
# Estimating the Cost of an Adequate Education in Montana

**By**

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# EXECUTIVE SUMMARY

In today's world of higher state education standards, No Child Left Behind (NCLB), increased accountability for student, school and district performance, and a steady growth in high-stakes testing, there is ever-increasing pressure on education systems to ensure that all students leave school with the tools and skills they need to succeed in life. Such increased pressure can have a positive influence on performance, but only if policymakers and education leaders also have the capacity to answer what might appear to be a simple question: Do schools and districts have the resources they need to meet performance expectations?

Many state education finance systems have not addressed this question of "adequate" education funding. In many states, for instance, policymakers have developed academic standards and timetables to achieve performance expectations. And they have created accountability systems with consequences for schools and districts when expectations are not met. Most often, however, these expectations and consequences are created without understanding what it costs for schools and districts to meet desired outcomes.

This "funding adequacy" report is designed to help address this issue in Montana and to develop a supportable means for policy makers and other education leaders to estimate what it will cost for each district in the state to achieve the performance that is expected of them. The Montana legislature in 2005 defined a basic system of free quality public elementary and secondary schools to mean the following[1]:

- Educational programs meet specified accreditation standards provided for in Montana state statutes,[2] which represent the minimum standards upon which a basic system of free quality public elementary and secondary schools is built.
- Educational programs provide for students with special needs, including at-risk, special education, students with limited English proficiency, and gifted and talented students.
- Educational programs integrate the distinct and unique cultural heritage of American Indians into the curricula.
- Schools and districts are staffed with qualified and effective teachers, administrators and other staff.
- Facilities and distance learning technologies are available that meet the accreditation standards.
- Transportation is provided for students.
- A procedure to assess and track student achievement is established.
- Local control of schools is preserved in each district.

This legislative definition coupled with the state's plan to comply with the federal No Child Left Behind Act (NCLB), which includes 100 percent of students meeting

[1] Mont. Cod Ann section 20-9-309.
[2] Mont. Cod Ann section 20-7-111.

reading and math proficiency targets by 2013-14, was the basis for the cost estimates provided in this report.

The report – prepared by Augenblick, Palaich and Associates, Inc. (APA), a Denver-based consulting firm that has worked with state policy makers on school funding issues for more than 20 years – focuses on determining two key cost elements:

1) A base, per-student cost adjusted by size of district; and

2) Additional cost "weights" (which are applied to the base cost) for students with special needs, including: children who are:
   - In special education;
   - At-risk of failing in school (based on the number of students receiving free or reduced-price lunches); and
   - Limited English Proficient (LEP) students.

In conducting its work, APA primarily used the "professional judgment" (PJ) approach. The PJ approach relies on panels of experienced educators (such as teachers, principals, superintendents, and district business officials) and education service experts. Informed by education research findings, these panels are used to specify the resources needed for different size schools and districts to educate their students to meet future state and federal performance expectations. Panelists review current state and federal academic standards and requirements and are asked to outline the resources they believe are needed to meet those requirements in large, medium and small K-12 districts.

In Montana, APA also conducted a limited "successful school district" (SSD) analysis. Under the SS approach a base, per-student cost is determined by examining the spending of schools that successfully meet current academic performance standards. The SS approach can provide a useful view of the *present*-day spending of successful schools. It cannot, however, provide information about the added cost adjustments required for special needs populations, like LEP or at-risk.

The SSD analysis requires student test score data in order to properly evaluate and identify successful schools or districts. While Montana does now have a student testing system in place, the system is still in its early years of implementation. After an examination of available data, APA concluded there is insufficient data to run a full SSD analysis. We do not, therefore, provide any specific SSD base cost figures. Instead, the SSD information provided in this report is for illustrative purposes only.

**Key Findings**

APA's PJ approach yields a picture of the resources needed for Montana's schools and districts to meet its 2013-14 student performance goals. The table below summarizes the PJ findings and provides a base, per-student cost as well as added cost weights for students with special needs. These figures are adjusted to include

the cost differences associated with serving students in districts of small, moderate, large, and very large size.

**Summary Table**
**Special Need Student Cost Weights by Size**

| Hypothetical K-12 District Size | Small | Moderate | Large | Very Large |
|---|---|---|---|---|
| Enrollment | 208 | 748 | 1,740 | 8,450 |
| Total Base Cost | $11,518 | $9,869 | $9,030 | $9,030 |
| Added Cost of Special Need Students | | | | |
| ***Special Education*** | | | | |
| ***Mild*** | ***0.77*** | ***0.77*** | ***0.77*** | ***0.77*** |
| ***Moderate*** | ***1.32*** | ***1.32*** | ***1.32*** | ***1.32*** |
| ***Severe*** | ***2.93*** | ***2.93*** | ***2.93*** | ***2.93*** |
| ***At-Risk Students*** | ***0.27*** | ***0.35*** | ***0.40*** | ***0.50*** |
| ***LEP Students*** | ***0.82*** | ***0.71*** | ***0.63*** | ***0.50*** |

Tailoring the base cost and added weights for each Montana school system and combining the resulting costs would yield a total adequacy cost of $1,648.4 million ($1.65 billion) for K-12 school systems and $211.9 million for K-8 school systems. These costs are derived from the set of resources which education experts indicated are needed for Montana's students to reach the state and federal government's future performance targets. They do not include costs associated with student transportation or school and district facility needs. The figures are presented in 2006-07 dollars, and will need to be adjusted in the future to account for inflation.

