target revenue level for every school district and shares in funding that amount of revenue inversely in relation to the wealth of each district; all other factors being the same, wealthier districts receive less state aid than low wealth districts using this approach. States calculate the target revenue on the basis of two components: (1) a base cost level, or foundation level that is constant for all students, and (2) a series of adjustments designed to assure the availability of additional revenue based on the characteristics of students (such as being from a low income family), programs (such as special education), or districts (such as enrollment level) that put cost pressures on school districts that they cannot control (these adjustments are often displayed as “weights” that reflect some portion of the base cost level – for example, bilingual education may cost 50 percent more than the base cost level so an added weight of .50 [above 1.00] would be used in counting students with bilingual education needs). Historically, many states set the base cost level on the basis of how much revenue is available or how much might become available through higher levels of taxation.¹ If the base cost level is nothing more than an amount designed to assure that both the state does not exceed some pre-determined spending level and property tax rates are set at a particular level, then it has little or no meaning in terms of education services or student performance. If the base cost has no educational meaning, it is a real possibility that whatever student weights are being used also have no educational meaning.

In the past few years, some states have begun to develop approaches to calculate the base cost that are designed to reflect a particular set of services or a particular level of student performance, or both, so that the base cost has a meaning beyond simply reflecting available revenue. The effort to develop these approaches is necessitated by the fact that no research exists that demonstrates a straightforward relationship between how much is spent to provide education services and student performance (which might take the form of a line in

¹ See “A New Millennium and a Likely New Era of Education Finance” by James W. Guthrie and Richard Rothstein, a chapter in the *2001 Annual Yearbook of the American Education Finance Association* (edited by Stephen Chaikind and William F. Fowler) for a discussion of the history of state attempts to deal with adequacy in the distribution of state aid.

a graph where the “x” and “y” axes are per pupil spending and student attainment and the values of spending and performance are plotted for every school district). If such a relationship existed, then state policy-makers could simply determine the level of performance they wanted and provide the appropriate amount of revenue or, conversely, determine how much revenue was available and know the level of performance that could be attained.

In the absence of such a simple relationship, and in light of the fact that some people believe that there is no clear association between spending and performance, four rational approaches have emerged as ways to determine a base cost level: (1) the professional judgment approach; (2) the successful school district approach; (3) the whole-school reform approach; and (4) the statistical approach.² It should be noted that these designations are not used universally, that the approaches have been called different things over the last few years as they have been developed, and that different people interpret what each approach means somewhat differently. These approaches differ in terms of underlying philosophy, the assumptions that need to be made to use them, the data they require to function, the extent to which they rely on social science research, and the ease with which they are understood by policy makers, educators, and the general public. These approaches should not be viewed as competing with one another but, rather, as alternatives that might be used appropriately depending on particular circumstances. Moreover, while any of these approaches might be used to calculate a base cost figure, they might be more or less useful in calculating adjustments to the base cost to account for the varying, uncontrollable cost pressures different districts face.

² More is being written about the issue of education funding adequacy, including, for example: “The New School Finance” by Allan Odden in *Phi Delta Kappan*, 2001; “Enabling Adequacy to Achieve Reality: Translating Adequacy into State School Finance Distribution Arrangements” by James W. Guthrie and Richard Rothstein in *Equity and Adequacy in Education Finance*, edited by Helen F. Ladd, Rosemary Chalk, and Janet S. Hansen (National Research Council, National Academy press, Washington DC, 1999); “The Empirical Argument for Educational Adequacy, the Critical Gaps in the Knowledge Base, and a Suggested Research Agenda” in *Selected Papers in School Finance, 1995* (National Center for Education Statistics, Washington DC, 1997); “Defining Adequacy: Implications for School Business Officials” by Lawrence O. Picus (*School Business Affairs*, January 1999); “The Costs of Sustaining Educational Change Through Comprehensive School Reform” by Allan Odden (*Phi Delta Kappan*, February 2000); “Alternative Approaches to Measuring the Cost of Education” by William Duncombe, John Ruggiero, and John Yinger in *Holding Schools Accountable: Performance-based Reform in Education*, edited by Helen F. Ladd (The Brookings Institution, Washington DC 1996); and other references, including A&M Ohio and Illinois reports.

The professional judgement approach relies on the views of experienced service providers to specify the kinds of resources, and the quantities of those resources, that would be expected to be available in order to achieve a set of objectives specified for the service providers. This “input-based” approach was developed in Wyoming to calculate a base cost amount in response to the state Supreme Court’s requirement that the school finance system reflect the cost of the “basket of goods and services” needed to assure that a high school graduate could be admitted to an institution of higher education in the state. The approach uses panels of experts to specify the way education services should be delivered in prototypical elementary, middle, and high schools, which combine to form a prototype school district – where prototypical schools are hypothetical schools of a specific size and demography that reflects the characteristics of a particular state.

Once the services have been specified (with a focus on regular school programs, extended-day and extended-year programs, numbers of different types of personnel, professional development, and technology), costs are attached and a prototype per pupil cost is determined. This approach best reflects the experiences of people who are actually responsible for delivering education services, and may be combined with research results, as a rational way to specify the resources required to produce a specific level of student performance. The actual procedures of implementing the professional judgement approach vary in the states that have used it; for example, in some states panel members come from the state in which the work is being done while in other states, panel members come from outside of the state. In some states, multiple panels are used, with one panel reviewing the work of another panel, while in other states a single panel is used. Regardless of how the approach has been implemented, it has been designed to distribute funds through a “block grant,” without specifying exactly how money should be spent, despite the fact that the prototype schools designate what the experts believe is the best combination of resources. The advantages of the approach are that it reflects the views of actual service providers and it is easy to understand; the disadvantages are that it tends to be based on current practice and there is little evidence that the provision of money at the designated level, or even the deployment of resources as specified by the prototype models, will produce the anticipated outcomes.

The successful school district approach is based on the simple premise that any district should be able to be as successful at meeting a set of objectives as those districts that actually meet those objectives provided that every district has the same level of funding that has been available to the successful districts and that differences in student characteristics have been taken into consideration. This approach was developed in Ohio in response to litigation. In Ohio, the average “basic” spending (excluding spending for capital purposes and transportation, expenditures funded by federal revenues, and expenditures for which adjustments would be expected to be calculated) of the districts that met almost all of the state’s 18 measurable objectives is the foundation level; in New Hampshire, the approach was modified to include only those districts that were among the lower spending of those that were within a narrow range of meeting the state’s objectives (excluding those that far exceeded the state’s objectives). In Mississippi, separate groups of districts were

identified to calculate base cost figures for instruction, administration, and plant maintenance and operation, which were then combined to produce a single base cost level.

The successful school district approach is most useful when the state has specified its objectives, and districts can be identified that meet them on the basis of acceptable criteria. The strengths of the approach are that it is based on actual evidence that districts can be successful at a certain resource level and that the ways that resources are used can vary among successful districts; a weakness of the approach is that it makes no adjustments to the base cost to reflect uncontrollable cost pressures, since the characteristics of some districts might differ from those that have been successful.

The comprehensive school reform approach is based on the estimated costs of implementing whole-school, systemic reform models, such as those developed by the New American Schools Development Corporation (NAS). The assumption is that such models reflect the best thinking about how to organize schools to assure their success, particularly with the most difficult students, and that any school that had the same resources as the model school would have the ability to put the model into effect and be equally successful. Only New Jersey has used this approach in response to long-term litigation that has focused on the needs of 30 or so urban districts (out of 600 districts). The fact that the approach is not more widespread may reflect the fact that the models have not been adopted by many school districts across the country as was originally expected.

The statistical approach is based on understanding those factors that statistically explain differences in spending across school districts while controlling for student performance.³ In some sense, the statistical approach is the most powerful of the

³ The following references are to studies or reports on the above mentioned approaches to looking at the adequacy of school funding: "The New Finance: Today's High Standards Call for a New Way of Funding Education" by Deborah A. Verstegen (*American School Board Journal*, October 2002); "Achieving Educational Adequacy through School Finance Reform" by Andrew Reschovsky and Jennifer Imazeki (*Journal of Education Finance*, 2001); "Performance Standards and Educational Cost Indexes: You Can't Have One Without the Other" by William D. Duncombe and John M. Yinger in *Equity and Adequacy in Education Finance: Issues and Perspectives* edited by Helen F. Ladd, Rosemary Chalk and Janet S. Hansen (National Academies Press, Washington, DC 1999); "A Proposed Cost-Based Block Grant Model for Wyoming School Finance" by James Guthrie, et. al. (Submitted to the Wyoming Legislature 1997); "Assessing SEEK from an Adequacy Basis" by Allan Odden and Lawrence Picus (Prepared for the Kentucky Department of Education 2001); "Calculation of the Cost of a Suitable Education in Kansas in 2000-2001 Using Two Different Analytical Approaches" by John Augenblick, John Myers, Justin Silverstein, and Anne Barkis (Prepared for the Legislative Coordinating Council; available at www.aandm.org); "Calculation of the Cost of an Adequate Education in Indiana in 2001-2002 Using the Professional Judgement Approach" by Augenblick & Myers, Inc. (Prepared for the Indiana State Teachers Association; available at www.aandm.org); "Calculation of the Cost of a Suitable Education in Maryland in 1999-2000 Using Two Different

alternatives and is subject to the least manipulation. However, it has proven difficult to explain how the approach works in situations other than academic forums. The approach requires the availability of lots of data, much of which needs to be at the school or student level in order to be most useful. No state has used the statistical approach to determine the parameters of a school finance formula. However, the statistical approach has been used to establish some of the adjustments states use to allocate support sensitive to uncontrollable cost pressures, such as setting the weights for students enrolled in special education programs or creating the formulas to reflect the costs associated with different enrollment levels.

None of these approaches are immune from manipulation; that is, each is subject to tinkering on the part of users that might change results. In addition, it is not known at this point whether they would produce similar results if used under the same circumstances (in the same state, at the same time, with similar data).⁴ In fact, there is some speculation that the successful school district approach and the comprehensive school reform approach produce lower costs than the professional judgement approach or the statistical approach. Regardless of these shortcomings, each approach represents an attempt to rationally determine the parameters that drive the allocation of state aid, and the use of any of the approaches raises the level of discussion about school finance adequacy.

Analytical Approaches” by Augenblick & Myers, Inc. (Prepared for the Maryland Commission on Education Finance, Equity, and Excellence).

⁴ Both the professional judgement and successful school district approaches have been used in the same state at the same time –in Kansas and Maryland. The professional judgement approach produced a base cost of \$5,811, while the successful school district approach produced a base cost of \$4,547 in Kansas. In Maryland the base cost produced by the professional judgement approach was \$6,612, while the successful school district approach produced a figure of \$5,969.

III. DEFINING ADEQUACY USING THE COLORADO STANDARD

Introduction

In order to calculate the cost of an adequate education in Colorado, A&M needed to have a specific definition of what that constituted. We began by reviewing Colorado legislation, including HB 93-1313, HB 98-1267, and SB-0186. Using this information, the expertise of the Colorado School Finance Project (CSFP), and an “adequacy” advisory group, composed of a variety of educators from across the state, we defined the meaning of an adequate education in Colorado. Our definition of an adequate education guided the discussions of our professional judgement panels. It also became the basis for us to find the data needed to identify successful school districts for the successful school district approach. This section will review the process of establishing a statewide standard for an adequate education.

Examples of Adequacy Definitions

In defining an adequate education states primarily use two types of measures of success –input and output. Often states rely more heavily on one or the other when setting their definition of adequacy. Wyoming is an example of a state that used input measures in setting its definition of adequacy. Input measures focus on the types of resources, the number of teachers, and the course offerings that should be offered to students. In Wyoming, the measure focused on those activities a student needed to complete in order to be admitted to the Wyoming university system. They felt that high school course offerings were essential to defining their definition. Wyoming did not use student performance on assessments as a measure.

Wyoming used only input standards to define adequacy, however, many states rely on output measures. Output measures focus on student performance and are typically associated with statewide testing in a variety of subject areas at several grade levels. Minimum graduation rates, maximum dropout rates, and minimum attendance rates are also considered output measures. In Illinois, outcomes on tests were the main measures used in determining adequacy. Districts that met state measures on a number of tests were considered to be performing at an adequate level. Illinois districts either had to meet the absolute standard, a certain percent of students meeting state goals on the test, or a change over time standard. The change over time standard measured adequacy in terms of improvement –if a district improved at a level that kept them on pace to achieve the absolute standard in a given period of time they were also deemed to be performing at an adequate level.

Current Colorado Standards

In 1993, standards-based reform began in Colorado with the passage of HB 93-1313. In response to this legislation the state set content standards in 11 subject matter areas including: reading, writing, math, science, history, geography, civics, art, music, physical education and foreign language. In recent years, content standards have been added for theatre, dance, and economics. Every district in the state is required to have content standards that either meet or surpass those scripted by the state. Then in 1998, the Legislature passed HB 98-1267 which aligned the new content standards with state's accreditation of schools. In this bill, in order to remain accredited school districts must demonstrate one year's growth in one year's time for all students on assessments. Accountability for student success in meeting the content standards was enhanced by SB 00-186. This bill required Colorado Student Assessment Program (CSAP) tests for all students in reading and writing in grades 3-10, math in grades 5-10, and science in 8th grade.

The introduction of the School Accountability Reports (SAR) allowed the state to hold schools and school districts more accountable. Primarily using the results of the Colorado Student Assessment Program (CSAP) tests, the state creates a composite score for school sites. The score is then used to hold school districts and schools more accountable for student performance. There are important rewards and consequences based on how students perform on the tests. Schools that have the most student success are given monetary rewards. On the other hand, schools may be converted into a charter school if they are unable to demonstrate that enough students can meet state standards after a three year period of time. It is this level of accountability and accreditation that form the basis for the Colorado standards.

Setting the Adequacy Definition

A&M worked with the CSFP and the "adequacy" advisory committee to create the description of the state standard for an adequate education. The description of the state standard focused on state requirements for accreditation and the need for one year's growth for one year of schooling. Additional language for bullying prevention, safe schools, and the Colorado Basic Literacy Act was included in the definition.

Special attention was given to the relationship between state accreditation and accountability requirements and the new federal requirements defined by the No Child Left Behind Act (NCLB). NCLB requires that 100% of students must meet state standards in reading and mathematics by 2013-14. It also requires schools and school districts to make Adequate Yearly Progress towards this goal. In order to be in compliance with the federal law, Colorado's CSAP scoring ratings will be collapsed into three categories by adding "Partially Proficient" and 'Proficient' together. (This means that scores will be reported to the federal government for unsatisfactory, partially proficient/proficient, and advanced.)

We also set the performance measures that would be used in the successful school district approach. It was important to everyone that as many measures be used to identify successful school districts as possible. Together we determined that CSAP scores for 2001 and 2002, graduation rates for 2000 and 2001, drop-out rates for 2000 and 2001, and accreditation levels for 2001 would be used in the selection process. It is important to note that the accreditation level was included because it encompasses all of the state requirements for school districts, including bullying prevention and safe schools.

Using the Adequate Education Definition

This definition was used for the two approaches. In the professional judgement approach, participants were asked to build school districts that would provide an adequate education. In this approach the participants were given Appendix A, which served as the definition of the current state standard. In addition to the accreditation and accountability discussed above, information on “Value Added Growth” was included. Additionally, each prototype panel was given a comparison of actual performance levels by school districts of the appropriate size. The performance level shown were based on percentages of students at partially proficient and above. This was used to illustrate to the panels the amount of growth in student performance that is needed in five years if they are expected to make Adequate Yearly Progress towards 100% in 2013-14 (see Appendix D). The members of the professional judgement panels were asked to build school districts that could accomplish the goal of the definition. In essence, the districts had to be able to teach and assess in all content standards and prepare students sufficiently to achieve the one year’s growth in one year’s schooling.

For the successful school district approach, more information can be gained by using several approaches –an absolute approach and a relative approach. The absolute standard used in Colorado is derived from the old accreditation requirements that said that 80 percent of all students needed to be proficient on CSAP tests. The second approach, the relative approach, is more aligned with the NCLB and the new state accreditation system because it looks at students’ yearly progress over time. In addition to students’ performance on CSAP tests, we used full accreditation status with the state to ensure that school districts were meeting additional state defined requirements. We then identified those districts that were meeting performance standards. Once those districts were identified we applied a variety of filters, including drop-out rate and graduation rate, to get a set of school districts deemed successful.

The following two sections describe the full process of undertaking the professional judgement and successful school district approaches in Colorado.