Assuming that the cost weights that modify the base remain constant over time and apply to the base as it increases, Montana's policy makers need to decide how best to increase the revenues of school districts to match their anticipated costs. This task could be accomplished in two ways:

(1) The increase could be based on the annual percentage change needed to move from the lower costs to the higher costs; or
(2) The increase could be based on the annual constant amount that would be needed to move from the lower costs to the higher costs.

Regardless of the approach chosen to increase funding to schools and school systems, the gaps between current spending and the amount needed to reach the ultimate funding goal indicate there is significant work to be done. And yet, this work is certainly achievable. The knowledge gained through this report can be used to

modify the state's existing aid system so it guarantees every school district has sufficient revenue to successfully meet existing performance expectations.

In closing, it is important to note that APA's analysis focuses on the total amount of funding required to raise school districts in Montana to an adequate funding level. The report does not discuss where needed revenues might come from, but all funds do not necessarily need to come from state aid. Instead the costs identified here can be paid through a combination of federal, state, and local revenue sources.

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# INTRODUCTION

This report was prepared by Augenblick, Palaich and Associates, Inc. (APA), a Denver-based consulting firm that has worked with state policy makers on school funding issues for more than 20 years. Over this time, the firm has evaluated school finance systems in more than 20 states and helped create the school finance systems in Colorado, Kansas, Louisiana, Maryland, Mississippi, New Hampshire, Ohio, and South Dakota.

The report was prepared at the request of the Montana Quality Education Coalition (MQEC) and updates work from a 2002 adequacy study undertaken by APA, then Augenblick & Myers. This earlier work was undertaken for a number of education groups including the Montana School Boards Association, the Montana Quality Education Coalition, the Montana Rural Education Association, the Montana Association of School Business Officials, and the Montana Association of County School Superintendents. The original study investigated the cost of an adequate education in Montana using the professional judgment approach to estimate adequate education funding. At the time the original study was undertaken, the federal No Child Left Behind Act (NCLB) was just being implemented and Montana did not have a statewide assessment system in place.

Furthermore, the Montana legislature has since defined a basic system of free quality public elementary and secondary schools to mean the following[3]:

- Educational programs meet specified accreditation standards provided for in Montana state statutes,[4] which represent the minimum standards upon which a basic system of free quality public elementary and secondary schools is built.
- Educational programs provide for students with special needs, including at-risk, special education, students with limited English proficiency, and gifted and talented students.
- Educational programs integrate the distinct and unique cultural heritage of American Indians into the curricula.
- Schools and districts are staffed with qualified and effective teachers, administrators and other staff.
- Facilities and distance learning technologies are available that meet the accreditation standards.
- Transportation is provided for students.
- A procedure to assess and track student achievement is established.
- Local control of schools is preserved in each district.

Finally, as provided for by the state legislature, developing a funding system to support a basic system of free quality public elementary and secondary schools, the following adjustments must be taken into consideration in the state's funding formula:

[3] Mont. Cod Ann section 20-9-309.
[4] Mont. Cod Ann section 20-7-111.

(a) the number of students in a district; (b) the needs of isolated schools with low population density; (c) the needs of urban schools with high population density; (d) the needs of students with special needs, such as a child with a disability, an at-risk student, a student with limited English proficiency, a child who is qualified for services under 29 U.S.C. 794, and gifted and talented children; (e) the needs of American Indian students; and finally (f) the ability of school districts to attract and retain qualified educators and other personnel.

The purpose of this report is to update the estimate of the cost of an "adequate" education in Montana. As used here, "adequacy" means the cost of meeting the state's resource requirements and student performance expectations. These requirements and expectations are specified in statute, in the education accountability system and the state's federally-approved plan to comply with NCLB. It is important to note that from the legislative framework outlined above, two items were not addressed by the current APA study – student transportation and facility needs.

By defining the resources needed to meet these expectations and requirements and costing out those resources, this report can help school districts, taxpayers, and policy makers understand the fiscal resources schools need to produce the student results that are expected of them. To accomplish this work, APA focuses on two key costs:

> 1) A base cost, per-student (including the cost of plant operation and maintenance, but excluding costs of student transportation, food services, community services, adult education, capital costs, and debt service costs) adjusted for the size of the district[5]; and
>
> 2) Additional cost "weights" for students with special needs (including "at-risk students" – those eligible for free or reduced price lunch are used as a proxy to define at-risk students – special education students, and English language learners).

As discussed later in this report, APA used a "professional judgment" analysis as the primary study approach for this work. A "successful schools" analysis was also undertaken, but this was done for illustrative purposes because the "successful schools" analysis relies on test scores to measure success and Montana's testing system has not generated enough years of data to fully complete such an analysis.

The chapters of this report are organized as follows:

- Chapter I discusses what it means to examine the cost of an "adequate" education. It provides a background on adequacy, outlines the four main

[5] This definition of base cost should not be confused with the use of the term "base" in the existing Montana school finance system.

approaches used to conduct adequacy studies, and describes the experiences of three states that have used such studies in the past.

- Chapter II describes the results of the successful school approach.

- Chapter III describes the results of the professional judgment approach including the generation of a per-student base cost and additional special need student cost weights.