IV. IMPLEMENTING THE PROFESSIONAL JUDGEMENT APPROACH IN COLORADO

Introduction

The primary purpose of the professional judgement approach is to estimate the cost of providing those services believed to be necessary to assure that all students can meet whatever objectives a state has established for public education. As discussed earlier, this is typically done by determining a base cost figure (the cost to assure that an average student, attending school in an average school district, can meet those objectives) and a series of adjustments, expressed as pupil weights¹, that specify the added costs of both serving students with special needs and providing services in school districts that face cost pressures beyond their control. In the case of this study, we were interested in estimating a base cost figure and the costs of serving pupils in special education programs, pupils at risk of academic failure (using as a proxy measure the number of students eligible for free lunch), and English language learners (ELL) as well as the cost of providing regular services and special services in districts of varying size (enrollment level).²

In its simplest form, the professional judgement approach uses a panel of well-qualified people to identify the resource needs of prototype elementary, middle, and high schools with a particular set of characteristics. Prototype schools are hypothetical

¹ Pupil weights are factors used in counting students to express the added cost of serving students with a particular type of special need. Regular students, with no special needs, would be counted as 1.00 students since they have no added costs and 1.00 would be multiplied by the base cost figure to determine the total cost of serving such students. If the added cost of serving a student with a particular special need were determined to be 60 percent of the base cost, then the student would be counted as 1.60 students and the total cost of serving such a student would be 1.60 times the base cost figure. Additional weighting might be applied to all students in a district to account for the cost of a district characteristic if the added cost associated with that characteristic has been determined; for example, if it were found that the added cost of serving students in a district with 100 students was 120 percent higher than the cost of serving students in districts with the lowest cost per student then all students in the district would be weighted at 2.20 – 1.00 plus 1.20 – in order to recognize costs specifically attributable to school district size.

² The study specifically did not evaluate an adjustment for geographic cost differences, which requires the use of a different methodology.

ones that have a set of characteristics designed to reflect statewide average characteristics or the characteristics of sub-groups of school districts; while it might be possible to specify the characteristics of prototype schools in terms of “best practices” or what schools “ought to look like,” we have never taken that approach when we use the professional judgement approach. To the extent that all of the schools within a state would be reasonably well represented by a set of prototype schools with one set of characteristics, a single group of people would suffice to get the job done. However, in order to calculate all of the desired adjustments, which are necessary because school district characteristics vary widely in Colorado, we needed to use multiple groups of people, each focused on prototype schools and/or districts of different size.

Further, based on our experience using the professional judgement approach in other states, we felt that it was best to use multiple panels of people, each of which had somewhat different responsibilities: (1) a set of school-level panels that focused exclusively on estimating the resource needs of prototype schools; (2) a corresponding set of district-level panels that reviewed the work of the school-level panels and estimated added resource needs at the district level; and (3) an “expert” panel that reviewed the work of the district panels, discussed resource prices, and examined cost figures.

The remainder of this chapter discusses the characteristics of the prototype schools and school districts, the ways the panels went about their work, the resource needs of prototype schools and school districts, the prices assigned to those resources, the resulting costs for a variety of resource components, the differing resource costs for school districts of different size, and the relationships we found between the added costs of special services and the base cost.

Determining the Characteristics of Prototype Schools and School Districts

In 2001-2002, nearly 700,000 students attended public schools in Colorado. They were enrolled in 178 school districts. The school districts varied dramatically, with, for example, 30 districts having fewer than 200 students and 11 districts having more than 20,000 students and some school districts having very low proportions of students from low income families while others had a significant proportion of students from low income families.

In order to better understand the diversity of school districts, we examined their characteristics after grouping them into four size categories (quartiles) based both on a nearly equal number of school districts in each group and on a similar number of students in each group. The characteristics of these groups are shown in Tables IV-1A and IV-1B. When districts are organized with nearly equal numbers of school districts in each quartile (Table IV-1A), districts in the smallest quartile enroll less than 1 percent of all students and enroll, on average, about 147 students per district. Districts in the largest quartile of districts enroll 88.8 percent of all students and have a bit more than

14,000 students per district. When school districts are organized with similar numbers of students in each quartile (Table IV-1B), the smallest 158 districts enroll about 25,000 more students than are enrolled in the largest two districts, with the smallest districts having an average size of 1,109 students and the largest districts having an average size of 75,231 students. Tables IV-1A and IV-1B also indicate that even when school districts are grouped by size, they have substantially different proportions of students from low income families (based on those eligible for the federally sponsored free lunch program) and very different proportions of ELL students.

Based on this information and an examination of the list of districts rank-ordered by size, we felt that five prototype K-12 districts would be sufficient to represent the diversity of K-12 districts in the state (keeping in mind that the purpose of the exercise is to develop a set of adjustments that can be translated into factors designed to consider the actual circumstances of each district). The figures below show the characteristics of the prototype districts, including the size of the district, the numbers of students with special needs, and the numbers of schools in the districts.

CHARACTERISTICS OF PROTOTYPE SCHOOLS AND PROTOTYPE SCHOOL DISTRICTS IN COLORADO

	<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) Range in Size of District (Students)	≤200	200-800	801-3,000	3,001-12,500	≥12,500
(2) Size of Prototype District	125	430	1,500	5,200	29,970
(3) <u>Students in Special Education</u>					
Proportion	12%	13%	13%	12%	11%
Number	15	56	195	624	3,297
(4) <u>At-Risk Students</u>					
Proportion	32%	29%	27%	27%	24%
Number	40	125	405	1,404	7,193

	<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(5) <u>ELL Students</u>					
Proportion	1%	4%	7%	11%	11%
Number	1	17	105	572	3,297
(6) <u>Number of Prototype Schools</u>					
Elementary	1	1	2	6	30
Middle	-	1	1	3	9
High School	1	1	1	2	7
(7) <u>Size and Grade Span of Prototype School*</u>					
Elementary	67 (k-6)	200	345	400	460
Middle	-	100	345	400	770
High School	58 (7-12)	130	465	800	1,320

* Unless otherwise indicate elementary schools serve grades K-5, middle schools serve grades 6-8, and high schools serve grades 9-12.

The Work of the Professional Judgement Panels

Having determined the numbers of prototype school districts we needed to examine, the characteristics of prototype schools and school districts, and the objectives the schools would be expected to achieve (see Appendix A), we created a number of professional judgement panels, as listed below:

1. A school-level panel was created to specify the resource needs of schools in very small *and* small districts.
2. A school-level panel was created to specify the resource needs of schools in moderate size districts.
3. A school-level panel was created to specify the resource needs of schools in large districts.

4. A school-level panel was created to specify the resource needs of schools in very large districts.
5. A district-level panel was created to review the school-level costs of both very small districts and small districts and to specify the resource needs of very small and small districts.
6. A district-level panel was created to review the school-level costs of moderate size districts and to specify the resource needs of moderate size districts.
7. A district-level panel was created to review the school-level costs of large districts and to specify the resource needs of large districts.
8. A district-level panel was created to review the school-level costs of very large districts and to specify the resource needs of very large districts.
9. An “expert” panel was created to review the work of all of the district-level resource panels and to discuss the prices (primarily salaries and benefits) needed to cost out personnel resources.

Once we identified the characteristics of the individuals we wanted to serve on those panels (in terms of role in the school/district, level of experience, and the size of the district in which the individual worked), we asked the Colorado School Finance Project to identify individuals who might serve on the panels. Twenty-seven people attended the one-and-a-half day meeting on September 12-13, 2002, in Colorado Springs (see Appendix B-1 for names of participants) of the first four panels. At that meeting, participants were placed into appropriate panels, given a set of instructions to guide their work (see Appendix C-1), and assigned a person from A&M to facilitate the work (John Augenblick, John Myers, Justin Silverstein, and Jennifer Sharp fulfilled this role). Each panel identified a recorder whose job was to enter the opinions of the group into computer-based information gathering tools that A&M supplied. The panels developed an underlying philosophy and specified the resource needs of prototype schools. Resources included the number and size of classes to be offered during the school year, the availability of supplemental learning opportunities (during the regular school year and during the summer), the availability of services for some children before kindergarten, equipment, additional amounts of professional development, technology, support services, and non-academic activities. Following this meeting, we summarized the work of the panels for review by the prototype district-level panels.

We followed a similar procedure in identifying participants for the prototype district-level panels as we had in finding individuals to serve on the prototype school-level panels (see Appendix B-2 for names of participants). The four panels, with a total of 26 participants, met for a day in Colorado Springs on October 16, 2002.

John Augenblick, John Myers, Justin Silverstein, and Jennifer Sharp oversaw the work

of the district-level panels. Again, panel members were given a set of materials to guide their work (see Appendix C-2) and one participant recorded the consensus of the group on computer-based forms. The panels reviewed the work of the prototype school panels, amended the list of resources for the prototype schools, and created a resource list for central district activities that had not been included in the prototype schools. Following these meetings, we made some preliminary decisions about resource prices and, based on panel decisions about resources, we estimated the cost of basic services, and the added cost of services for students with special needs.

The cost estimates, and the underlying resources and prices, were reviewed by the expert panel at a day-long meeting in Denver on November 13, 2002. Expert panel members were selected using a similar procedure to those used for the prototype school and prototype school district panels (see Appendix B-3), and they were given a set of materials to assist them in their work (see Appendix C-3). At that meeting, the expert panel modified some resources to make them somewhat more consistent from school to school and suggested changes in the prices used to estimate costs.

The Resource Needs of Schools and School Districts

The figures shown in Tables IV-2A, IV-2B, IV-2C, IV-2D, and IV-2E indicate the personnel needs of prototype elementary schools, middle schools, and high schools in different size school districts based on the work of the professional judgement panels. Some things should be kept in mind in looking at the figures displayed in the tables. First, figures are in full-time equivalent personnel terms – they reflect the resource needs of schools not the way schools may be organized to deliver services. Second, because we wanted to estimate the costs of services for students with special needs, we asked panels to distinguish, as best they could, the extra resources that students with particular needs might require – this often results in some resources being included as basic resources since most students with special needs are not treated separately. Third, we asked panels to be as precise as they could, but precision should not be over-interpreted; that is, panel members found it difficult to precisely link resources to performance expectations. Fourth, some activities are covered by the specified resources without being addressed separately – for example, some of the panels felt that programs for gifted/talented students could be provided in all schools without requiring additional resources or without distinguishing such resources. Finally, we treated each group of students with special needs as if they were independent while, in reality, there may be cross-over among groups that leads to some double counting of resources (for example, some ELL students might also be eligible for free lunch).

In an attempt to make it easier to compare personnel resources across different schools, Tables IV-3A, IV-3B, and IV-3C standardize the resources shown in the previously discussed tables by displaying numbers of personnel per 1,000 students. The tables compare schools serving similar grades across districts of differing size. Again, the caveats expressed above need to be kept in mind while comparing figures. However, in general, as size of district and school increases, the numbers of personnel

per 1,000 students tend to decrease. In some cases, this change is dramatic (as in the case of classroom teachers in elementary and high schools, nurses at all levels, librarian/media specialists in middle schools and high schools, and principals at all levels). In other cases, the ratio changes only slightly or there is no obvious relationship between numbers of personnel per 1,000 students and size of district. In some cases, the very large districts have more personnel of a specific type than relatively smaller districts (as in the case of clerical personnel at the elementary level guidance counselors at the middle school level, and librarian/media specialists and technology specialists at the high school level). It should be remembered that it is difficult to focus on any single category of personnel since the panels designed schools on the basis of the total personnel needed – numbers of personnel were not driven by formulaic procedures but rather by the design of the whole school.

One way to validate the figures presented in Tables IV-3A through IV-3C is to compare the figures developed in this analysis to those that have been used in other states. Table IV-3D provides information that compares the numbers of staff per 1,000 students required for elementary students with no special needs in relatively large districts as specified by the Colorado professional judgement panels to those specified by panels in Kansas, Maryland, Montana, and Nebraska (states in which A&M has used the professional judgement approach in the last two years). One thing to keep in mind in looking at these figures is that state expectations are difficult to compare across states and may vary considerably, making the kinds of comparisons implicit in the table less meaningful than they appear to be. Assuming that the figures can be reasonably compared, Colorado needs a few more teachers than the other states that have undertaken this kind of analysis. Colorado would expect to use fewer teacher aides than any of the other states, fewer guidance counselors than two of the states but more counselors than the other two states, fewer nurses than three of the four states, fewer librarians than three of the four states, and fewer clerical staff than any of the other four states. While Colorado would use a relatively low number of principals, it would expect to use assistant principals at elementary schools, which is not anticipated in other states. In total, Colorado would expect to employ 91.3 people per 1,000 students, fewer than is the case in Kansas or Nebraska but more than would be expected to be needed in Maryland or Montana. These figures suggest that the personnel decisions made by the panel are reasonable and not out of line with decisions made in other states using the same methodology.

The figures in Tables IV-4A, IV-4B, and IV-4C show the other resources needed in schools, including those associated with professional development, student activities, and assessment. After reviewing the work of the other panels, the expert panel agreed that school districts needed \$1,000 per teacher for professional development each year, which might be paid as a stipend for time spent before the start of or after the school year for students and/or to pay for fees, materials, or travel associated with development activities. They also agreed that funds would need to be available for instructional supplies and materials, and for equipment in amounts that tended to be slightly higher in high schools and slightly higher in smaller districts.

It should be noted that large districts included additional amounts for supplies and materials at the district level so they do not appear at the school level. Assessment was viewed as a relatively small but important cost. Student activities, including all costs associated with extra-curricular activities such as sports, are a substantial cost the magnitude of which could only be estimated.

Tables IV-5A, IV-5B, and IV-5C indicate the other kinds of services the panels felt needed to be in place in order to assure that schools could meet state expectations. Many of these programs are at the elementary level and many of them are designed to serve at-risk students, with the expectation that investments in services made early, even before kindergarten, would alleviate the need for some services later. At the elementary level, the panels felt that full-day kindergarten was essential for all students in all size school districts and that pre-school should be available to all students in all but the very large district where it would be provided for ELL and at-risk students only (the very large district identified this as a district-level cost and it is not seen on Table IV-5A). Extended-day and summer programs were primarily provided for at-risk students and, even then, not in school districts of every size group. At the middle school level, there was an emphasis on summer programs and after-school programs for at-risk students, particularly in districts other than small ones. At the high school level, summer programs and after-school programs for at-risk students were thought to have value in relatively large school districts.

The technology needs of elementary, middle, and high schools are shown in Tables IV-6A, IV-6B, and IV-6C. In order to develop the technology needs, panels were given a standard list of equipment, based on work done by the Education Commission of the States, which was modified as necessary to be consistent with each panel's design. In most cases, the panels wanted to see an extensive array of technology available in classrooms, in computer labs, in media centers, and for teachers and administrative staff.

Resource Prices

The primary prices needed to cost out the resources specified above are the salaries and benefits of personnel and the prices assigned to different kinds of technology equipment. For personnel salaries, we typically use average figures based on the school district size groups (which may be adjusted for regional competitiveness as described below). Group averages are used when the state does not incorporate a regional (or district) price factor in distributing state aid – in effect, the use of a size group average incorporates regional price differences and differences due to school district size. Since Colorado uses a regional cost-of-living adjustment, which is applied to a base cost figure (and would be applied, we assume, to the base cost figure produced by this analysis), it is important to exclude the influence of that factor in determining the base cost figure and the district size adjustment factor. Therefore, for this study, we chose to use statewide average salary figures so that the size adjustment

factor is not contaminated by regional price differences. Statewide personnel salaries for 2000-01 are shown below disaggregated as far as the data available from the Colorado Department of Education permit (in some cases, the figures are for multiple personnel groups that probably have different average salary levels but that cannot be subdivided).

Statewide Average Personnel Salaries in 2000-01

<u>Personnel Group</u>	<u>Average Salary</u>
Teachers	\$39,183
Counselors/Librarians	\$45,998
Psychologist	\$42,673
Superintend./Asst. Super.	\$82,390
Director/Manager/Supervisor	\$65,635
Principal/Asst. Prin./Activities Dir.	\$64,867
Clerical/Office Support	\$24,287
Instructional Aide	\$13,086
Library/Media Aide	\$15,863
Health Aide/Interpreter	\$17,071
Technology Specialist	\$42,308
Janitor/Maintenance/Custodians	\$18,306

A benefit rate of 25 percent was applied to all salaries based on the work of the expert panel. Substitute teachers were priced at \$100 per day.

Some panel members discussed the need for higher teacher salary levels in Colorado although many of their comments focused on the difficulty of attracting new teachers in general, the problems of attracting teachers to particular locations, or issues surrounding particular credentials (such as special education). Given the lack of any detailed data about the movement of teachers into or out of the education system, it is difficult to evaluate the anecdotal information obtained through conversations with educators. In the absence of other information, we chose to compare the average salary in Colorado to the statewide average salaries paid in surrounding states, making the assumption that Colorado competes with those states to attract teachers. As shown in Table IV-7, the average 1999-2000 teacher salary in Colorado was higher than it was in all of the eight surrounding states. Since average salary levels reflect the education and experience of teachers (almost all school districts pay teachers on the basis of a salary schedule driven by education level and experience), and since cost-of-living varies across states, it is important to control for these factors in comparing average salary levels. In order to do this, we used data available from the National Center for Education Statistics concerning both the average salary paid to teachers with particular levels of education/experience and the average age of teachers as well as data from the American Federation of Teachers that quantifies differences in cost-of-

living among the states. After making these adjustments, Colorado's average teacher salary was higher than six of the eight nearby states but lower than two (Kansas and Texas). Since the average salary of the nearby states was lower than the average in Colorado (regardless of how the average was calculated), we decided not to adjust the statewide average salaries at all, a decision that was supported by the expert panel.

Technology costs are listed below. For costing purposes, we assumed that technology equipment would be replaced every four years; therefore, we took 25 percent of the total cost (number of pieces of equipment times the prices listed below) as the annual cost to be included in our calculations.