- Chapter IV discusses how the figures produced can be used to estimate the cost of adequacy for Montana school districts.

# I. WHAT DOES "ADEQUACY" MEAN IN EDUCATION?

For purposes of this report "adequate revenues," or "adequacy," mean: sufficient funding so that schools and districts have a reasonable chance to meet state and federal student performance expectations. Such performance expectations are reflected in Montana's state statutes, the state education accountability system and the state's federally-approved plan to comply with the federal No Child Left Behind Act (NCLB).

There are two primary reasons to determine the cost of adequacy:

(1) To understand the cost implications associated with meeting state requirements/expectations; and

(2) To estimate needed adjustments to existing state school finance formulas.

With regard to meeting state requirements (and state-federal agreements), the fact is that most states (including Montana) and the federal government have decided to use standards-based reform as the way to improve the elementary and secondary education system in this country. Under standards-based reform, the role of the state is to: (1) set standards for students, teachers, schools, and/or school districts (in terms of both "inputs," such as teacher qualifications, course offerings, or service requirements, and "outcomes", such as attendance and student performance on achievement tests); (2) measure how well students, teachers, schools, and/or school districts are doing in meeting the standards; and (3) hold students, teachers, schools, and/or school districts accountable for their performance.

At the outset of the standards-based reform movement, starting with the reform of the Kentucky education system in 1990, most states and the federal government did not attempt to estimate or account for the costs that every school or district would incur in order to meet state and federal performance standards. Instead, state education budgets typically were based on political calculations, on dividing up what funds were deemed available, and on other factors which had little or nothing to do with ensuring a specific level of performance. Determining the resources and associated costs needed to reach a specific performance target has therefore become an essential missing piece that state policy makers need in order to properly allocate funds to districts and schools. Once these costs are determined, state policy makers also need to be able to incorporate them into their state school finance systems.

Montana uses a "foundation" formula to distribute most state aid. In an attempt to limit the disparities in expenditures between school districts, an "equalization" component is included in the school funding formula. This "equalization" structure determines a maximum and minimum general fund budget for each school district based on the number of students in a district. Assuring that the system provides an adequate level of support requires that the foundation level be set at an appropriate level — a level that has some relationship to either the amount of services that can be delivered to students or the level of performance students are asked to achieve.

In some states, the foundation level is calculated based on the amount of revenue needed for a student with no special needs attending school in an average size school district. In other states, student weights are used to help reflect the added cost of serving students with special or high cost needs (such as at-risk students, English language learners, and those in special education). Weights can also be used to reflect the added cost of providing services in districts that face uncontrollable cost pressures – often related to a district's size or regional cost differences. In many states – including Montana – however, the determination of the foundation level does not take into account the state (and federal) expectations for district and school performance. Such a method for determining the foundation level, uncoupled from performance expectations, does not reflect the level of resources needed to fully implement standards-based reform.

**Approaches to Estimating the Cost of Adequacy**

In the past few years, researchers and policy experts have developed several approaches for calculating the cost of an adequate education. These efforts are designed to create a base cost that has meaning beyond simply reflecting available state revenue. Instead, the adequacy cost reflects the resources needed to reach a particular level of desired student performance. Researchers have identified four approaches to determine the cost of adequacy:

(1) The successful school district (SSD) approach;
(2) The professional judgment (PJ) approach;
(3) The evidence-based approach; and
(4) The statistical approach.

Each of these methodologies has strengths and weaknesses. They differ in their underlying philosophies, the amounts of information they require, the types of information they produce, the number of states in which they have been used, and the magnitude of the parameters that they estimate.

APA has come to believe that, with the appropriate number of years of student performance data, the SSD approach provides a reasonable estimate of the base cost in relation to how school districts are performing today. Under this approach, the base cost is determined by examining the spending of districts that meet (or are on track to meet) current state accreditation and performance standards. The base cost applies to students with no special needs attending schools in systems that do not face unusual cost pressures.

We have found that the PJ approach provides a reasonable estimate of the base cost for a level of performance expected in the future, such as the nearly 100 percent reading and math student proficiency goal that the state has targeted for 2013-14. The approach also provides information about the additional costs of serving students with special needs or of serving students in districts that face differing cost pressures due to size.

The PJ approach relies on the knowledge of experienced educators, education service providers and school business officials who are gathered together in panel discussions to identify the resources needed for students to achieve a specific set of performance objectives. The resources identified by the panels tend to focus on such items as numbers of instructional personnel, extended-day and extended-year programs, teacher professional development, and technology. Once such resources are identified, costs can be attached to them and a per pupil cost can be determined.

APA has found that the statistical approach – which is based on understanding those factors that statistically explain differences in spending across school districts while controlling for student performance – has limited effectiveness in most states due to a lack of available data to run the statistical equations needed for the calculations. In particular, there is often a lack of needed school-level fiscal data. We have found the evidence-based approach – which seeks to use information gleaned from research to define the resource needs of a hypothetical school district – to also be limited. This limitation is driven largely by the difficulty in extrapolating the findings of a particular study to schools in other states or parts of the country.

Weighing the strengths and weaknesses of the four main adequacy approaches, APA undertook both the SSD and PJ approaches in Montana. We used the Evidence Based (EB) research findings to begin the deliberations within the PJ panels.