Desktop Computer	\$1,432
Laser Printer	\$1,451
Server	\$5,043
Laptop Computer	\$2,309
Inkjet Printer	\$156
Digital Camcorder	\$867
Projector	\$2,822
CD/DVD Tower	\$2,355
Smartboard	\$3,300
Video Editor	\$4,000
TV/VCR	\$700
Scanner	\$200
LAN	\$1,500
Converter Boxes	\$160
Technology Lab	\$25,000

Prototype Cost Estimates

School Level Costs

Tables IV-8A, IV-8B, IV-8C, IV-8D, and IV-8E show the prototype school costs that result from applying the prices discussed above to the resources specified by the professional judgement panels. Per pupil figures were calculated for all pupils and for pupils with special needs by multiplying numbers of resources (such as personnel or technology equipment) by prices and dividing either by the number of students in each prototype school or by the number of students with a particular special need.

In looking at the tables, we have divided the information into two categories: (1) figures related to base spending – that is spending for all students that cannot be disaggregated for students with special needs; and (2) figures related to spending for students with special needs, which are disaggregated by specific need. Within the first category, we divided figures into basic programs (which includes a basic cost that

reflects personnel, annually consumed supplies and materials, and ancillary school-based costs) professional development, and technology. For all figures we show school level costs and then combine costs across levels to calculate a district-wide figure based on the statewide average distribution of students. In small, moderate, large, and very large K-12 districts the distribution is in 46.7 percent in elementary schools, 23.8 percent in middle schools, and 29.5 percent in high schools. However, in the very small K-12 district the distribution of students is 54.7 percent in a K-6 elementary school and 45.3 percent in a 7-12 secondary school.

Focusing on very small districts (Table IV-8A), we estimate that high school basic spending would need to be \$13,740, about 29 percent higher than elementary (K-6) spending when professional development, technology, full-day kindergarten, and pre-school costs are included. We also found that the cost of professional development in the high school (\$177 per student) represents 1.4 percent of total basic spending while technology (\$559 per student) represents 4.3 percent of basic spending. In the very small school district there are no other basic programs, at the high school, identified by the professional judgement panels. The cost of special education would be \$8,465 per special education student while the cost of programs for at-risk students would be \$3,993 per at-risk student – the cost of ELL programs is zero at the school level because such costs were considered to be district level costs.

This pattern changes dramatically as school districts become larger. For example, in large districts, basic high school spending would be about 23.7 percent lower than elementary school spending (\$4,551 versus \$5,387) while middle school spending would be between high school and elementary school spending (\$5,354).³ Based on combined spending across all grades, professional development costs represent 1.5 percent of basic spending while technology costs would be 3.5 percent of basic spending in large districts. The additional costs of providing services for special education, at-risk students, and ELL students are substantial, ranging from 37 percent of basic spending for at-risk students to 67 percent of basic spending for ELL students to 95 percent of basic spending for students with special education needs.⁴

³ Note that in very large districts, high school costs are about 16 percent higher than elementary school costs.

⁴ Note that in moderate and very large districts, the added costs of special education exceed basic expenditures. Also, the relative cost of providing services for at-risk students in moderate size districts is similar to what it is in large districts while such costs are twice as high, in relative terms, in very large districts. Finally, while the cost of ELL programs are relatively lower in moderate size districts (in comparison to basic costs), they are higher in very large districts.

It is important to keep in mind that one should be careful in drawing conclusions based on school level costs since such costs exclude district level costs – it is really the combination of school and district costs that reflect the true cost of providing services and that permit the most appropriate basis of comparison across school districts of different size.

District Level Costs

The figures discussed above are school level costs to which district level spending needs to be added in order to get to both a full basic cost and the full cost of programs for students with special needs. Full cost figures for school districts of different size are shown in Table IV-9. Added district costs are for central services, some of which affect all students, such as administration and plant maintenance and operation (M&O), and others of which affect only students with special needs. The figures in Table IV-9 indicate that district level costs that affect all students decrease substantially as the size of a district increases although some costs rise in very large districts. For example, district level administration costs drop from \$2,051 per student in very small districts to \$298 per student in very large districts but the per student cost of plant maintenance and operation (M&O) decrease from \$1,366 in very small districts to \$600 in large districts and then rise slightly, to \$676, in very large districts. Overall, basic district level costs decrease from \$4,321 per student in very small districts to \$1,206 per student in large districts and rise to \$1,807 per student in very large districts, which exceeds the level of moderate size districts (\$1,440). The district level costs of serving students with special needs bounce around quite a bit across districts of different size, which reflects the varying reliance on district level costs by the panels (the extremely high district level cost per student of ELL in very small districts reflects the very low number of students involved in the program).

Table IV-9 also shows total spending after combining school and district spending. The total base spending decreases as school district size increases, from \$16,373 per student in a prototype district with 125 students to \$6,815 in a prototype district with 5,200 students before rising slightly to \$6,951 in a prototype very large district with 29,970 students. These figures suggest the existence of a “backward J curve” in describing the relationship between cost per student and school district size in Colorado (the description arises from the fact that costs are very high in very small districts, drop to a minimum level in districts of a certain size, and then rise up slightly in districts that are much larger). Additional costs for special education also vary with size of district in much the same way that basic costs vary – for at-risk and ELL students, costs decrease from the very small to the large districts and then increase in the very large districts (with the increase being substantial). For special education, costs decrease steadily from the very small to the very large prototype districts.

A note of caution is in order concerning these costs. They represent estimates based on the best judgements of many people, reviewed multiple times, and on estimated prices, based on statewide average figures. We present them as precise figures reflecting the assumptions that were used to calculate them. But it is probably wiser to view them as indicative of an order of magnitude that might be slightly low or slightly high and that could change more substantially if other people, informed by experience, research, and expertise, thought the objectives identified to the panels could be met even if some components were modified or eliminated.

It should also be noted that no individual member of our panels would suggest that resources be deployed precisely in the way the panels did for the purpose of estimating cost. First, the final figures represent a series of trade-offs among the experts themselves – trade-offs not required by an expenditure limit placed on panel members, but by the fact that there is no one best way to provide services. Second, the panels focused on several schools and districts with average characteristics among groups of districts of different size – no such schools or districts actually exist in Colorado. Third, even if such a school did exist, the panel members suggested that other factors, outside the scope of their discussions, might affect the way they would use resources in an actual school.

Finally, it is important to note that these cost estimates do not include transportation, food services, other services schools provide such as adult education, or capital outlay and debt service related to facilities. In particular, panel members noted that existing facilities might not be able to accommodate the programs they designed for schools.

TABLE IV-1A

**CHARACTERISTICS OF SCHOOL DISTRICTS IN
COLORADO FOR “EQUAL DISTRICT” QUANTILES OF
DISTRICTS BASED ON NUMBER OF DISTRICTS**

	District Enrollment Quartile			
	<u>Quartile 1</u>	<u>Quartile 2</u>	<u>Quartile 3</u>	<u>Quartile 4</u>
	#261 stu.	262- 607 stu.	608- 2,287 stu.	\$2,287 stu.
<u>Quartile Characteristics</u>				
Number of Districts	44	45	45	44
Number of Students	6,486	17,700	53,598	618,695
Average Size of Districts	147 stu.	393 stu.	1,191 stu.	14,061 stu.
<u>Proportion of Students:</u>				
Eligible for Free Lunch	31%	28%	30%	24%
In Special Education	12%	12%	13%	11%
English Language Learners	2%	3%	7%	11%

TABLE IV-1B

**CHARACTERISTICS OF SCHOOL DISTRICTS IN
COLORADO FOR “EQUAL STUDENT” QUARTILES OF
DISTRICTS BASED ON NUMBER OF DISTRICTS**

	District Enrollment Quartile			
	<u>Quartile 1</u>	<u>Quartile 2</u>	<u>Quartile 3</u>	<u>Quartile 4</u>
	#6,563 stu.	6,564- 23,234 Stu.	22,234- 41,950 stu.	\$41,950 stu.
<u>Quartile Characteristics</u>				
Number of Districts	158	12	6	2
Number of Students	175,195	177,046	193,776	150,462
Average Size of Districts	1,109 stu.	14,754 stu.	32,296 stu.	75,231 stu.
<u>Proportion of Students:</u>				
Eligible for Free Lunch	27%	25%	16%	33%
In Special Education	12%	11%	11%	11%
English Language Learners	8%	9%	9%	16%

TABLE IV-2A

**PERSONNEL REQUIREMENTS OF COLORADO
PROTOTYPE SCHOOLS TO ACHIEVE DESIRED RESULTS
GIVEN SPECIFIED SCHOOL CHARACTERISTICS**

Very Small School District

	<u>Elementary</u>	<u>High School</u>
<u>Specified Characteristics</u>		
Enrollment	67	58
Number of Students in Special Education	8	7
Number of Students Eligible for Free/ Reduced Price Lunch	21	19
Number of ELL Students	1	1
<u>Personnel</u>		
(1) <u>Teaching Staff</u>		
<i>Regular Student</i>		
Classroom Teacher	6.5	7.5
Other Teacher	1.5	1.5
Aide	0.5	0.5
<i>Special Education</i>		
Classroom Teacher	1.0	1.0
Other Teacher	-	-
Aide	0.5	0.5
<i>Free/Reduced Price Lunch</i>		
Classroom Teacher	-	1.0
Other Teacher	0.5	-
Aide	1.0	-
<i>ELL</i>		
Classroom Teacher	-	-
Other Teacher	1.0	-
Aide	2.0	-

TABLE IV-2A (Continued)

<u>Personnel (Continued)</u>	<u>Elementary</u>	<u>High School</u>
(2) <u>Pupil Support Staff</u>		
<i>Regular Student</i>		
Guidance Counselor	.25	.25
Nurse	.25	.25
Psychologist	-	-
<i>Special Education</i>		
Guidance Counselor	-	-
Nurse	-	-
Psychologist	-	-
<i>Free/Reduced Price Lunch</i>		
Guidance Counselor	-	-
Nurse	-	-
Psychologist	-	-
<i>ELL</i>		
Guidance Counselor	-	-
Nurse	-	-
Psychologist	-	-
(3) <u>Other Staff</u>		
<i>All Students</i>		
Librarian/Media Specialist	0.5	0.5
Technology Specialist	0.5	0.5
Substitutes	6 days @ \$100	6 days @ \$100
(4) <u>Administration</u>		
<i>All Students</i>		
Principal	0.5	0.5
Activities Director	-	0.4
Clerical/Data	0.5	0.5

TABLE IV-2B

**PERSONNEL REQUIREMENTS OF COLORADO
PROTOTYPE SCHOOLS TO ACHIEVE DESIRED RESULTS
GIVEN SPECIFIED SCHOOL CHARACTERISTICS**

Small School District

	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
<u>Specified Characteristics</u>			
Enrollment	200	100	130
Number of Students in Special Education	26	13	17
Number of Students Eligible for Free/ Reduced Price Lunch	58	29	38
Number of ELL Students	8	4	5
<u>Personnel</u>			
(1) <u>Teaching Staff</u>			
<i>Regular Student</i>			
Classroom Teacher	13.0	7.0	13.0
Other Teacher	1.5	1.5	2.5
Aide	-	-	1.0
<i>Special Education</i>			
Classroom Teacher	2.0	-	2.0
Other Teacher	-	1.0	-
Aide	4.0	1.5	1.5
<i>Free/Reduced Price Lunch</i>			
Classroom Teacher	-	1.0	1.5
Other Teacher	2.0	-	-
Aide	3.0	1.0	1.0
<i>ELL</i>			
Classroom Teacher	1.0	0.5	0.5
Other Teacher	-	-	-
Aide	1.0	-	-

TABLE IV-2B (Continued)

<u>Personnel (Continued)</u>	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
(2) <u>Pupil Support Staff</u>			
<i>Regular Student</i>			
Guidance Counselor	0.5	.33	0.5
Nurse	0.5	.33	.25
Psychologist	.25	-	.25
<i>Special Education</i>			
Guidance Counselor	-	-	-
Nurse	-	-	-
Psychologist	-	-	-
<i>Free/Reduced Price Lunch</i>			
Guidance Counselor	0.5	-	-
Nurse	-	-	-
Psychologist	-	-	-
<i>ELL</i>			
Guidance Counselor	-	-	-
Nurse	-	-	-
Psychologist	-	-	-
(3) <u>Other Staff</u>			
<i>All Students</i>			
Librarian/Media Specialist	.33	.33	.33
Technology Specialist	.33	.33	.33
Substitutes	6 Days @ \$100	6 Days @ \$100	6 Days @ \$100
(4) <u>Administration</u>			
<i>All Students</i>			
Principal	1.0	.50	0.5
Assistant Principal	-	.25	0.4
Clerical/Data	1.0	1.0	1.0

TABLE IV-2C

**PERSONNEL REQUIREMENTS OF COLORADO
PROTOTYPE SCHOOLS TO ACHIEVE DESIRED RESULTS
GIVEN SPECIFIED SCHOOL CHARACTERISTICS**

Moderate Size School District

	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
<u>Specified Characteristics</u>			
Enrollment	345	345	465
Number of Students in Special Education	45	45	60
Number of Students Eligible for Free/ Reduced Price Lunch	93	93	126
Number of ELL Students	24	24	33
<u>Personnel</u>			
(1) <u>Teaching Staff</u>			
<i>Regular Student</i>			
Classroom Teacher	20.0	21.0	30.0
Other Teacher	4.5	-	11.0
Aide	11.0	4.0	1.0
<i>Special Education</i>			
Classroom Teacher	3.0	3.0	3.5
Other Teacher	1.0	1.0	0.5
Aide	4.5	4.0	3.0
<i>Free/Reduced Price Lunch</i>			
Classroom Teacher	2.0	2.0	3.0
Other Teacher	0.5	1.0	0.5
Aide	-	1.0	2.0
<i>ELL</i>			
Classroom Teacher	1.0	1.0	2.0
Other Teacher	-	-	-
Aide	0.5	-	1.0

TABLE IV-2C (Continued)

<u>Personnel (Continued)</u>	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
(2) <u>Pupil Support Staff</u>			
<i>Regular Student</i>			
Guidance Counselor	1.0	1.0	2.0
Nurse	.65	.65	.65
Psychologist	-	-	-
<i>Special Education</i>			
Guidance Counselor	-	-	.-
Nurse	.35	.35	.35
Psychologist	0.5	0.5	0.5
<i>Free/Reduced Price Lunch</i>			
Guidance Counselor	-	0.5	0.5
Nurse	-	-	-
Psychologist	-	-	-
<i>ELL</i>			
Guidance Counselor	-	-	-
Nurse	-	-	-
Psychologist	-	-	-
(3) <u>Other Staff</u>			
<i>All Students</i>			
Librarian/Media Specialist	1.0	1.0	1.0
Technology Specialist	1.05	1.05	1.0
Substitutes	6 Days @ \$100	6 Days @ \$100	6 Days @ \$100
(4) <u>Administration</u>			
<i>All Students</i>			
Principal	1.0	1.0	1.0
Assistant Principal	-	1.0	2.0
Clerical/Data	2.0	3.0	3.0

TABLE IV-2D

**PERSONNEL REQUIREMENTS OF COLORADO
PROTOTYPE SCHOOLS TO ACHIEVE DESIRED RESULTS
GIVEN SPECIFIED SCHOOL CHARACTERISTICS**

Large School District

	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
<u>Specified Characteristics</u>			
Enrollment	400	400	800
Number of Students in Special Education	48	48	96
Number of Students Eligible for Free/ Reduced Price Lunch	108	108	216
Number of ELL Students	44	44	88
<u>Personnel</u>			
(1) <u>Teaching Staff</u>			
<i>Regular Student</i>			
Classroom Teacher	24.5	18.0	45.8
Other Teacher	4.0	8.0	-
Aide	2.0	3.0	4.0
<i>Special Education</i>			
Classroom Teacher	2.0	3.0	5.0
Other Teacher	-	-	-
Aide	4.0	4.0	6.0
<i>Free/Reduced Price Lunch</i>			
Classroom Teacher	2.0	1.0	1.5
Other Teacher	-	-	1.0
Aide	4.0	3.0	-
<i>ELL</i>			
Classroom Teacher	2.0	2.0	4.0
Other Teacher	-	-	-
Aide	4.0	2.0	4.0

TABLE IV-2D (Continued)

<u>Personnel (Continued)</u>	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
(2) <u>Pupil Support Staff</u>			
<i>Regular Student</i>			
Guidance Counselor	1.0	3.0	3.0
Nurse	-	-	1.0
Psychologist	-	-	-
<i>Special Education</i>			
Guidance Counselor	-	-	-
Nurse	-	-	-
Psychologist	-	-	-
<i>Free/Reduced Price Lunch</i>			
Guidance Counselor	-	-	-
Nurse	-	-	-
Psychologist	-	-	1.0
<i>ELL</i>			
Guidance Counselor	-	-	0.5
Nurse	-	-	-
Psychologist	-	-	-
(3) <u>Other Staff</u>			
<i>All Students</i>			
Librarian/Media Specialist	1.0	1.0	1.0
Technology Specialist	1.0	0.5	1.0
Substitutes	6 Days @ \$100	6 Days @ \$100	6 Days @ \$100
(4) <u>Administration</u>			
<i>All Students</i>			
Principal	1.0	1.0	1.0
Assistant Principal	0.5	1.0	2.0
Clerical/Data	2.0	3.0	6.0

TABLE IV-2E

**PERSONNEL REQUIREMENTS OF COLORADO
PROTOTYPE SCHOOLS TO ACHIEVE DESIRED RESULTS
GIVEN SPECIFIED SCHOOL CHARACTERISTICS**

Very Large School District

	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
<u>Specified Characteristics</u>			
Enrollment	460	770	1,320
Number of Students in Special Education	51	85	145
Number of Students Eligible for Free/ Reduced Price Lunch	110	185	317
Number of ELL Students	51	85	145
<u>Personnel</u>			
(1) <u>Teaching Staff</u>			
<i>Regular Student</i>			
Classroom Teacher	21.5	43.2	77.0
Other Teacher	5.0	-	-
Aide	-	-	-
<i>Special Education</i>			
Classroom Teacher	3.0	6.0	10.0
Other Teacher	-	-	-
Aide	5.0	8.0	10.0
<i>Free/Reduced Price Lunch</i>			
Classroom Teacher	5.0	7.0	8.0
Other Teacher	-	-	-
Aide	-	3.0	-
<i>ELL</i>			
Classroom Teacher	3.0	5.0	8.25
Other Teacher	-	-	-
Aide	2.0	3.0	5.0

TABLE IV-2E (Continued)

<u>Personnel (Continued)</u>	<u>Elementary</u>	<u>Middle School</u>	<u>High School</u>
(2) <u>Pupil Support Staff</u>			
<i>Regular Student</i>			
Guidance Counselor	1.0	3.0	4.5
Nurse	0.2	0.4	-
Psychologist	-	-	1.0
<i>Special Education</i>			
Guidance Counselor	-	-	-
Nurse	0.2	0.4	0.5
Psychologist	1.0	1.0	1.0
<i>Free/Reduced Price Lunch</i>			
Guidance Counselor	-	-	0.5
Nurse	0.1	0.2	.25
Psychologist	-	0.5	0.5
<i>ELL Student</i>			
Guidance Counselor	-	-	0.5
Nurse	0.1	0.2	.25
Psychologist	-	0.5	0.5
(3) <u>Other Staff</u>			
<i>All Students</i>			
Librarian/Media Specialist	1.0	1.0	2.0
Technology Specialist	1.0	1.5	2.0
Substitutes	6 Days @ \$100	6 Days @ \$100	6 Days @ \$100
(4) <u>Administration</u>			
<i>All Students</i>			
Principal	1.0	1.0	1.0
Assistant Principal	0.5	1.0	4.0
Clerical/Data	2.5	5.0	8.0
Instructional Coach	1.0	1.0	2.0

TABLE IV-3A

**PERSONNEL PER 1,000 ELEMENTARY SCHOOL
STUDENTS FOR SELECTED TYPES OF PERSONNEL
SERVING REGULAR STUDENTS OR ALL STUDENTS
BY SCHOOL DISTRICT SIZE BASED ON THE WORK OF
THE COLORADO PROFESSIONAL JUDGEMENT PANELS**

Elementary School

	Size of School District				
	<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Teaching Staff</u>					
Clstrm. Teacher	97.0	65.0	58.0	61.3	46.7
Other Teacher	22.4	7.5	13.0	10.0	10.9
Aide	7.5	-	31.9	5.0	-
(2) <u>Pupil Support Staff</u>					
Guidance Counselor	3.7	2.5	2.9	2.5	2.2
Nurse	3.7	2.5	1.9	-	.44
(3) <u>Other Staff</u>					
Librarian/Media Spec.	7.5	1.7	2.9	2.5	2.2
Technology Spec.	7.5	1.7	3.0	2.5	2.2
(4) <u>Administration</u>					
Principal	7.5	5.0	2.9	2.5	2.2
Asst. Principal	-	-	-	1.3	1.1
Clerical/Data	7.5	5.0	5.8	2.5	5.4

TABLE IV-3B

**PERSONNEL PER 1,000 MIDDLE SCHOOL
STUDENTS FOR SELECTED TYPES OF PERSONNEL
SERVING REGULAR STUDENTS OR ALL STUDENTS
BY SCHOOL DISTRICT SIZE BASED ON THE WORK OF
THE COLORADO PROFESSIONAL JUDGEMENT PANELS**

Middle School

	<u>Size of School District</u>			
	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Teaching Staff</u>				
Clstrm. Teacher	70.0	60.9	45.0	56.1
Other Teacher	15.0	-	20.0	-
Aide	-	11.6	7.5	-
(2) <u>Pupil Support Staff</u>				
Guidance Counselor	5.0	2.9	7.5	3.9
Nurse	2.5	1.9	-	.52
(3) <u>Other Staff</u>				
Librarian/Media Spec.	3.3	2.9	2.5	1.3
Technology Spec.	3.3	3.0	2.5	2.0
(4) <u>Administration</u>				
Principal	5.0	2.9	2.5	1.3
Asst. Principal	2.5	2.9	2.5	1.3
Clerical/Data	10	8.7	7.5	6.5

TABLE IV-3C

**PERSONNEL PER 1,000 HIGH SCHOOL
STUDENTS FOR SELECTED TYPES OF PERSONNEL
SERVING REGULAR STUDENTS OR ALL STUDENTS
BY SCHOOL DISTRICT SIZE BASED ON THE WORK OF
THE COLORADO PROFESSIONAL JUDGEMENT PANELS**

High School

	Size of School District				
	<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Teaching Staff</u>					
Clstrm. Teacher	129.3	100.0	64.5	57.3	58.3
Other Teacher	25.9	19.2	23.7	-	-
Aide	8.6	-	2.2	5.0	-
(2) <u>Pupil Support Staff</u>					
Guidance Counselor	4.3	3.8	4.3	3.8	3.4
Nurse	4.3	1.9	1.4	1.3	-
(3) <u>Other Staff</u>					
Librarian/Media Spec.	8.6	2.5	2.2	1.3	1.5
Technology Spec.	8.6	2.5	2.2	1.3	1.5
(4) <u>Administration</u>					
Principal	8.6	3.8	2.2	1.3	.76
Asst. Principal	-	-	4.3	2.5	3.0
Clerical/Data	8.6	7.7	6.5	7.5	6.1

TABLE IV-3D

**SELECTED TYPES OF PERSONNEL PER 1,000 “REGULAR” STUDENTS
NEEDED IN ELEMENTARY SCHOOLS IN RELATIVELY LARGE SCHOOL
DISTRICTS TO MEET STATE STANDARDS IN COLORADO AND
SELECTED OTHER STATES THAT HAVE USED THE PROFESSIONAL
JUDGEMENT APPROACH TO SPECIFY PERSONNEL NEEDS**

	<u>Colorado</u>	<u>Kansas</u>	<u>Maryland</u>	<u>Montana</u>	<u>Nebraska</u>
<u>Teaching Staff</u>					
Classroom Teachers	61.3	55.0	54.0	51.6	51.4
Other Teachers	10.0	12.5	8.0	9.7	12.9
<i>Total Teachers</i>	<i>71.3</i>	<i>67.5</i>	<i>62.0</i>	<i>61.3</i>	<i>64.3</i>
<u>Student/Teacher Support</u>					
Teacher Aides	5.0	6.5	–	9.7	25.7
Guidance Counselors	2.5	5.0	–	3.2	1.4
Nurses	1.2*	2.5	2.0	1.1	1.4
<u>Other Staff</u>					
Librarians/Media Spec.	2.5	5.0	2.0	3.2	2.9
Technology Spec.	2.5	1.7	4.0	3.2	1.4
<u>Administration</u>					
Principal	2.5	5.0	2.0	3.2	2.9
Assistant Principal	1.3	–	–	–	–
Clerical/Data Entry	2.5	5.0	8.0	4.8	2.9
<i>Total Personnel</i>	<i>91.3</i>	<i>98.2</i>	<i>80.0</i>	<i>89.7</i>	<i>102.9</i>

* This figure was imputed since the panel assigned nurses at the district level.

TABLE IV-4A

**OTHER NON-PERSONNEL COSTS TO OPERATE
PROTOTYPE ELEMENTARY SCHOOLS IN DISTRICTS OF
DIFFERENT SIZE BASED ON THE WORK OF THE
COLORADO PROFESSIONAL JUDGEMENT PANELS**

Elementary School

	Size of K-12 School District				
	Very Small	Small	Moder.	Large	Very Large
(1) Professional Development	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.
(2) Instructional Supplies/Mater.	\$360/pup.	\$360/pup.	\$350/pup.*	\$155/pup.*	\$300/pp.*
(3) Equipment	\$120/pup.	\$100/pup.	\$3,400*	\$10/pup.*	\$15/pup.
(4) Assessment	\$15/pup.	\$15/pup.	\$22/pup.*	\$20/pup.*	\$11/pup.*
(5) Student Activities	\$25/pup.	\$25/pup.	\$25/pup.*	-*	\$40/pup.*
(6) Safety/Secur.	\$15/pup.	\$10/pup.	-*	-	\$10/pup.
(7) Other	-	-	\$1,000**	-	\$15/pup.**

* Other funds are added specifically for pupils in special education, at-risk, or bilingual programs.

** This is for assisting students with clothing, parent outreach and additional library resources. Other funds are also added specifically for pupils in special education, at-risk, or bilingual programs.

TABLE IV-4B

**OTHER NON-PERSONNEL COSTS TO OPERATE
PROTOTYPE MIDDLE SCHOOLS IN DISTRICTS OF
DIFFERENT SIZE BASED ON THE WORK OF THE
COLORADO PROFESSIONAL JUDGEMENT PANELS**

Middle School

	Size of K-12 School District			
	Small	Moder.	Large	Very Large
(1) Professional Development	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.
(2) Instructional Supplies/Mater.	\$360/pup.	\$425/pup.*	\$175/pup.*	\$350/pup.*
(3) Equipment	\$100/pup.	\$125/pup.*	\$8/pup.*	\$30/pup.*
(4) Assessment	\$10/pup.	\$22/pup.*	\$20/pup.	\$11/pup.*
(5) Student Activities	\$350/pup.	\$121/pup.*	\$176/pup.*	\$150/pup.*
(6) Safety/Secur.	\$10/pup.	.5 SRO**	-	1 SRO**
(7) Other	-	\$1,000***	-	\$11,500***

* Other funds are added specifically for pupils in special education, at-risk, or bilingual programs.

** SRO is a School Resource Officer.

*** This is for parent outreach, assisting children with clothing and other needs, and additional library resources. Other funds are also added specifically for pupils in special education, at-risk, or bilingual programs.

TABLE IV-4C

OTHER NON-PERSONNEL COSTS TO OPERATE PROTOTYPE HIGH SCHOOLS IN DISTRICTS OF DIFFERENT SIZE BASED ON THE WORK OF THE COLORADO PROFESSIONAL JUDGEMENT PANELS

High School

	Size of K-12 School District				
	Very Small	Small	Moder.	Large	Very Large
(1) Professional Development	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.	\$1,000/tchr.
(2) Instructional Supplies/Mater.	\$450/pup.	\$450/pup.	\$500/pup.*	\$225/pup.*	\$350/pup.*
(3) Equipment	\$200/pup.	\$250/pup.	\$200/pup.*	\$6/pup.*	\$50/pup.
(4) Assessment	\$50/pup.	\$50/pup.	\$22/pup.*	\$20/pup.	\$10/pup.*
(5) Student Activities	\$1,500/pup.	\$1,500/pup.	\$350/pup.*	\$188/pup.	\$568/pup.*
(6) Safety/Secur.	\$15/pup.	\$10/pup.	.5 SRO**	.5 SRO**	4 SROs**
(7) Other	-	-	\$40,000***	-	\$6,600

* Other funds are added specifically for pupils in special education, at-risk, or bilingual programs.

** SRO is a School Resource Officer.

*** This is designated for graduation, other programs at the school site and parent outreach. Other funds are also added for pupils in special education, at-risk, or bilingual programs.

TABLE IV-5A

**OTHER PROGRAMS INCLUDED AS RESOURCE NEEDS
OF PROTOTYPE ELEMENTARY SCHOOLS IN DISTRICTS
OF DIFFERENT SIZE BASED ON THE WORK OF THE
COLORADO PROFESSIONAL JUDGEMENT PANELS**

Elementary School

	Size of School District				
	<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Pre-School</u>					
All Students	U	U	U	U	
Special Educ.		U		U	
At-Risk Stu.					
ELL					
(2) <u>Full-Day Kinder.</u>					
All Students	U	U	U	U	U
At-Risk Stu.					
(3) <u>High Ability Learners</u>					
All Students			U		U
At-Risk Stu.					
(4) <u>Extended-Day</u>					
All Students					
At-Risk Stu.	U		U	U	
(5) <u>Summer Programs</u>					
All Students		U			
Special Educ.			U		
At-Risk Stu.			U	U	U
ELL		U			

TABLE IV-5B

**OTHER PROGRAMS INCLUDED AS RESOURCE NEEDS
OF PROTOTYPE MIDDLE SCHOOLS IN DISTRICTS
OF DIFFERENT SIZE BASED ON THE WORK OF THE
COLORADO PROFESSIONAL JUDGEMENT PANELS**

Middle School

	Size of School District			
	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Summer Programs</u>				
All Students	U			
At-Risk Stu.		U	U	U
Special Educ.		U		
(2) <u>After-School Programs</u>				
All Students				
Special Educ.				
At-Risk Stu.		U	U	U
(3) <u>High Ability Learners</u>				
All Students				U
At-Risk Stu.				

TABLE IV-5C

**OTHER PROGRAMS INCLUDED AS RESOURCE NEEDS
OF PROTOTYPE HIGH SCHOOLS IN DISTRICTS
OF DIFFERENT SIZE BASED ON THE WORK OF THE
COLORADO PROFESSIONAL JUDGEMENT PANELS**

High School

		Size of School District				
		<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1)	<u>Summer Programs</u> All Students At-Risk Stu. Special Educ.		U	U	U	U
(2)	<u>After-School Programs</u> All Students Special Educ. At-Risk Stu.	U		U	U	U
(3)	<u>High Ability Learners</u> All Students At-Risk Stu.	U				
(4)	<u>Alternative School/ Night School</u> All Students At-Risk Stu.			U		
(5)	<u>Extended Learning Opportunities</u> All Students At-Risk Students			U		U

TABLE IV-6A

**TECHNOLOGY NEEDS OF PROTOTYPE ELEMENTARY
SCHOOLS IN DISTRICTS OF DIFFERENT SIZE BASED
ON THE WORK OF THE COLORADO PROFESSIONAL
JUDGEMENT PANELS**

Elementary School

		Size of School District				
		<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Classroom</u>						
Computer		15.0	80.0	52.0	122.0	130.0
Printer (Inkjet)		7.5	16.0	26.0	30.5	32.5
TV/VCR		7.5	16.0	26.0	30.5	32.5
(2) <u>Computer Lab</u>						
Computer		15.0	25.0	50.0	20.0	50.0
Scanner		1.0	1.0	2.0	1.0	3.0
Printer (Laser)		1.0	1.0	2.0	1.0	4.0
(3) <u>Media Center</u>						
Computer		5.0	5.0	5.0	5.0	5.0
Printer		-	-	-	1.0	-
Dig.I Video Cam.		1.0	1.0	2.0	2.0	2.0
Digital Camera		1.0	2.0	2.0	2.0	2.0
Video Edit. Com.		-	-	1.0	1.0	1.0
Projector		1.0	1.0	2.0	1.0	4.0
DVD-ROM Tower		-	-	1.0	1.0	1.0
Cable Distribution		-	-	-	-	\$8,000
Converter Boxes		-	-	26	-	-
LAN		-	-	1.0	-	-
(4) <u>Admin./Support/Other Staff</u>						
Computer		2.0	3.0	4.0	4.0	8.0
Printer (Laser)		1.0	1.0	2.0	2.0	3.0
(5) <u>Other</u>						
Faculty Laptop		9.0	19.5	32.0	34.5	38.5
Server		1.0	1.0	1.0	2.0	1.0

TABLE IV-6B

**TECHNOLOGY NEEDS OF PROTOTYPE MIDDLE
SCHOOLS IN DISTRICTS OF DIFFERENT SIZE BASED
ON THE WORK OF THE COLORADO PROFESSIONAL
JUDGEMENT PANELS**

Middle School

	Size of School District			
	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Classroom</u>				
Computer	42.5	54.0	48.0	122.4
Printer (Inkjet)	8.5	27.0	3.0*	61.2
TV/VCR	8.5	27.0	24.0	61.2
(2) <u>Computer Lab</u>				
Computer	25.0	75.0	75.0	120.0
Scanner	1.0	3.0	3.0	5.0
Printer (Laser)	1.0	3.0	3.0	9.0
(3) <u>Media Center</u>				
Computer	5.0	10.0	10.0	10.0
Printer	-	-	1.0	-
Dig.I Video Cam.	2.0	2.0	2.0	2.0
Digital Camera	2.0	2.0	2.0	4.0
Video Edit. Com.	1.0	1.0	1.0	2.0
Projector	1.0	5.0	2.0	7.0
DVD-ROM Tower	-	1.0	1.0	1.0
Cable TV Distribution	-	-	-	\$9,000
STC Tec. Lab	-	\$25,000	-	-
Smartboards	-	5.0	-	-
Converter Box	-	20	-	-
(4) <u>Admin./Support/Other Staff</u>				
Computer	3.0	4.0	4.0	12
Printer (Laser)	1.0	2.0	2.0	4.0
(5) <u>Other</u>				
Faculty Laptop	11.0	29.0	32.0	62.2
Server	1.0	1.0	5.0	2.0

* Changed inkjet to laser printers.