## How Adequacy Studies Are Used: Case Studies in Three States

This section describes the experience of three states (Kansas, Maryland, and Mississippi) that have conducted studies designed to understand the cost of an adequate education. Each state's unique context and circumstances result in different stories for how the adequacy studies are used and implemented by policymakers.

### Kansas

Kansas is an example of the interaction between a state's constitution, its legislature, and its courts in terms of education adequacy. The Kansas constitution requires that the "legislature shall make suitable provision for finance of the educational interests of the state." In 1994, the Kansas Supreme Court upheld the previously enacted school finance system (the School District Finance and Quality Performance Act). In 2002 APA released its study, which was commissioned by the state Legislature. The study estimated the factors that could be used to estimate the cost of a "suitable" education. APA, however, never used the factors to make a district by district estimate of such costs. Instead, the State, through the state Department of Education, did its own analysis and determined that the cost was $726 million over the $1.95 billion that was being spent in school districts at that time.

In 2003, a state district court declared the school finance system to be unconstitutional and gave the legislature until the end of the 2004 session to fund the system at an appropriate level. The legislature did not significantly modify funding that year and in 2005 the Kansas Supreme Court found the school finance system to be in violation of state constitutional provisions.

During the 2005 legislative session, the legislature developed a plan to increase education funding by $141 million and to do so by phasing-in new funds over time. The Kansas Supreme Court required the legislature to add $143 million to the $141 million already provided, and this was accomplished before the 2005-06 school year began. During the 2005 session the legislature also required that the Division of Post Audit (DPA) conduct an independent study of the costs of a suitable education. A driving factor behind the legislature's request for the DPA study was a statement made by the Kansas Supreme Court that the only information it had to guide its thinking about cost was the 2002 APA study.

The study by the DPA was released in 2006 and recommended total spending that was consistent with the state's interpretation of the APA study. In 2006, the legislature added additional funding for education and established a plan to phase in more funding over the next eight years. The Kansas Supreme Court reviewed the legislature's work and ruled that the school finance system is in compliance with the state constitution.

Maryland

Maryland is an example of a state taking the lead in identifying and providing the adequate cost of education. In 1999, Maryland established the Commission on Education Finance, Equity, and Excellence (known as the Thornton Commission). The Thornton Commission first examined the overall structure of the state's school finance system and then began to examine the adequacy of the system. One of the big reasons the commission turned to adequacy was Maryland's strong accountability system and the commission's belief that districts needed to be assured of having the resources necessary to meet the standards.

The Thornton Commission relied on APA (then Augenblick & Myers) to conduct both the SSD and PJ study approaches. The approaches created two base costs and a number of adjustments for students with special needs. The Thornton Commission's final report suggested using the SSD base number as a starting point with districts working towards reaching the PJ base. The adjustments for students with special needs were also changed to reflect the fact that students can sometimes overlap several special need categories (for instance, some students can be both at-risk and English language learners).

The legislature adopted the Thornton Commission's recommendations in 2002. The result was a six year phase-in of a $1.1 billion dollar increase in school funding. The phase-in continues today and is nearing full implementation.

Mississippi

Mississippi is an example of a state that has used the SSD approach as the basis for developing the base cost figure it uses in its school finance system (the Mississippi Adequate Education Program, or MAEP). MAEP was adopted in 1996, replacing a system that had been based on numbers of personnel and a statewide teacher salary schedule. Both MAEP and its predecessor are foundation-type systems, which require the state to specify the revenue needs of each school district.

At the time MAEP was enacted, the legislature was looking for a way to determine how much school districts needed to spend in order to meet state school district accreditation requirements. The MAEP base, developed by APA, is therefore composed of four accreditation components – instruction, administration, plant operation and maintenance (M&O), and ancillary (primarily student and staff support). APA created a procedure to identify districts that were "successful" in terms of meeting specific criteria associated with each component. First, school districts that met the highest level of accreditation were selected. Then, within each component, efficiency criteria were specified to identify districts that had personnel ratios that were closer to the statewide average. For example, with instruction, the per student expenditure figures of districts that both met accreditation standards at the highest level and did not have unusually low student-teacher ratios were used to create a statewide average figure for instruction. Figures for the other components were combined with instruction to create a base cost.

In 2005, APA was asked to help a joint legislative committee update the MAEP formula in light of student performance information (which was not available earlier) and new efficiency criteria. The legislature adopted the new procedure in 2006 and student performance criteria now play a central role in the state's accreditation standards. It should be noted that the legislature has not made changes in the ways it provides support for students with special needs. Additional analysis, using an approach other than the successful school approach would be required to develop such adjustments.

# II. SUCCESSFUL SCHOOL DISTRICT ANALYSIS

The Successful School District (SSD) approach typically seeks to identify districts that meet specific academic performance standards. The base spending of these "successful" districts is then calculated and examined. As discussed in the introduction to this report, the base spending refers only to spending for "regular" education students with no special needs. It is important to note that, while identified districts might be labeled "successful," it is not accurate to refer to other districts in the state as unsuccessful. Other districts may, in fact, be making significant positive strides with student performance even though they do not now meet the definition of "success" used in the SSD analysis.

APA's 2002 Montana adequacy study did not use the SSD approach. This was because Montana did not have a statewide assessment program associated with the state's content standards. Without the results of such a testing program there was no way to measure the relative success of districts. Since the 2002 study, Montana has adopted a new assessment program as part of its accountability system and has linked this system with the federal No Child Left Behind Act (NCLB) requirements.

While a testing system is now in place it is still in its early years of implementation. After an examination of the available data, APA concluded that it is too early in the Montana assessment system's implementation to run a full SSD analysis. As a consequence of the lack of assessment data, APA was able to use only two years of testing data (2003-04 and 2004-05). We therefore do not believe that the results of the SSD analysis are as robust as when additional years of assessment data are available. We do, however, believe that some results of the SSD analysis are worth examining and they are presented below.

### Identifying Successful School Districts in Montana

APA collected the 2003-04 and 2004-05 test performance data for each Montana school district. These two years were the first two years of student performance data available from Montana's new assessment system. APA took all the information and converted it to the system level by combining the data for those elementary and secondary districts that function as a single entity for delivering education services. After collecting test performance data, APA applied two measures to analyze districts:

1. A "growth" trend standard. This identifies districts or systems whose aggregate test scores are on a trajectory to meet a future performance goal.

2. An "absolute" standard. This identifies only those districts or systems that *currently meet* a future performance standard.

A description of how each of the two standards was applied in Montana is provided below.

## The Growth Standard

An SSD growth standard is typically aligned with state's definition of a basic system of free quality public elementary and secondary schools and the state's specified NCLB performance targets. In other words, districts are typically measured based on their growth in the percentage of students achieving proficiency on the state assessment. Yearly state goals are tied to the increasing percentages the state sets as part of its NCLB agreement with the federal government.

In the Montana analysis, this created two problems. First, measuring growth with only two available years of test data (2003-04 and 2004-05) is difficult because it is impossible to determine whether the two data points point to a long-term trend or whether one or both of the points merely represents a deviation from the norm. Additional data points are needed to properly make this judgment. Second, Montana is in the process of setting the intermediate performance targets that need to be met to comply with the Adequate Yearly Progress (AYP) component of NCLB. AYP requires that such intermediate targets be set for each year up to 2013-14, by which time 100 percent of students are expected to reach academic proficiency in reading and math. Because Montana's intermediate targets are just being set, school systems have not had sufficient time to consider them or incorporate them into their planning strategies for the future.

Due to these problems, APA decided to look at two different growth objectives. For the first growth objective, APA used the 2013-14 NCLB goal of 100 percent of students reaching proficiency in reading and math. Once this standard was selected, APA looked at test score growth (for reading and math individually) from the 2003-04 tests to the 2004-05 tests. Based on this analysis, APA identified 78 school systems that were on pace to meet the 2013-14 standard of 100 percent proficiency.

For the second growth objective, APA started with the percentage of students meeting Montana's 2005-06 NCLB performance standard and extrapolated an intermediate 2009-10 target that would place school systems on track to meet the state's 2013-14 100 percent reading and math proficiency goal. For the 2005-06 year Montana's NCLB standard is 55 percent of students scoring at proficient or above in reading and 40 percent in math. APA calculated the growth that would be needed from this starting point to reach the 2013-14 target. We assumed the state would request an equal rate of growth each year. This created 2009-10 proficiency targets of 80 percent of students in reading and 73 percent of students in math. Again, APA reviewed test score growth (for reading and math separately) from the 2003-04 and the 2004-05 assessments. We identified 91 systems that were on pace to meet the identified 2009-10 standard.

## The Absolute Standard

As mentioned above, an absolute standard identifies systems that are currently meeting a future performance standard. For comparison purposes, APA set the

absolute standard at the same 2009-10 projected performance goal that was identified for the above growth standard. That is, to meet the absolute standard school systems had to have 80 percent of their students proficient in reading and 73 percent proficient in math.

The difference in applying the absolute standard was that APA simply identified those systems whose current performance was already at or above these target levels on the 2004-05 tests. Only a handful of systems met this target. The number was so low that APA believes the results, if presented, would be spurious and misleading. We therefore chose not to present such limited results.

## Identifying Successful School District Spending

APA gathered spending data for each school district in Montana. The spending data was then organized in such way that APA could examine the base spending for each school. Base spending excludes spending on food service, transportation and capital and represents only that spending related to serving students with no special needs. This excludes spending for any portion of personnel salaries (including teachers, paraprofessionals, and administrators) that might be devoted to serving special need students (such as special education, at-risk students, and English language learners). Excluding these expenditures means that if a district has a high level of spending for special needs students, the base cost for a district could be below actual operating expenditures.

APA calculated base spending for every district in the state. District data was used and, where appropriate, we combined district information into system-level data. APA was able to exclude spending for special need students categories but was unable to extract differences in spending related to district size.