TABLE IV-6C

**TECHNOLOGY NEEDS OF PROTOTYPE HIGH
SCHOOLS IN DISTRICTS OF DIFFERENT SIZE BASED
ON THE WORK OF THE COLORADO PROFESSIONAL
JUDGEMENT PANELS**

High School

	Size of School District				
	<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
(1) <u>Classroom</u>					
Computer	15.0	80.0	77.0	57.3	206.50
Printer (Inkjet)	7.5	16.0	38.5	7.0**	103.25
TV/VCR	7.5	16.0	38.5	57.3	103.25
(2) <u>Computer Lab</u>					
Computer	25.0	35.0	100.0	150.0	240.0
Scanner	2.0*	2.0*	4.0	5.0	8.0
Printer (Laser)	3.0*	4.0*	4.0	10.0	8.0
(3) <u>Media Center</u>					
Computer	5.0	5.0	15.0	20.0	30.0
Printer	-	-	-	1.0	-
Dig.l Video Cam.	2.0	2.0	5.0	3.0	4.0
Digital Camera	2.0	2.0	2.0	3.0	8.0
Video Edit. Com.	1.0	1.0	1.0	1.0	3.0
Projector	2.0	3.0	5.0	3.0	14.0
DVD-ROM Tower	1.0	1.0	1.0	2.0	1.0
Cable TV Distribution	-	-	-	-	\$10,000
STC Tech. Lab	-	-	\$25,000	-	-
Smartboards	1.0	1.0	5.0	-	-
Converter Box	-	-	38.5	-	-
LAN	-	-	1.0	-	-
(4) <u>Admin./Support/Other Staff</u>					
Computer	4.0	3.0	6.0	9.0	23.0
Printer (Laser)	2.0	2.0	3.0	4.0	6.0
(5) <u>Other</u>					
Faculty Laptop	12.0	17.0	50.5	57.3	106.3
Server	1.0	1.0	1.0	5.0	3.0

* Includes technology resources for extended learning center.

** Changed inkjet to laser printers.

TABLE IV-7

**COMPARISON OF 1999-2000 STATEWIDE AVERAGE TEACHER SALARY
IN COLORADO TO NEARBY STATES – ADJUSTING FOR TEACHER
CHARACTERISTICS AND INTER-STATE COST-OF-LIVING DIFFERENCES**

State	Avg. Salary and (# of Teachers)	Avg. Salary by Educ. and Experience and Percentage Distribution of Teachers by Age				New Avg. Using CO %	COL	COL Adj. Avg.
		Lowest #30	All Others 30-50	MA/20yrs. 50-54	Highest \$55			
Colorado	\$39,073 (41,997)	\$24,037 15.3%	\$41,819 52.6%	\$38,876 19.5%	\$46,188 12.6%	\$39,073	.981	\$39,073
<i>Nearby States</i>								
Arizona	\$34,824 (45,775)	\$23,815 13.9%	\$35,618 55.2%	\$36,347 21.3%	\$42,843 9.6%	\$34,865	.959	\$35,664
Kansas	\$36,282 (32,741)	\$25,102 19.6%	\$36,282 53.1%	\$36,186 14.8%	\$41,194 12.5%	\$36,749	.898	\$40,146
Nebraska	\$33,237 (20,721)	\$20,545 16.5%	\$32,932 57.6%	\$34,435 15.8%	\$36,838 10.1%	\$31,822	.890	\$35,075
New Mexico	\$32,713 (20,333)	\$25,484 11.4%	\$29,867 57.8%	\$38,457 18.3%	\$44,069 12.5%	\$32,660	.947	\$33,833
Oklahoma	\$29,525 (41,290)	\$24,042 16.2%	\$29,201 59.3%	\$32,757 14.4%	\$35,624 10.1%	\$29,914	.877	\$33,461
Texas	\$37,567 (274,826)	\$25,806 18.0%	\$39,132 56.2%	\$41,914 16.2%	\$43,127 9.6%	\$38,138	.900	\$41,571
Utah	\$34,946 (22,027)	\$23,191 16.6%	\$34,336 54.5%	\$41,679 16.9%	\$44,516 12.0%	\$31,507	.938	\$32,951
Wyoming	\$34,188 (6,743)	\$22,052 11.4%	\$33,641 61.5%	\$38,748 16.6%	\$43,377 10.5%	\$34,090	.933	\$35,844
<i>Average of Nearby States</i>								
Unweighted								\$36,046
Weighted by Number of Teachers								\$39,049

Sources: Schools and Staffing Survey, 1999-2000: Overview of the Data for Public, Private, Public Charter, and Bureau of Indian Affairs Elementary and Secondary Schools, Kerry J. Gruber, Susan D. Wiley, Stephen P. Broughman, Gregory A. Strizek, and Marisa Burian-Fitzgerald (National Center for Education Statistics, U.S. Department of Education: Washington, DC, May 2002), Tables 1.02 and 1.13.

Survey and Analysis of Teacher Salary Trends, 2000, F. Howard Nelson, Rachel Drown, and Jewell C. Gould (American Federation of Teachers: Washington, DC), Table 1-7.

TABLE IV-8A

SCHOOL LEVEL COSTS FOR VERY SMALL SCHOOL DISTRICTS BASED ON THE WORK OF THE COLORADO PROTOTYPE PANELS

	<u>Elementary School</u>	<u>High School</u>	<u>Combined</u>
(1) <u>Base Spending*</u>			
Basic**	\$8,650	\$13,004	\$10,622
Prof. Devel.	\$138	\$177	\$156
Technology	\$345	\$559	\$442
<u>Other Prog.</u>			
Full-Day K	\$507	\$0	\$277
Pre-School	\$1,014	\$0	\$555
(2) <u>Spending for Special Student Populations***</u>			
Special Educ.	\$7,332	\$8,465	\$7,846
<u>At-Risk</u>			
Base	\$4,033	\$2,662	\$3,412
After School	\$0	\$1,331	\$603
ELL	\$0	\$0	\$0

* Costs are shown per pupil in school.

** Basic base spending includes school level personnel salaries and benefits, supplies and materials, assessment, and other expenditures.

*** Costs are shown per pupil in the program.

Note: Combined figures are based on the following statewide proportions of students: elementary (K-6) 54.7% and high school (7-12) 45.3%.

TABLE IV-8B

**SCHOOL LEVEL COSTS FOR SMALL
SCHOOL DISTRICTS BASED ON THE WORK
OF THE COLORADO PROTOTYPE PANELS**

	<u>Elem. School</u>	<u>Middle School</u>	<u>High School</u>	<u>Combined</u>
(1) <u>Base Spending*</u>				
Basic**	\$5,288	\$6,402	\$9,754	\$6,870
Prof. Devel.	\$82	\$103	\$132	\$102
Technology	\$291	\$396	\$507	\$380
<u>Other Prog.</u>				
Full-Day K	\$340	\$0	\$0	\$159
Pre-K	\$858	\$0	\$0	\$401
Summer School	\$43	\$78	\$24	\$46
(2) <u>Spending for Special Student Populations***</u>				
<u>Special Educ.</u>				
Base	\$6,561	\$5,282	\$7,411	\$6,113
ESY	\$2,613	\$0	\$0	\$1,220
At-Risk	\$3,146	\$2,204	\$2,430	\$2,711
<u>ELL</u>				
Base	\$8,492	\$5,635	\$4,998	\$6,781
Summer School	\$192	\$0	\$0	\$90

* Costs are shown per pupil in school.

** Basic base spending includes school level personnel salaries and benefits, supplies and materials, assessment, and other expenditures.

*** Costs are shown per pupil in the program.

Note: Combined figures are based on the following statewide proportions of students: elementary (K-5) 46.7%, middle (6-8) 23.8%, and high school (9-12) 29.5%.

TABLE IV-8C

**SCHOOL LEVEL COSTS FOR MODERATE SIZE
SCHOOL DISTRICTS BASED ON THE WORK
OF THE COLORADO PROTOTYPE PANELS**

	<u>Elem. School</u>	<u>Middle School</u>	<u>High School</u>	<u>Combined</u>
(1) <u>Base Spending*</u>				
Basic**	\$5,597	\$5,306	\$6,897	\$5,911
Prof. Devel.	\$109	\$78	\$97	\$98
Technology	\$208	\$272	\$282	\$245
<u>Other Prog.</u>				
Full-Day K	\$270	\$0	\$0	\$126
Pre-K	\$361	\$0	\$0	\$169
Post Secondary Options	\$0	\$0	\$19	\$6
High Ability Learners	\$30	\$0	\$0	\$14
(2) <u>Spending for Special Student Populations***</u>				
<u>Special Educ.</u>				
Base	\$7,977	\$7,849	\$5,620	\$7,251
ESY	\$322	\$401	\$0	\$246
<u>At-Risk</u>				
Base	\$1,626	\$2,364	\$2,098	\$1,941
After School	\$273	\$437	\$0	\$232
Summer School	\$177	\$157	\$35	\$130
ELL	\$3,191	\$2,859	\$4,049	\$3,365

* Costs are shown per pupil in school.

** Basic base spending includes school level personnel salaries and benefits, supplies and materials, assessment, and other expenditures.

*** Costs are shown per pupil in the program.

Note: Combined figures are based on the following statewide proportions of students: elementary (K-5) 46.7%, middle (6-8) 23.8%, and high school (9-12) 31.2%.

TABLE IV-8D

**SCHOOL LEVEL COSTS FOR LARGE
SCHOOL DISTRICTS BASED ON THE WORK
OF THE COLORADO PROTOTYPE PANELS**

	<u>Elem. School</u>	<u>Middle School</u>	<u>High School</u>	<u>Combined</u>
(1) <u>Base Spending*</u>				
Basic**	\$5,100	\$5,074	\$4,316	\$4,863
Prof. Devel.	\$89	\$85	\$67	\$82
Technology	\$198	\$195	\$168	\$188
<u>Other Prog.</u>				
Full-Day K	\$310	\$0	\$0	\$145
Pre-K	\$268	\$0	\$0	\$125
(2) <u>Spending for Special Student Populations***</u>				
<u>Special Educ.</u>				
Base	\$3,658	\$4,653	\$3,875	\$3,959
Pre-K	\$2,552	\$0	\$0	\$1,192
<u>At-Risk</u>				
Base	\$1,598	\$963	\$842	\$1,224
After School	\$1,321	\$67	\$2	\$634
Summer School	\$143	\$143	\$190	\$156
ELL	\$3,698	\$3,106	\$3,443	\$3,608

* Costs are shown per pupil in school.

** Basic base spending includes school level personnel salaries and benefits, supplies and materials, assessment, and other expenditures.

*** Costs are shown per pupil in the program.

Note: Combined figures are based on the following statewide proportions of students: elementary (K-5) 46.7%, middle (6-8) 23.8%, and high school (9-12) 31.2%.

TABLE IV-8E

**SCHOOL LEVEL COSTS FOR VERY LARGE
SCHOOL DISTRICTS BASED ON THE WORK
OF THE COLORADO PROTOTYPE PANELS**

	<u>Elem. School</u>	<u>Middle School</u>	<u>High School</u>	<u>Combined</u>
(1) <u>Base Spending*</u>				
Basic**	\$4,332	\$4,578	\$5,369	\$4,696
Prof. Devel.	\$64	\$63	\$65	\$64
Technology	\$239	\$212	\$221	\$227
<u>Other Prog.</u>				
Full-Day K	\$225	\$0	\$0	\$105
High Ability Learners	\$56	\$66	\$0	\$42
Distance Learning	\$0	\$0	\$10	\$3
Post Secondary	\$0	\$0	\$21	\$6
(2) <u>Spending for Special Student Populations***</u>				
Special Educ.	\$5,914	\$6,117	\$5,253	\$5,780
<u>At-Risk</u>				
Base	\$2,811	\$3,206	\$2,101	\$2,695
After School	\$0	\$540	\$477	\$269
Summer School	\$808	\$646	\$557	\$695
Bilingual	\$4,029	\$4,842	\$4,593	\$4,389

* Costs are shown per pupil in school.

** Basic base spending includes school level personnel salaries and benefits, supplies and materials, assessment, and other expenditures.

*** Costs are shown per pupil in the program.

Note: Combined figures are based on the following statewide proportions of students: elementary (K-5) 46.7%, middle (6-8) 23.8%, and high school (9-12) 31.2%.

TABLE IV-9

DISTRICT LEVEL COSTS AND TOTAL COSTS
FOR SCHOOL DISTRICTS OF VARYING SIZE
BASED ON THE WORK OF THE COLORADO
PROTOTYPE PANELS

	Size of School District				
	Very Small	Small	Moder.	Large	Very Large
(1) <u>District Level Spending</u>					
Administration*	\$2,051	\$727	\$576	\$305	\$298
Plant M&O*	\$1,366	\$1,017	\$534	\$600	\$676
Other*	\$904	\$367	\$330	\$301	\$833
<u>Spec. Need Stu.</u>					
Special Ed.**	\$6,266	\$4,178	\$1,696	\$4,731	\$1,914
At-Risk**	\$175	\$288	\$551	\$487	\$477
ELL**	\$20,436	\$1,976	\$738	\$266	\$448
(2) <u>Total Spending</u>					
<u>Base Spending*</u>					
School Level	\$12,052	\$8,246	\$6,568	\$5,609	\$5,144
District Level	\$4,321	\$2,111	\$1,440	\$1,206	\$1,807
Total Base Cost	\$16,373	\$10,357	\$8,008	\$6,815	\$6,951
<u>Added Cost of Spec. Need Stu.**</u>					
Special Ed.	\$14,111	\$11,906	\$9,193	\$9,881	\$7,694
At-Risk	\$4,190	\$2,999	\$2,854	\$2,501	\$3,880
ELL	\$20,436	\$8,847	\$4,104	\$3,874	\$4,837

* Costs are per all pupils.

** Costs are per pupil with the special needs identified.

V. IMPLEMENTING THE SUCCESSFUL SCHOOL DISTRICT APPROACH IN COLORADO

Introduction

The successful school district approach is the second method we used to examine the base cost figure associated with providing an adequate education. The purpose of the successful school district approach is to determine a base cost figure on the basis of the actual spending of school districts that are able to meet state standards. While the approach theoretically could be used to investigate the supplemental costs associated with special education, or other programs for students with special needs, the data needed to support such an analysis are not available in Colorado (or any state with which we are familiar).¹ To implement the approach for a base cost figure it is necessary to do three things: (1) specify the school districts that are successful; (2) examine the basic expenditures/revenues of those districts (basic expenditures exclude spending for capital purposes, transportation, special education, ELL programs, and programs and services for at-risk pupils as well as any adjustments for district characteristics, such as size or regional cost differences that will be applied to a base cost figure in allocating state aid to school districts); and (3) calculate a base cost figure using the basic expenditure figures of successful districts and, possibly, using a set of screening procedures to exclude districts, even though they are successful, that might be considered to be unusual or inappropriate for some reason (for example based on demographic characteristics).

Since the successful school district approach can require us to make decisions about exactly what elements, or levels of elements, constitute “success” – particularly if a state has a complex set of standards for schools and school districts, as was true in Colorado as of the writing of this report – we began by investigating two different ways of determining success. One way used an absolute measure of performance and the other way used change in performance over time. A reasonable number of districts, enrolling a reasonable proportion of all students, have to be identified as successful so that any conclusions drawn will not be based on the spending patterns of just a few school districts or even a relatively large number of very small districts. Colorado has 178 districts and 30-40 of them are so small that statewide test results are not reported in order to avoid the possibility of identifying individual students. Based on our experience and our familiarity with the characteristics of school districts in Colorado rather than on some statistical requirement, we felt that it was important that about 20 districts, enrolling a total of about 20 percent of all students, be identified as being successful no matter what methodology was used to measure success.

¹ The data include full-time-equivalent enrollment and supplemental spending for students with special needs by category of need. Also, it is necessary to have indicators of the extent to which students with special needs are meeting state standards.

This section of the report describes the procedures we used to identify successful schools, calculate a basic expenditure figure, and calculate a base cost figure using that information. Given Colorado standards and the data we examined, none of the figures we found is fully comparable to the base cost figure calculated using the professional judgement approach.