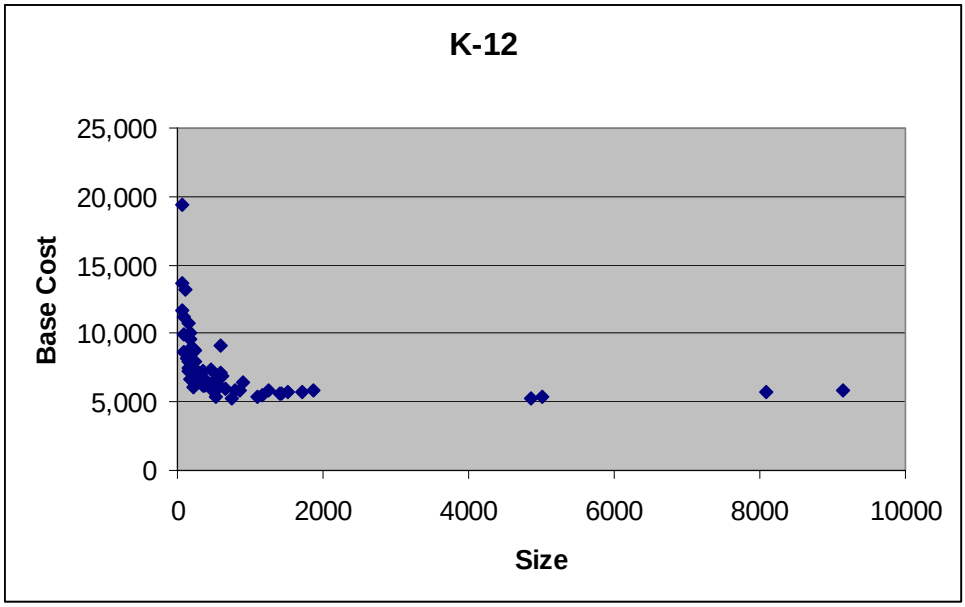
APA then determined the base spending amount for each successful system. The total base spending was then converted into a per pupil base cost figure for each system. Again, because Montana's testing system is so new, APA did not attempt to identify an adequacy cost using the SSD approach. Instead, our SSD analysis can be used to help illustrate spending in the identified districts and to show the differences in base per pupil spending when the size of the district is examined.

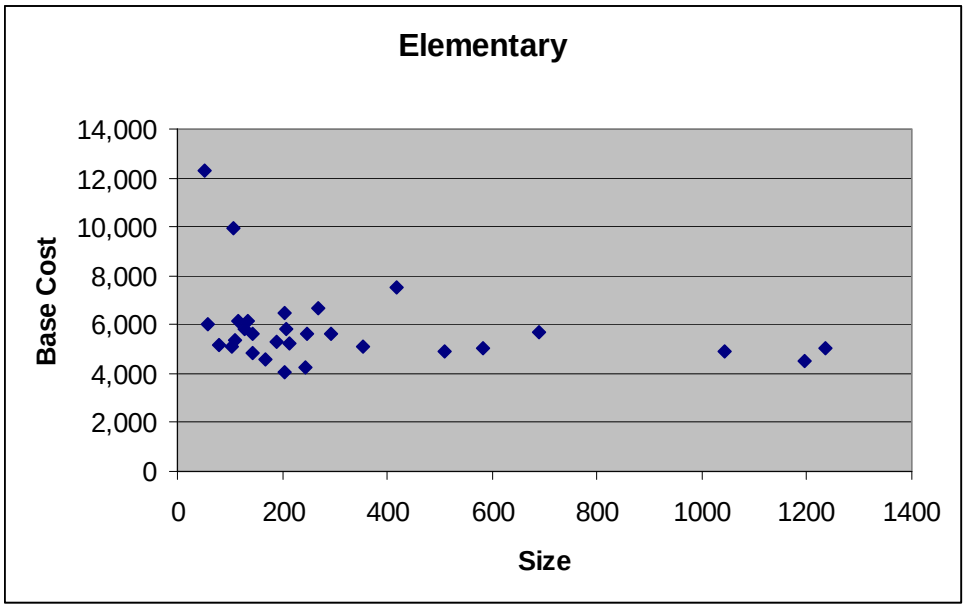
To illustrate the results, we focused on the per pupil base cost spending for the 91 systems meeting the 2009-2010 growth standard. These 91 systems enrolled over 64,000 students and ranged in size from 53 to 9,135 students. Their base, per pupil spending ranged from about $4,000 to $19,000 with a weighted average (weighted by students) of just under $6,000.

A second way to examine the data is to break the districts up into the existing 62 K-12 and 27 elementary systems (2 districts were high school districts). The K-12 systems ranged in size from 64 to 9,135 students and had a base cost per pupil of from $5,250 to $19,000. The weighted average base per pupil amount for the K-12

systems was just over $6,000. The elementary systems ranged in size from 53 and 1,236 pupils and had a base cost per pupil of from just above $4,000 to around $12,300. The weighted average base per pupil amount for the elementary systems was just over $5,200.

The findings illustrate some important differences in base per pupil spending related to size. In particular, the smaller districts generally spend more per pupil, with the costs going down as district size grows. The following two figures show this trend for the K-12 and elementary districts.



To reiterate, APA did not create a specific base cost figure from this SSD analysis due to data limitations. The information provided in this chapter is for illustrative purposes only.

# III. PROFESSIONAL JUDGMENT APPROACH

The 2002 Montana adequacy study completed by APA relied on the professional judgment (PJ) approach. For this 2006 update study, APA redid the previous PJ work instead of simply updating it. The principal reason for redoing the analysis is that in 2002, when the first study was undertaken, both the state's testing and accountability system and the federal NCLB legislation were just coming online. Educators could not be expected to understand the resources needed to meet the new requirements because the requirements themselves were in early stages of development.