Selecting Successful Schools

As mentioned above, Colorado has a complex way of holding schools and school districts accountable for student performance. The state has evaluated school districts in terms of accreditation requirements (according to the Colorado Department of Education, all districts meet state accreditation standards at this time) and it has identified schools in terms of student performance ranging from excellent to unsatisfactory. Although we sought a list of successful school districts we were not able to find such a list. This lack of district level evaluation required us to develop procedures to classify school districts as being successful or not based on student performance (since all districts, according to accreditation, apparently fulfill state expectations in regard to such things as the Safe Schools Act, the Colorado Basic Literacy Act, and bullying prevention).

As mentioned above, we initially attempted to identify successful school districts using both an absolute and relative standard. The absolute standard was based on past accreditation requirements that required districts to have 80 percent of their students at proficient or advanced on all CSAP tests. We measured this standard using 2002 CSAP test results in math (grades 5-10), reading (grades 3-10), and writing (grades 3-10). No school districts met this standard.

Next, we used a relative standard (a change over time approach) that is much more aligned with the NCLB and the current Colorado accreditation system, focusing on adequate yearly progress. Under this approach, we assumed that all students needed to be rated as “partially proficient”, “proficient”, or “advanced” on the math (grades 5, 8, and 10) and reading (grade 4) tests by 2013-14 (although we did not examine the performance of sub-populations of students, such as those with special education needs, as required by the federal legislation) and that between 2001 and 2002 performance would need to increase by at least 1/13 of the difference between 100 and the actual proportion of students rated at those levels in 2001.² For the purpose of this approach, we compared results for the same grade levels from one year to the next – we did not compare the performance of students in a grade in the earlier year to the performance of students in the next grade in the following year (which would be closer to comparing the same group of students over time). Only one district, Gunnison Watershed RE-1J, was found to be successful using the relative standard.

² These four tests are the only tests for which we had data for both 2001 and 2002.

Since, our original approaches failed to identify an acceptable number of districts or an acceptable number of students we had to modify the approaches based on our own analysis of the data. We continued to use both methods, absolute standards and relative standards, but changed the parameters. In addition to the absolute and relative standards we created a set of filters that could be applied to either method.

The first modified approach we took used 2002 CSAP test results in math (grades 5-10), reading (grades 3-10), and writing (grades 3-10). We set 80 percent as the level of performance that needed to be met on each test including students who performed at the partially proficient, proficient, and advanced level. Using this measure five districts would be classified as successful – but because five districts are too few to meet our criteria for numbers of districts/students to feel comfortable drawing conclusions, we did not consider this to be a useful approach. However, if we lowered the math test percentage to 70 percent, we were able to identify 21 districts as being successful (that is, in 2002 at least 70 percent of the students taking the math tests and at least 80 percent of the students taking the reading and writing tests were rated as being partially proficient, proficient, or “advanced”). See Table V-1 for a list of the 21 districts.

The second modified approach we took to classify districts was based on change in performance over time. We first looked at all tests that we had data for both 2001 and 2002 which included reading 4th grade, writing 4th and 7th grades, and math 5th, 8th and 10th grades. We initially excluded any requirement for percent of student participation on tests and used the same measurement procedure as described for the relative approach above. In this case, we identified 19 districts in which the one year gain from 2001 to 2002 exceeded the annual amount needed to be on track to meet federal requirements by 2013-14 in math, reading, and writing at all of the available grade levels. Using this measure no districts would be classified as successful. However, if we eliminated the math tests, we were able to identify 19 districts as being successful (that is, in 2002, 19 school districts were on pace to have every student partially proficient, proficient, or advanced by 2013-2014 in reading and writing). See Table V-1 for the list of the school districts.

We also examined a combined approach under which any district meeting the requirements of the first or second modified approach were considered to be successful. In this case, 38 districts qualified – that is, only two districts met both requirements since 40 districts met either requirement. See Table V-1 for a list of the 38 districts.

In addition to the three approaches, we chose to use three different “filters” as a way of testing whether certain additional criteria affected the selection of successful school districts. One filter was based on the proportion of students taking CSAPs and assumed that at least 90 percent of all eligible students should take every test but one in order to avoid the possibility that low participation might skew performance. A second filter was based on both the drop-out rate and the graduation rate under the assumption that the the drop-out rate should be low (below two percent) and the high

school graduation rate should be relatively high (greater than 85 percent) in order to be successful. The third filter was based on the federal government's rating of Title 1 schools and assumed that districts should have no more than a third of their Title 1 schools considered to be in need of improvement. We applied these filters sequentially, using the first filter alone, adding the second filter, and then adding the third filter to the first two filters.

We found that when the filters are applied to the modified absolute method of examining CSAP test results, the number of successful school districts is not affected by the first filter (proportion of students taking CSAP tests) but that adding the second filter (drop-out and graduation rates) reduced the number of successful districts from 21 to 13; the third filter (Title 1 schools needing improvement) did not further affect the number of successful districts. When the filters are applied to the change over time method of examining CSAP test results the number of successful districts decreases from 19 to 18 when the first filter (proportion of students taking CSAP tests) is applied and the number drops further, from 18 to eight districts, when the second filter (drop-out and graduation rates) is used; the number of successful districts declines from eight to six when the third filter (Title 1 schools needing improvement) is used. The number of districts removed due to the filters is additive when the two CSAP evaluation methods are combined.

All of the districts that are considered to be successful using these alternative CSAP evaluation procedures and filters are shown in Table V-1.

Determining Basic Expenditures

The next step in implementing the successful school district approach was to identify the basic expenditures for each of the districts considered to be successful. Basic expenditures do not include all spending that occurs in the district, but are designed to reflect the cost of serving students with no special needs in districts with no cost-related characteristics that are taken into account by the state. In fact, when district spending is examined to determine basic expenditures, expenditures for transportation, special education, programs for at-risk students, programs for ELL students, all federal revenue for special student populations, and state revenue specifically allocated due to a size adjustment factor or a regional cost-of-living factor would be excluded in Colorado. However, since we could not obtain the information needed to make such deductions, we used revenues as the basis of determining basic expenditures. This can be done in Colorado because of the way the school finance system works. Colorado uses a foundation formula (with a base cost and adjustments for at-risk students, district size, and district cost-of-living), several categorical programs for students with special needs (such as special education and ELL) and transportation, and an unequaled "second tier" that permits districts to supplement foundation funding with limited local funding if approved by the voters. This means that base foundation support and local funds approved by voters reflect the revenues available for basic purposes since all other funds are theoretically provided to meet special needs

associated with student or district characteristics. It should be noted that to the extent that districts use such revenue to supplement state and federal support targeted for special needs, the use of foundation base funding and voter approved supplemental funds might overstate basic expenditures. In 2001-02, the foundation base was \$4,202 per student (from state and local sources), which could be supplemented by 20 percent plus some special levies for general purposes (since the 20 percent was based on total foundation costs, not just basic costs, some districts might have generated more than 20 percent, or \$840 per student). Table V-2 indicates the basic revenues of the 38 districts that met any of the criteria used in determining whether districts were successful. It is worth noting that districts that met the absolute modified CSAP standard appear to have higher per student expenditures than those that met the one year CSAP improvement standard (for example, only five of 21 districts that met the absolute standard had basic revenues below \$4,500 per student while 12 of the 19 districts that met the one year improvement standard had basic revenues below \$4,500 per student).

Calculating a Base Cost Figure

Having created a basic per student revenue figure for all districts that met the modified state standard we used to identify successful school districts (and remembering that no districts met the actual student performance standard being used by the state), we calculated the weighted average revenue of districts that met different combinations of standards and filtering criteria.³

In using our original approaches we identified only one school district as being successful, Gunnison Watershed RE-1J. Its base cost figure is \$4,202. We did not feel comfortable using only one district as the measure of what should be spent in all districts in the state. Instead we used the figures in Table V-3 that show the numbers of districts, the total enrollment of districts, and the weighted average per student revenue of districts that fulfill the alternative modified criteria (the table also shows the coefficient of variation of the weighted average, which indicates the extent of the variation in the figures – .000 indicates no variation). When no filters were used, the average revenue of the 21 districts that met the absolute modified standard was \$4,768 per student (for which the coefficient of variation was very low at .041 – which means that approximately two thirds of the 252,188 students in all 21 districts were in districts with per student revenue between \$4,573 and \$4,963). The use of filters caused the number of districts that met all criteria of success to be reduced (in some cases) with associated decreases in the numbers of students in successful districts. At the same time, the average revenue of districts increased as they were required to meet more criteria. The average revenue of the 19 districts that met the one year improvement

³ Weighted averages take into consideration the enrollment of school districts so that large districts have a greater impact on the result than small ones.

criteria was about four percent lower than the average of the districts that met the absolute criteria. Again, as more criteria needed to be met, the number of districts decreased and average revenue per student rose.

In our view, it would be reasonable to conclude that none of the figures shown in Table V-3 are appropriate for use as a base cost figure since none of the districts meet all of the standards the state expects school districts to fulfill. Given the patterns in revenue shown among districts that meet modified standards and filtering criteria, it would be expected that districts would require more revenue than any of the figures in the table although it is not possible to estimate how much more revenue would be needed. Among the figures in Table V-3, two could be used as a reasonable lower level amount on the basis of this analysis. The first is the \$4,768 associated with the absolute criteria and the 90 percent of students taking all CSAP tests but one since it includes enough districts, and enough students, for us to feel comfortable (the only modification we would suggest is to eliminate the very smallest and the very largest districts – those with enrollments less than 1,000 students and those with enrollments more than 25,000 students, which would result in a figure of \$4,819). The second figure would be the one associated with the combined approach (using both the absolute and the one year change approaches) and applying all filters (the proportion of students taking the test, the drop-out rate and graduation rate, and the Title 1 schools needing improvement), which is \$4,845 and includes 18 districts and 147,597 students (if the smallest and largest districts were excluded, the figure would be \$4,833).

The average basic expenditure number does not tell us anything about how the districts spend their money. It only tells us, on average, the amount of money districts need to provide programs and services for students with no special needs, in average districts, to be successful. Our belief is that districts can use this amount of money in the way they feel best meets the needs of their student population. Of course, this base amount does not cover the costs of serving students with special needs, the costs faced by small or very large districts, the relative adjustment need for districts with different costs-of-living, or the costs associated with student transportation, food services, or capital outlay and debt service.

TABLE V-1

**LIST OF COLORADO SCHOOL DISTRICTS THAT ARE
CONSIDERED TO BE SUCCESSFUL IN MEETING STUDENT
PERFORMANCE EXPECTATIONS AND OTHER CRITERIA**

District Number	District Name	Enroll.	(1) Meet Full Std.?	(2) How Meet Mod. Std.?	(3) Meet 1 st Filt.?	(4) Meet 2 nd Filt.?	(5) Meet 3 rd Filt.?
<i>Districts Meeting Absolute CSAP Standard</i>							
130	Cherry Creek	41,944	No	Abs.	Y	Y	Y
140	Littleton	15,811	No	Abs.	Y	Y	Y
480	Boulder Valley	26,546	No	Abs.	Y	Y	Y
920	Elizabeth	2,816	No	Abs.	Y	N	N
1020	Cheyenne Mountain	4,005	No	Abs.	Y	Y	Y
1030	Manitou Springs	1,322	No	Abs.	Y	Y	Y
1040	Academy	17,311	No	Abs.	Y	Y	Y
1080	Lewis-Palmer	4,714	No	Abs.	Y	Y	Y
1350	East Grand	1,290	No	Abs.	Y	Y	Y
1420	Jefferson County	83,465	No	Abs.	Y	N	N
1520	Durango	4,531	No	Abs.	Y	N	N
1530	Bayfield	1,072	No	Abs.	Y	N	N
1550	Poudre	23,233	No	Abs.	Y	Y	Y
1560	Thompson	14,233	No	Abs.	Y	N	N
2710	Meeker	604	No	Abs.	Y	Y	Y
2770	Steamboat Springs	1,863	No	Abs.	Y	Y	Y
2830	Telluride	523	No	Abs.	Y	Y	Y
2862	Julesburg	286	No	Abs.	Y	Y	Y
3000	Summit	2,576	No	Abs.	Y	N	N
3085	Eaton	1,427	No	Abs.	Y	N	N
3100	Windsor	2,632	No	Abs.	Y	N	N

Districts Meeting One Year Change CSAP Standard

10	Mapleton	5,132	No	Chng.	Y	N	N
123	Sheridan	1,821	No	Chng.	Y	N	N
500	Salida	1,146	No	Chng.	Y	Y	Y
520	Cheyenne County	285	No	Chng.	Y	N	N
540	Clear Creek	1,185	No	Chng.	Y	N	N
580	South Conejos	357	No	Chng.	Y	N	N
860	Consolidated C-1	417	No	Chng.	Y	Y	N
870	Delta County	4,743	No	Chng.	Y	Y	Y

TABLE V-1 (Continued)

District Number	District Name	Enroll.	(1)	(2)	(3)	(4)	(5)
			Meet Full Std.?	How Meet Mod. Std.?	Meet 1 st Filt.?	Meet 2 nd Filt.?	Meet 3 rd Filt.?

Districts Meeting One Year Change CSAP Standard (Continued)

890	Dolores County	314	No	Chng.	Y	Y	N
920	Elizabeth	2,816	No	Chng.	Y	N	N
970	Calhan	673	No	Chng.	Y	N	N
1040	Academy	17,311	No	Chng.	Y	Y	Y
1450	Arriba-Flagler	222	No	Chng.	Y	Y	Y
2070	Mancos	457	No	Chng.	Y	N	N
2660	Lamar	1,771	No	Chng.	N	N	N
2750	Sargent	403	No	Chng.	Y	Y	Y
2760	Hayden	450	No	Chng.	Y	N	N
3090	Keenesburg	1,635	No	Chng.	Y	Y	Y
3145	Ault-Highland	912	No	Chng.	Y	N	N

Note: Districts in **bold** are included in both lists.

Note: For column (1), full standard means that 80 percent of all students are rated as “proficient” or “advanced” on math, reading, and writing tests at all appropriate grade levels.

For column (2), districts may meet a modified standard (70 percent for math and 80 percent for reading and writing are rated as “partially proficient”, “proficient” or “advanced” at all appropriate grade levels) identified by *Abs.* or districts may meet a change over time standard (based on making yearly progress towards having 100 percent of all students being identified “partially proficient”, “proficient” or “advanced” at all appropriate grade levels) identified by *Chng.*

For column (3), the first filter is that 90 percent of eligible students take every test but one.

For column (4), the second filter is that no more than two percent of students drop out and at least 85 percent of students graduate from high school.

For column (5), the third filter is that no more than a third of Title 1 schools are identified as needing improvement according to the federal government.

TABLE V-2

**PER STUDENT BASIC EXPENDITURES OF COLORADO
SCHOOL DISTRICTS CONSIDERED TO BE SUCCESSFUL
IN MEETING MODIFIED STUDENT PERFORMANCE
EXPECTATIONS BEFORE APPLYING ANY FILTERS**

<u>District Number</u>	<u>District Name</u>	<u>Enrollment</u>	<u>How Meet Mod. Std.?</u>	<u>Per Student Basic Revenue</u>
10	Mapleton	5,132	Chng.	\$4,770
123	Sheridan	1,821	Chng.	\$4,751
130	Cherry Creek	41,944	Abs.	\$4,860
140	Littleton	15,811	Abs.	\$4,854
480	Boulder Valley	26,546	Abs.	\$4,867
500	Salida	1,146	Chng.	\$4,782
520	Cheyenne County	285	Chng.	\$4,968
540	Clear Creek	1,185	Chng.	\$5,100
580	South Conejos	357	Chng.	\$4,202
860	Consolidated C-1	417	Chng.	\$4,202
870	Delta County	4,743	Chng.	\$4,202
890	Dolores County	314	Chng.	\$4,202
920	Elizabeth	2,816	Both	\$4,202
970	Calhan	673	Chng.	\$4,202
1020	Cheyenne Mountain	4,005	Abs.	\$4,626
1030	Manitou Springs	1,322	Abs.	\$4,803
1040	Academy	17,311	Both	\$4,781
1080	Lewis-Palmer	4,714	Abs.	\$4,661
1350	East Grand	1,290	Abs.	\$5,843
1420	Jefferson County	83,465	Abs.	\$4,628
1450	Arriba-Flagler	222	Chng.	\$4,202
1520	Durango	4,531	Abs.	\$4,781
1530	Bayfield	1,072	Abs.	\$4,234
1550	Poudre	23,233	Abs.	\$5,020
1560	Thompson	14,233	Abs.	\$4,717
2070	Mancos	457	Chng.	\$4,202
2660	Lamar	1,771	Chng.	\$4,202
2710	Meeker	604	Abs.	\$4,873
2750	Sargent	403	Chng.	\$4,388
2760	Hayden	450	Chng.	\$5,159
2770	Steamboat Springs	1,863	Abs.	\$5,189

TABLE V-2 (Continued)

<u>District Number</u>	<u>District Name</u>	<u>Enrollment</u>	<u>How Meet Mod. Std.?</u>	<u>Per Student Basic Revenue</u>
2830	Telluride	523	Abs.	\$5,235
2862	Julesburg	286	Abs.	\$4,202
3000	Summit	2,576	Abs.	\$5,374
3085	Eaton	1,427	Abs.	\$4,202
3090	Keenesburg	1,635	Chng.	\$4,230
3100	Windsor	2,632	Abs.	\$4,202
3145	Ault-Highland	912	Chng.	\$4,202

Note: For the column concerning how districts meet the modified standard, "Abs." means that districts meet the modified absolute standard, "Chng." means that districts meet the modified one year improvement expectation, and "both" means that districts meet both standards.