Since 2002, the state has created a comprehensive assessment and accountability system, evaluated current student performance levels, and agreed to set NCLB performance goals. In addition, the Montana legislature in 2005 defined a basic system of free quality public elementary and secondary schools to mean the following[6]:

- Educational programs meet specified accreditation standards provided for in Montana state statutes,[7] which represent the minimum standards upon which a basic system of free quality public elementary and secondary schools is built.
- Educational programs provide for students with special needs, including at-risk, special education, students with limited English proficiency, and gifted and talented students.
- Educational programs integrate the distinct and unique cultural heritage of American Indians into the curricula.
- Schools and districts are staffed with qualified and effective teachers, administrators and other staff.
- Facilities and distance learning technologies are available that meet the accreditation standards.
- Transportation is provided for students.
- A procedure to assess and track student achievement is established.
- Local control of schools is preserved in each district.

This legislative definition coupled with the state's plan to comply with the federal No Child Left Behind Act (NCLB), which includes 100 percent of students meeting reading and math proficiency targets by 2013-14, was the basis for the performance standard used by all professional judgment panel members.

As a consequence, educators today are much more aware of the performance of their students, what is meant by the definition of quality schools in Montana and the agreed upon target percentages of students that must meet proficiency standards. As a consequence, APA is more confident that the resources identified by the 2006 PJ panels are associated with the identified state and federal performance goals.

[6] Mont. Cod Ann section 20-9-309.
[7] Mont. Cod Ann section 20-7-111.

The PJ approach relies on the assumption that experienced educators can identify the resources hypothetical schools need to meet future state standards. PJ panelists take part in a strategic planning exercise. They are shown a hypothetical school or district – complete with enrollment numbers and breakdowns of specific numbers of children with special needs – and are asked to use their experience and knowledge to identify the personnel, equipment, and programs they would put in place to help nearly 100 percent of the students achieve reading and math proficiency by 2013-14.

The PJ approach also relies on the assumption that the costs of panel-identified resources can be determined based on a set of prices specific to those resources. Identified resources are typically divided into two groups:

(1) Those associated with a "base cost" that applies to all students; and
(2) Those associated with students who have special needs.

For example, thinking about the base cost, PJ panelists might find that, for a hypothetical school with 200 students, ten teachers would be needed so that students can meet proficiency standards. If the statewide average salary and benefits of a teacher were $40,000, then the cost per student for teachers based on the professional judgment panel's decision would be $2,000 (10 teachers times $40,000/teacher divided by 200 students). Based on the panel's judgments, other costs might also need to be incurred such as those associated with teacher aides, school principals, supplies and materials, and so on. Together, these costs are added to determine the total "base" cost of providing an adequate education.

In the case of Montana's study, APA also examined whether base costs should vary by such factors as school district size and students with special learning needs. Students with "special needs" as defined by Montana statute 20-9-309 cited earlier include the following:

- Those in special education programs (for which students require individual education plans [IEPs]);
- Those with language difficulties (who we refer to as Limited English Proficient [LEP] students);
- Those who are at risk of failing in school (the count for which we estimate based on a proxy measure, which is eligibility for free or reduced-price lunch).

Using the PJ approach, the additional cost of serving students with such special needs can be expressed through student "weights" relative to the base cost.[8] The

[8] Pupil weights are factors used to express the added cost of serving students with special needs. Every student, regardless of special needs, is counted as a 1.00 student. In order to determine the base cost of a district, the number of students enrolled in the district is multiplied by 1.00 and that product is then multiplied by the base cost per pupil figure. If the *added* cost of serving a student with a special need were determined to be 60 percent more than the base cost, then the weight applied to such a student would be .60 (for a total weight of 1.60). Finally, additional weights can be applied to

ability to identify resources for such special need students distinguishes the PJ approach from the SSD approach discussed in the previous chapter.

## Creating Hypothetical Schools

Hypothetical schools are ones designed to reflect either statewide average characteristics or the average characteristics of sub-groups of school districts. If all schools in a state were the same or similar, a single professional judgment panel would be sufficient to estimate funding adequacy. Because Montana school systems can vary significantly, however, APA needed to use multiple PJ panels, each focused on hypothetical schools and/or school systems of different configurations and sizes.

The size of the hypothetical schools and districts in this study remained the same as those used in the 2002 APA Montana PJ study. Montana's school systems were again divided into four size groups:

1) A "small district" group which included school systems under 500 students;
2) A "moderate district" group with school systems between 501 and 1,200 students;
3) A "large district" group with school systems between 1,200 and 3,000 students; and
4) A "very large district" group which included any school systems with over 3,001 students.

APA used the average characteristics of each group and the set of hypothetical schools and districts based on averages developed in 2003. The characteristics of these hypothetical groups are shown in Table III-1. For example, the small K-12 hypothetical district had 208 students who attended one elementary school with 112 students, one middle school with 32 students and one high school with 64 students.

To address the added cost of students with special needs, APA similarly looked at the average characteristics in existing schools and developed enrollment levels for each of the hypothetical district sizes (also shown in Table III-1). In this study, special education percentages were kept constant across the hypothetical districts; 8 percent of students are identified as mild, 3 percent are moderate, and 1 percent are severe special education students. Similarly, the 4 percent LEP percentage was the same across districts. At-risk percentages, which are based on the proxy of free and reduced lunch counts, differed to mirror the populations found in the four categories of existing Montana school systems. For instance, in the hypothetical "small" size district, 37 percent of students are identified as at-risk, while 24 percent are identified in the "very large" district.

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all students in a district to account for certain district characteristics (such as size) that have an impact on per student costs.