TABLE V-3

BASE COST FIGURES ASSOCIATED WITH ALTERNATIVE APPROACHES TO SELECTING SUCCESSFUL SCHOOL DISTRICTS AND USING FILTERS IN COLORADO

<u>Filters</u>	<u>Alternative Selection Approach</u>		
	<u>Absolute</u>	<u>One Year Change</u>	<u>Combined</u>
<u>No Filters</u>			
Number of Districts	21	19	38
Number of Students	252,188	42,044	274,106
Base Cost Figure	\$4,768 (.041)	\$4,593 (.063)	\$4,746 (.046)
<u>90% of Students Taking All but One CSAP</u>			
Number of Districts	21	18	37
Number of Students	252,188	40,274	272,335
Base Cost Figure	\$4,768 (.041)	\$4,610 (.061)	\$4,750 (.046)
<u>90%/2% Drop-Out/85% Graduation Rate</u>			
Number of Districts	13	8	20
Number of Students	139,449	26,189	148,328
Base Cost Figure	\$4,877 (.029)	\$4,614 (.056)	\$4,842 (.041)
<u>90%/2%-85%/Title 1 Schools</u>			
Number of Districts	13	6	18
Number of Students	139,449	25,459	147,597
Base Cost Figure	\$4,877 (.029)	\$4,626 (.054)	\$4,845 (.040)

TABLE V-3 (Continued)

Notes: The primary way that districts were identified as being successful was based on CSAP test results. The use of the “absolute” criteria means that districts were selected based on the proportion of students identified as being partially proficient, proficient, or advanced on reading, writing, and math in 2002. It should be noted that no districts would have been selected if 100 percent of students needed to be classified in those categories for all three tests in 2002.

In order to identify any districts as being successful using the absolute approach, the percentages of students needing to be partially proficient, proficient, or advanced were reduced to 80 percent or more for reading and writing and 70 percent or more for math.

Using the one year change approach, the percentage of students who were partially proficient, proficient, or advanced in 2002 was compared to the proportion in 2001 using the reading and writing tests for the same grade in each year (that is, third grade results in 2002 were compared to third grade results in 2001) for which data were available for both years. In order to be successful, a district needed to have made one thirteenth of the progress necessary so that 100 percent of all students would be partially proficient, proficient, or advanced in 2013-14 (that is, the difference between the percentage in 2002 and in 2001 had to exceed $[100 - \text{percentage in 2001}]/13$).

Combined includes districts that met either the absolute or the one year change criteria.

Filters refer to criteria used to eliminate school districts that did not meet certain other requirements related to the proportion of students who took CSAP tests, the proportion of students who dropped out of school, the proportion of students who did not graduate from high school, and the proportion of Title 1 schools that were identified by the federal government as needing improvement. No filters indicates that all districts that met CSAP expectations were included.

The 90 percent of students taking the test criteria was used to eliminate districts in which less than 90 percent of all students had taken any of the CSAP tests but one.

The drop-out/graduation criteria was used to eliminate districts in which the drop-out rate exceeded two percent and/or the graduation rate was less than 85 percent.

The Title 1 filter was used to exclude districts in which more than a third of all Title 1 schools were identified as needing improvement.

VI. USING FIGURES DERIVED FROM THE ANALYSIS FOR POLICY PURPOSES

While the purpose of the work we did could be described as “determining the cost of an adequate education,” the knowledge of which might be valuable to different groups of people in a variety of different contexts, we hope that the results of the work can be used for state policy purposes and, specifically, in developing procedures to allocate state aid to school districts. For all the effort involved, this study can be viewed as producing a few figures that can serve as the key elements of a school finance system: (1) a base cost figure that can serve as the foundation level in a foundation program and (2) a set of adjustments to the base cost that attempt to consider the most important, uncontrollable factors that affect the cost of providing education services in different school districts.

Before examining a procedure to distribute state support, it is necessary to briefly address differences in the results of using the professional judgement and successful school district approaches. Our analysis suggests that the base cost figure in 2000-01 using the professional judgement approach would have been \$6,815, the lowest base cost figure among the five district size prototypes (see Table IV-9). Using the successful school district approach, we were unable to obtain a comparable base cost figure since an insufficient number of districts were identified as being successful. When we identified districts that were performing relatively well – that is, their performance was high even though they did not meet fully any of the standards we used to evaluate them – we found a base cost figure of \$4,768-\$4,845 using a rough revenue-based procedure (see Table V-3). The difference between the figures produced by the two different approaches is around \$2,000 per student, or about 42 percent. This difference is somewhat higher than what we have found in other states where we have undertaken both approaches (in Kansas and Maryland the difference was in the same direction but on the order of 25-27 percent).

Certainly there is no reason to believe that the figures associated with two different approaches would produce the same result. Our feeling is that participants in the professional judgement approach find it very difficult to focus exclusively on those resources, and only those, that are needed so that a school might meet a particular outcome, such as a level of student performance. It would be nearly impossible for participants to be able to differentiate the resources needed so that a specific proportion of students would “pass” a particular state test as compared to the resources that would be needed if five percent more students were expected to “pass” the same test. Our experience is that participants in the professional judgement approach tend not to be Machiavellian, although they could be – they could choose to provide very few resources to pupils who might be expected to meet a standard without much help and focus other resources only on the additional pupils who need to pass a test so that a

school or school district meets a particular standard. The successful school district work we did in Colorado suggests that districts that meet more difficult standards spend more money to do so. Therefore, it may be that the base cost figure produced by the professional judgement approach slightly overstates the need for funds while the base cost figures associated with the successful school district approach seriously underestimates the need for funds.

Regardless of the level at which the base cost figure is set, the professional judgement approach provides a wealth of information about how to use a base cost figure in a school finance formula. For example, the figures in Table VI-1 indicate that the cost of providing services varies with the size of a school district. This conclusion is consistent with a large body of evidence that suggests that costs per student differ in school districts of different size due to economies of scale. Too, Colorado uses a factor to adjust for school district size like other states in which there is a very wide variation in the enrollment of districts. Based on the prototype districts we examined, the minimum cost per student is associated with a district of 5,200 students. Costs rise slightly in districts that are larger than 5,200 students – our analysis indicates that per student costs increase by two percent in districts that have around 30,000 students. Per student costs rise much more dramatically for districts that are much smaller than 5,200 students: costs per student are 18 percent higher in districts with 1,500 students, they are 52 percent higher in districts with 430 students, and they are 140 percent higher in districts with 125 students. In our view, these figures are sufficient to create a formula that specify the adjustment needed for a school district of any size.

The figures in Table VI-1 also suggest that a system of pupil “weights” could be developed to specify the cost of special services for students with special needs, although such a system might need to be complex given that the magnitude of the weights appears to be related to district size for some needs. Student weights are used when the proportion of students with a special need varies across school districts and when there is an added cost, above the base cost, to serve such students. Weights are used to modify the count of students so that the modified count reflects the relative cost. For example, if the added cost of serving students with a particular need is 20 percent greater than the base cost and the proportion of students with that need varies across all districts, students with that need would be counted as 1.20 students – when the weight is multiplied by the base cost the total reflects the full cost of serving the student. Using this approach, 1.00 represents the base cost of providing service and .20 represents the *added* cost for the particular need. Student weights can be as simple or as complex as data and policy permit. For example, a base cost figure could be used that only reflects the cost of elementary level education while weights could be used to reflect the added costs associated with middle or high school relative to elementary school (this would be useful if not all school districts served grades k-12 so the use of a k-12 base cost figure might overstate or understate the per student cost of districts only serving grades k-8 or grades9-12). Another example is special education. In some states, multiple weights are used for special education with each weight

designed to reflect the relative cost of providing services to students with particular disabilities or based on the levels of service, each of different cost, individual students receive (of course, this approach requires information about the relative cost of different levels of special education). Because of the possibility of mis-classification of students when multiple weights are used for special education, some policy makers advocate the use of a single weight for special education, assuming that the distribution of students with varying levels of special education needs is, or should be, similar across school districts.¹

In the case of special education, the figures in Table VI-1 show that the *added* costs range from 86 percent to 145 percent of base costs depending on the size of the school district. Given that the relative costs are consistent for three of the five size groups and that one of the weights appears to be unusually high (1.45) while another appears to be unusually low (.86) it might make the most sense to use an added weight of 1.15 (which means a total weight of 2.15 for students with special education needs) regardless of district size; 1.15 is very close to the national figure (which ranges from .90 to 1.09) for the added costs of special education that has been calculated by the National Center on Special Education Finance. It should be noted that the use of this figure assumes the policy decision that all students in special education are treated in the same way regardless of disability; this approach may make sense for all students other than those few students with extraordinary high needs, who probably should be funded directly by the state given that even a single such student could have an enormous fiscal impact in a small school district.

In the case of at-risk students, the weight rises consistently from 26 percent above the base cost in the smallest to 56 percent above the base cost in the largest school district. The magnitude of the figures is in line with what other states have used to provide added support for at-risk students although it is based on the count of students eligible for free lunch while in other states the count may include students eligible for free and reduced price lunch. To some extent the fact that the weight increases with district size reflects added weight for the concentration of such students, which tends to be in large, urban districts; it should be noted that the actual concentration of students eligible for free lunch is greater in smaller districts than in larger districts in Colorado (see the table on page IV-3) so the cost per student rises in large districts even though the concentration of such students decreases, on average, in those districts. It would be possible to create a formula to define a precise

¹ Some people have advocated the use of the “census-based” approach to deal with special education costs. Under this approach, an assumption is made that every district has, or should have, the same total proportion of special education students. Once this assumption is made, the cost of special education can be included in the base cost figure since the proportion of students with special needs would not vary across districts.

relationship between district size and at-risk weight, which could then be applied to every district's actual situation.

Finally, for ELL students, there is a complex relationship between the added cost of ELL services and school district size that suggests that such costs are very high in small districts, decrease in moderate and large districts, and rise again in very large districts. Again, a formula could be used so that a specific weight could be assigned to districts of every possible size.

All of these weights could be combined to estimate the revenue needs of every school district in Colorado, which in turn could be used to operate a foundation program of the sort that Colorado uses to distribute state aid. The use of weights would allow all costs to be organized into a single formula rather than operating separate formulas for special education and ELL as is done now (there is an at-risk student adjustment in the current foundation formula). Our assumption is that a regional cost-of-living factor should be used as a final adjustment to determine the actual needs of school districts and that such a factor would need to be applied positively and negatively around the state average (that is, some districts have costs-of-living that are above average while others have costs-of-living that are below average – this is particularly true since we used statewide average salaries to determine relative costs rather than the group average salaries of different size districts).

While the result of this effort would be to specify the revenue needs of every school district such knowledge does not speak to the issue of where needed revenue would come from. Nothing in our analysis specifies how much revenue should come from local or state sources.

It is worth commenting on one other issue that arises in using the results of the professional judgement approach. Despite the fact that the base cost figure produced by the professional judgement approach is based on a very specific set of resources, it would not be appropriate to require school districts, or schools, to spend the money in accordance with the resource list. That is, even though the prototype high school in a large school district is designed to employ 57.3 teachers, it is not expected that all 800 student high schools should be required to employ that many teachers. In Maryland and Wyoming, the only states that have actually used the professional judgement approach to determine the revenue needs of school districts, the state aid system operates as a "block grant" -- the system determines how much revenue is needed but does not require districts to spend the money in a particular way.

There are at least two reasons why this is the case. First, it is consistent with the theory that underlies the whole concept of the state determining an adequate level of resources; under that theory, the state's role is to establish performance expectations, measure how well schools and districts are doing, assure that they have adequate resources, give them wide flexibility in how they spend those resources, and hold them

accountable for meeting state expectations – in some sense, if the state required schools and districts to spend funds in a specific way, the state could only hold them accountable for doing so, not for the performance of students. Second, it is unlikely that many schools are the same size as the prototypes and, more importantly, that they have the same demographic characteristics as the prototype schools. This would make it almost impossible to determine what resources each school actually should have and, even if that calculation could be made, it would result in the use of full-time-equivalent, or partial, people.

The one condition under which it makes sense to require districts to spend funds in a particular way arises when a district, having received the appropriate amount of revenue, is unable to meet state expectations; then it may make sense for the state to require the district to change the way it spends its funds to be more consistent with the resource components of the prototypes.

TABLE VI-1

THE RELATIVE COST OF PROVIDING EDUCATION SERVICES IN SCHOOL DISTRICTS OF DIFFERENT SIZE AND TO STUDENTS WITH DIFFERENT NEEDS IN COLORADO BASED ON THE PROFESSIONAL JUDGEMENT APPROACH

	Size of School District				
	<u>Very Small</u>	<u>Small</u>	<u>Moder.</u>	<u>Large</u>	<u>Very Large</u>
<u>Characteristics of Districts</u>					
Enrollment	125	430	1,500	5,200	29,970
<u>Base Cost</u>					
Actual Base Cost	\$16,373	\$10,357	\$8,008	\$6,815	\$6,951
Relative Base Cost	2.40	1.52	1.18	1.00	1.02
<u>Cost of Serving Students with Special Needs Relative to the Actual Base Cost</u>					
Special Education	.86	1.15	1.15	1.45	1.11
At-Risk Students	.26	.29	.36	.37	.56
ELL Students	1.25	.85	.51	.57	.70

APPENDIX-A

Standard for Professional Judgement and Successful School Districts Approaches in Colorado

1. In accordance with state requirements for accreditation, all districts must be teaching to and assessing the following standards:

Art	Mathematics
Civics	Music
Economics	Physical Education
Foreign Language	Reading
Geography	Science
History	Writing

Note: *District standards must either meet or exceed state standards.

**Currently, the state has created Colorado Student Assessment Program (CSAP) tests for Reading (Grades 3-10), Writing (Grades 3-10), Mathematics (Grades 5-10), and Science (Grade 8). If there is no CSAP test for the standard districts must show evidence that, the standards are being met or exceeded using some type of assessment, chosen by individual districts.

2. According to Colorado State Statute 22-7-603.5 “each child, no matter where the child starts, should improve equivalent of at least one academic grade during the school year.” Using the statute as a guide, we can identify current student achievement in school districts and then say at least one year’s progress is deemed successful. As long as schools and school districts are showing at least one year’s progress, we can think of them as being successful. The term used is “reasonable progress over reasonable time”. This is the value-added longitudinal growth approach. See the sheet on how to show value added growth.
3. Essentially, all school districts must comply with the state’s accreditation categories. See the accreditation indicators. There are four categories of accreditations: accredited, accredited: academic watch, accredited: academic probation, and non-accredited.
4. In order to comply with federal law (Elementary and Secondary Education Act (ESEA)) states must have 100% of students meeting state standards in reading and mathematics proficiently by 2013-14, this is known as Adequate Yearly Progress (AYP). See the comparison of CSAP scores.

Note: In order to be compliant with federal law, three basic categories for assessment are needed. Colorado currently has four. Therefore, Colorado’s categories will be collapsed as follows –Unsatisfactory, Partially Proficient/Proficient, and Advanced.

APPENDIX A (continued)

5. Norm-referenced testing data. (A certain level of performance must be set to determine successful school districts.)**
6. Dropout rates, and graduation rates. (A certain level of performance must be set to determine successful school districts.)**

** Numbers 5 and 6 will be used exclusively in the Successful School District model.

APPENDIX A (continued)

VALUE ADDED GROWTH

Colorado Accreditation Indicator D CCR 2202-401 (1) (d)

Question – How may a district demonstrate one year’s growth per one year in school for all student groups?

First, longitudinal growth evidenced on a district’s weighted CSAP score indices in reading, math and writing will meet this requirement as sequenced scale scores data becomes available.

Second, other methodologies, such as nationally developed testing programs with vertical scale scoring, may be used by districts. These include, but are not limited to:

- North West Educational Assessment Systems
- Terra Nova Assessment Systems
- Iowa Test Assessment Systems
- Stanford Test Assessment Systems
- California Achievement Test Assessment Systems

Analysis of data can be provided by Sanders’ EVAAS (Educational Value-Added Assessment System) or other systems.

Third, specialized tests may be used to measure growth over time in specialized areas. These tests include CSAP-A for special education, other measures for English Language Learners, and primary grades reading tests.

Lastly, the area of assessment is in a state of development and will change over time as more sophisticated systems of assessment become available. We encourage districts to develop their own customized systems that use multiple sources of data.

APPENDIX A (continued)

DISTRICT ACCREDITATION CATEGORIES AND INDICATORS

4.01 (1) To be accredited, districts must meet or exceed the following department accreditation indicators:

4.01 (1) (a) Implementation of an education improvement plan which includes best educational practices, including (1) setting high goals for student achievement, (2) advancing recognized instructional strategies, (3) promoting standards-based instruction, (4) using state and local assessments, (5) incorporating parent, student and community participation, and (6) other requirements as outlined in the accreditation contract.

4.01 (1) (b) Achievement of district established goals for improvement over time in reading, writing and mathematics measured by CSAP district weighted scores of student cohorts.

4.01 (1) (c) Achievement of district established goals for reducing learning gaps in reading, writing, and mathematics measured by disaggregated CSAP data for all students as defined in 1.01 (9), in accordance with house joint resolution 01-1014 concerning closing the learning gap.

4.01 (1) (d) The achievement of district established CSAP goals which demonstrate a minimum of one year's increase in student achievement for each year in school for all disaggregated groups of students as defined in 1.01 (9). Additional department approved measures may be presented to demonstrate one year's growth in student achievement.

4.01 (1) (e) Achievement of district established achievement goals in the following curriculum areas: science, history, geography, art, music, physical education, foreign language, economics, and civics.

4.01 (1) (f) Evidence of compliance with all requirements of the school accountability report, C.R.S. 22-7-601 through 610.

4.01 (1) (g) Evidence of compliance with the educational accreditation act, C.R.S. 22-11-101 through 204.

4.01 (1) (h) Evidence of compliance with the safe schools act and Colorado Basic Literacy Act.

Additional consideration must be given for bullying prevention and alternative education programs.

Appendix B-1

School-Site Prototype Participants

<u>Name</u>	<u>Position</u>	<u>District</u>
Barb Jones	Teacher	Custer County
Terry Amundson	Teacher	Byers
Doug Chamberlin	Superintendent	Las Animas
Richard Wilkinson	Principal	Miami-Yoder
Kyle Heberd	Principal	Springfield
Morris Ververs	Superintendent	Custer County
Les Brokaw	Superintendent	Wray
Megan Menerd	Teacher	Ellicott 22
Dave Van Sant	Curriculum (BOCES)	E. Central BOCES
Joe Donahue	Principal	Strasburg
Nancy Karas	Principal	East Grand County
Glenn McClain	Superintendent	Platte Valley
Larry Bonner	Director of Business Services	Park R-3
Steve Kennedy	Director of Student Services	Sheridan
Gary Justus	Teacher	Denver
Mike Smith	Teacher	Steamboat Springs
Judy Damas	Director of Learning Services	Westminister
James Reid	Principal	Harrison
Stephanie Watson	Director of Finance	Windsor
Jon Nelson	Special Education	Canon City
Judy Randol	Teacher	Greeley
Kerrie Schultz	Teacher	Denver
Barb Conroy	Assistant Superintendent	Boulder
Roger Pool	Principal	JeffCo
Mary Anne Maddy	Principal	Aurora
Howard Tucker	Business Manager	Brighton
Elizabeth Hoot	Special Education	Denver

APPENDIX B-2

District-Level Prototype Participants

<u>Name</u>	<u>Position</u>	<u>District</u>
Carol Buchholz	Teacher	Colorado Springs S.D. 11
Don Unger	Superintendent	Poudre
Nancy Wear	Curriculum	Thompson
Mary Jarvis	Principal	Cherry Creek
Velma Rose	Chief Financial Officer	Denver
Glenn Gustafson	Chief Financial Officer	Colorado Springs S.D. 11
Taylor Young		Colorado Springs S.D. 11
Stacey Fieth	Teacher	Canon City
Karen Lewis	Curriculum	Westminster
Walter Cooper	Assistant Superintendent	Cheyenne Mountain
Joe Subialka	Business Manager	Lewis-Palmer
Marietta Sears	Special Education	Centennial BOCES
Cheryl Springer	School Board	Falcon
Cindy Simms	Superintendent	Steamboat
Judy Kary	Superintendent	Sheridan
Richard Hagan	Principal	Montrose
Roy Fritch	Assistant Superintendent	LaJunta/Otero
Dave Thompson	Special Education	Pikes Peak BOCES
Tim Snyder	Superintendent	Sargent
Bob Conder	Superintendent	Norwood
Gerald Keefe	Superintendent	Kit Carson
Harry Masinton	Superintendent	Buffalo
Tina Goar	Superintendent	Dolores
Ray Kilmer	Special Education	
Tom Massey	School Board	Salida R32-J
James Day	Superintendent	Rangely RE-4

APPENDIX B-3

Expert Panel Participants

<u>Name</u>	<u>Position</u>	<u>District</u>
Dennis Geise	Superintendent	Buena Vista
Dennis Scheer	Superintendent	Ault-Highland
Toni Pariso	Superintendent	Greeley
Ken Kirkland	Chief Financial Officer	Saint Vrain
Scott Murphy	Chief Financial Officer	Littleton
Lucinda Hundley	Special Education	Littleton
Bill McCreary	School Board	Thompson
Joan Kniss	Teacher	Brighton

APPENDIX C-1

INSTRUCTIONS TO PROFESSIONAL JUDGEMENT PROTOTYPE SCHOOL PANEL MEMBERS

Augenblick & Myers, Inc.
Denver, CO

September 12-13, 2002
Colorado Springs, CO

1. You are a member of one of four panels of people that is being asked to design a set of prototype schools — a prototype elementary school, a prototype middle school, and a prototype high school. The prototype schools are hypothetical — they do not actually exist and they may never be created. They are a convenient way to identify the resources that schools with a particular set of characteristics should have in order to accomplish a specific set of objectives.
2. Four prototype panels will be working today and tomorrow. One panel will focus on schools in a small district. One panel will focus on schools in a moderately sized school district. One panel will focus on schools in a large school district. And one panel will focus on schools in a very large school district.
3. Each group should identify someone as a recorder for the group. The recorder will be asked to fill out forms on the computer provided to the group.
4. The characteristics of the prototype schools are shown on a separate page. The characteristics that define the schools include their enrollment, grade span, the proportion of pupils with special education needs, and the proportion of pupils from low income families (eligible for free/reduced price meals).
5. The objectives that need to be accomplished by the prototype schools are shown on a separate page. The objectives can be described broadly as either education opportunities/programs/services or as levels of education performance. See the separate document that shows how well districts are doing now.

6. In designing the prototype, we need you to provide some very specific information so that we can calculate the cost of the resources needed to meet the objectives identified above. The fact that we need that information should not constrain you in any way in designing the program of a prototype school. Your job is to create a set of programs/curriculums designed to serve students with particular needs in such a way that the objectives specified above are fulfilled. Use your experience and expertise to organize personnel, supplies and materials, and technology in any way you feel confident will produce the desired outcomes.

7. You can make certain assumptions about the prototype schools and the environment in which they exist. These assumptions may not characterize the school, or the school district, in which you work and we will devote some time to discussing the assumptions after you have completed your work.

Teachers: You should assume that you can attract and retain qualified personnel and that you can employ people on a part-time basis if needed (based on tenths of a full-time equivalent person).

Facilities: You should assume that the prototype school has sufficient space to meet the requirements of the program you design.

Revenues: You should not be concerned about where revenues will come from to pay for the program you design. Don't worry about federal or state requirements that may be associated with some kinds of funding. You should not think about whatever revenues might be available in the school or district in which you work or about any of the revenue constraints that might exist on those revenues.

Timing: You may create new programs or services that do not presently exist that you believe address problems that arise in schools. You should assume that such programs or services are in place and that no additional time is needed for them to produce the results you expect of them.

8. We encourage you to be creative and innovative. There is no single "right" approach to the task. For example:

- You may base your design on a "whole-school approach" (such as Roots and Wings), a charter school approach (such as Edison), or any other philosophical basis (such as Montessori) with which you are familiar even though you do not currently use it in your school district.

- You may want to use block scheduling even though your district uses a more traditional approach.
- You may want to have a longer or shorter school day or a longer or shorter school year (for some or for all students) than you use currently.
- You may expect some students to obtain some courses using education television, the internet, or through experiences in the community or in post-secondary education.
- You may choose to supplement professional staff with community volunteers.

APPENDIX C-2

INSTRUCTIONS TO PROFESSIONAL JUDGEMENT PROTOTYPE DISTRICT PANEL MEMBERS

Augenblick & Myers, Inc.
Denver, CO

October 16, 2002
Colorado Springs, CO

1. You are a member of one of four panels of people that is being asked to design a prototype school district. Your job is to review the work of other panels that have created prototype elementary, middle, and high schools and to design the district level organization that would include several prototype schools. The prototype schools and school districts are hypothetical—they do not actually exist and they may never be created. They are a convenient way to specify the resources that schools and school districts with a particular set of characteristics should have in order to accomplish a specific set of objectives.
2. The characteristics of the prototype schools and school districts are shown on a separate page. The characteristics that define the schools/districts include their enrollment, grade span, the proportion of pupils with special education needs and the proportion of pupils from low income families (eligible for free lunch).
3. Each group should identify someone as a recorder for the group. The recorder will be asked to fill out forms on the computer provided to the group.
4. The objectives that need to be accomplished by the prototype school district are shown on a separate page. The objectives can be described broadly as either education opportunities/programs/services or as levels of education performance. A separate document also shows how well districts are doing now.
5. In designing the district, we need you to provide some very specific information so that we can calculate the cost of the resources needed to meet the objectives identified above. The fact that we need that information should not constrain you in any way in designing a prototype school district. Your job is to create a set of programs/services designed to serve students with particular needs in such a way that the objectives specified above are fulfilled. Use your experience and expertise to organize personnel and other expenditures in any way you feel confident will produce the desired outcomes. This is a collaborative process and we strongly encourage groups to reach consensus on most decisions.

6. We are making a number of assumptions about the environment in which schools operate. These assumptions may not characterize the schools, or the school districts, with which you are familiar.

Teachers: You should assume that you can attract and retain qualified personnel and that you can employ people on a part-time basis if needed (based on tenths of a full-time equivalent person).

Facilities: You should assume that prototype schools and central facilities have sufficient space to meet the requirements of the program you design.

Revenues: You should not be concerned about where revenues will come from to pay for the program you design. Don't worry about federal or state requirements that may be associated with some kinds of funding. You should not think about whatever revenues might be available in the school or district in which you work or about any of the revenue constraints that might exist on those revenues.

Timing: You may create new programs or services that do not presently exist that you believe address problems that arise in schools. You should assume that such programs or services are in place and that no additional time is needed for them to produce the results you expect of them.

7. We encourage you to be creative and innovative. There is no single "right" approach to the task. You may suggest resources or methods of organizing resources that do not reflect what is being done in most school districts, or in any school district. Your task is simply to create an approach that is reasonable, and capable of accomplishing the objective efficiently.

APPENDIX C-3

INSTRUCTIONS TO PROFESSIONAL JUDGEMENT EXPERT PANEL MEMBERS

Augenblick & Myers, Inc.
Denver, CO

November 13, 2002
Denver, CO

1. You are a member of a panel of experts – people who have been identified as having extensive knowledge of how schools and school districts operate and the resources schools need to fulfill their objectives. Your job is to review the work of other panels that have created prototype elementary, middle, and high schools as well as prototype school districts of different sizes. The prototype schools and school districts are hypothetical — they do not actually exist and they may never be created. They are a convenient way to specify the resources that schools and school districts with a particular set of characteristics should have in order to accomplish a specific set of objectives.
2. While there is only one expert panel, it needs to review several different configurations of schools and school districts: (1) two sets of small schools operating in two small school districts; (2) a set of smaller than average schools operating in a smaller than average district; (3) a set of larger than average schools operating in a larger than average district; and (4) a set of very large schools operating in a large school district.
3. The characteristics of the prototype schools and school districts are shown on a separate page. The characteristics that define the schools/districts include their enrollment, grade span, the proportion of pupils with special education needs, the proportion of pupils from low income families (eligible for free/reduced price meals), and the proportion of bilingual students.
4. The objectives that need to be accomplished by the prototype school district are shown on a separate page. The objectives can be described broadly as either education opportunities/programs/services or as levels of education performance. A separate document shows how well districts are doing now.
5. We are making a number of assumptions about the environment in which schools operate. These assumptions may not characterize the schools, or the school districts, with which you are familiar.

Teachers: You should assume that you can attract and retain qualified personnel and that you can employ people on a part-time basis if needed (based on tenths of a full-time equivalent person).

Facilities: You should assume that prototype schools and central facilities have sufficient space to meet the requirements of the program you design.

Revenues: You should not be concerned about where revenues will come from to pay for the program you design. Don't worry about federal or state requirements that may be associated with some kinds of funding. You should not think about whatever revenues might be available in the school or district in which you work or about any of the revenue constraints that might exist on those revenues.

Timing: You may create new programs or services that do not presently exist that you believe address problems that arise in schools. You should assume that such programs or services are in place and that no additional time is needed for them to produce the results you expect of them.

6. You should know that we encouraged members of the prototype school and prototype district panels to be creative and innovative. Some of the resources they suggest, or the way resources are organized, may not reflect what is being done in most school districts, or in any school district. In our view, there is no single "right" approach to the task and we are not asking you to determine whether the what the other panels have done is perfect. We only want you to decide whether the approaches being taken are reasonable – that is, capable of accomplishing the objective efficiently.

APPENDIX D

COMPARISON OF ACTUAL PERFORMANCE OF SCHOOL DISTRICTS IN 2002 TO PERFORMANCE OBJECTIVES FOR 2007

Very Small School District Averages

	2002 Performance	5-year Goal (2007)
3rd Reading	74	85
3rd Writing	92	
4th Reading	94	97
4th Writing	94	
5th Math	88	93
5th Reading	84	91
5th Writing	94	
6th Math	81	89
6th Reading	87	92
6th Writing	89	
7th Math	80	88
7th Reading	86	92
7th Writing	96	
8th Math	65	80
8th Reading	77	87
8th Science	73	
8th Writing	80	
9th Math	51	71
9th Reading	86	92
9th Writing	89	
10th Math	35	62
10th Reading	87	92
10th Writing	88	

**Scores include partially proficient, proficient, and advanced scores on Colorado Student Assessment Program Tests

APPENDIX D (cont.)

COMPARISON OF ACTUAL PERFORMANCE OF SCHOOL DISTRICTS IN 2002 TO PERFORMANCE OBJECTIVES FOR 2007

Small School District Averages

	2002 Performance	5-year Goal (2007)
3rd Reading	94	97
3rd Writing	95	
4th Reading	88	93
4th Writing	89	
5th Math	88	93
5th Reading	87	92
5th Writing	93	
6th Math	83	90
6th Reading	90	94
6th Writing	92	
7th Math	68	81
7th Reading	77	87
7th Writing	83	
8th Math	67	81
8th Reading	88	93
8th Science	75	
8th Writing	94	
9th Math	61	77
9th Reading	90	94
9th Writing	92	
10th Math	63	78
10th Reading	88	93
10th Writing	92	

**Scores include partially proficient, proficient, and advanced scores on Colorado Student Assessment Program Tests

APPENDIX D (cont.)

COMPARISON OF ACTUAL PERFORMANCE OF SCHOOL DISTRICTS IN 2002 TO PERFORMANCE OBJECTIVES FOR 2007

Moderate Size School District Averages

	2002 Performance	5-year Goal (2007)
3rd Reading	91	95
3rd Writing	93	
4th Reading	86	92
4th Writing	88	
5th Math	86	92
5th Reading	82	90
5th Writing	90	
6th Math	81	89
6th Reading	86	92
6th Writing	89	
7th Math	76	86
7th Reading	82	90
7th Writing	91	
8th Math	69	82
8th Reading	85	91
8th Science	76	
8th Writing	91	
9th Math	59	76
9th Reading	87	92
9th Writing	89	
10th Math	62	78
10th Reading	86	92
10th Writing	89	

**Scores include partially proficient, proficient, and advanced scores on Colorado Student Assessment Program Tests

APPENDIX D (cont.)

COMPARISON OF ACTUAL PERFORMANCE OF SCHOOL DISTRICTS IN 2002 TO PERFORMANCE OBJECTIVES FOR 2007

Large Size School District Averages

	2002 Performance	5-year Goal (2007)
3rd Reading	89	94
3rd Writing	90	
4th Reading	85	91
4th Writing	86	
5th Math	85	91
5th Reading	82	90
5th Writing	90	
6th Math	82	90
6th Reading	87	92
6th Writing	89	
7th Math	70	83
7th Reading	79	88
7th Writing	89	
8th Math	67	81
8th Reading	85	91
8th Science	75	
8th Writing	92	
9th Math	54	73
9th Reading	84	91
9th Writing	88	
10th Math	57	75
10th Reading	83	90
10th Writing	88	

**Scores include partially proficient, proficient, and advanced scores on Colorado Student Assessment Program Tests

APPENDIX D (cont.)

COMPARISON OF ACTUAL PERFORMANCE OF SCHOOL DISTRICTS IN 2002 TO PERFORMANCE OBJECTIVES FOR 2007

Very Large Size School District Averages

	2002 Performance	5-year Goal (2007)
3rd Reading	90	94
3rd Writing	91	
4th Reading	85	91
4th Writing	85	
5th Math	85	91
5th Reading	84	91
5th Writing	90	
6th Math	82	90
6th Reading	87	92
6th Writing	90	
7th Math	75	85
7th Reading	82	90
7th Writing	92	
8th Math	70	83
8th Reading	85	91
8th Science	76	
8th Writing	91	
9th Math	63	78
9th Reading	86	92
9th Writing	90	
10th Math	65	80
10th Reading	85	91
10th Writing	88	

**Scores include partially proficient, proficient, and advanced scores on Colorado Student Assessment Program Tests