Any concentration of special need student could be used to estimate these costs. However, by using figures derived from actual school circumstances in Montana, the PJ panelists are better able relate to the hypothetical schools and districts they create.

**Professional Judgment Panel Design**

In Montana, APA conducted four levels of PJ panels, each building upon the work of the previous panel. By using multiple levels of panels, APA was able to (1) separate school-level resources (which include such things as teachers, supplies, materials, and professional development) from district-level resources (which include such things as facility maintenance and operation, insurance, and school board activities); (2) determine whether size has an impact on cost; and (3) have each panel's work reviewed by another panel, which strengthens the overall analysis. The panels were structured as follows:

(1) School level panels. Four separate panels were convened to identify school-level resource needs in each of the four hypothetical K-12 school districts. All panels "built" hypothetical elementary, middle, and high schools designed to accomplish specific performance objectives and standards (which are described in the next section on "Professional Judgment Panel Procedures"). All panels looked at school-level resources needed for "regular" education students (students with no special needs), as well as for at-risk and LEP students. These four panels did not, however, identify resources for special education students (these were examined by the special needs student panels, see below).

(2) Special Needs panels. Two panels were convened: one to focus on special needs populations for small/moderate sized districts; and the other to focus on the special needs populations of large/very large sized districts. The special needs panels reviewed the resources identified by the school-level panels for at-risk and LEP students then also discussed and identified added resources needed for special education students. Once school-level resources were identified both panels built in any additional district-level resources required for special needs students.

(3) District panels. Two district-level panels were conducted, one for small and moderate size districts and one for the large and very large districts. The district panels first reviewed the work of the school-level and special needs panels. Then they added any district-level resources needed for regular students.

(4) Statewide overview panel. The statewide overview panel reviewed the work of all previous panels. The overview panel looked to resolve any inconsistencies in the school or district findings of previous panels and provided input regarding salary comparisons with other states.

All PJ panels had 6-10 participants, including a combination of classroom teachers, principals, personnel who provide services to students with special needs, superintendents, and school business officials. Seventy panelists participated in the nine panels.

Panel members were selected by leaders of the major state education associations. APA provided a list of the job titles we were looking for, as well as some suggestions for selection criteria such as: (1) participants should be from districts that fit within the size range of the panels they would be serving on, i.e. for the small district panel participants were asked to be from districts of less than 1,500; (2) participants should also be experienced and, if possible, have received recognition for professional excellence; and (3) personnel should be from districts meeting current state performance standards to the extent that it is possible. This third request was made to help assure that panel participants based their recommendations on experiences in school districts that are already performing comparatively well.

The school-level panels met in Helena in late September 2006, the special needs and district-level panels met in Helena in mid-October and the statewide overview panel met in mid-December. Panel participants are identified in Appendix A.

**Professional Judgment Panel Procedures**

The panels followed a specific procedure in doing their work. Panelists first met jointly with APA staff to review background materials and instructions. These background materials were prepared by APA. In particular, panelists were instructed that their task was to identify what constitutes an "adequate" level of resources for hypothetical schools and districts. To accomplish this task, it was therefore necessary for panelists to understand the state's academic performance standards. APA reviewed these standards with panelists, who were instructed to focus on them when estimating the resources that schools and districts need to be successful.

Individual panels examined the following types of resources:

1) Personnel, including classroom teachers, other teachers, psychologists, counselors, librarians, teacher aides, administrators, clerks, etc.
2) Supplies and materials, including textbooks and consumables.
3) Non-traditional programs and services, including before-school, after-school, pre-school, and summer-school programs.
4) Technology, including hardware, software, and licensing fees.
5) Other personnel costs, including the use of substitute teachers and time for professional development.
6) Other costs, including security, extra-curricular programs, insurance, facilities operation and maintenance, etc.

In the case of several categories of personnel (teachers, principals, instructional leaders, teacher tutors) APA provided panel members with starting figures that reflect research results that evidence-based (EB) analyses have used in estimating

adequacy.[9] The following tables summarize the initial personnel resources identified by current research. The figures are calculated for a 500 student prototype school at each level. In the following tables the "instructional facilitator" position provides mentoring and professional development for teachers. A "teacher tutor" works directly with students to provide one on one tutoring. The personnel figure allotted to "other teachers" includes library/media specialists. The "instructional facilitator" figure also includes technology specialists. The research does not state how those figures should be broken-down into these categories.

| **Resource Allocations from the Evidence-based Model (EB)** | | | |
|---|---|---|---|
| 500 Total Pupils in Each School | | | |
| | **Elementary** | **Middle** | **High** |
| **Personnel** | | | |
| Classroom Teachers | 29 | 20 | 20 |
| Other Teachers | 6 | 4 | 4 |
| Counselors | 1 | 1 | 1 |
| Principal | 1 | 1 | 1 |
| Assistant Principal | 0 | 0.5 | 0.5 |
| Instructional Facilitators | 2.5 | 2.5 | 2.5 |
| Teacher Tutor | 1 | 1 | 1 |
| Substitutes | 10 days per teacher | 10 days per teacher | 10 days per teacher |
| **Other Costs** | | | |
| Professional Development | $60,000 | $60,000 | $60,000 |

It is important to note that evidence-based figures are calculated only for schools of 500 students. The EB figures are also limited to those categories shown above and are not readily available for all school-level personnel categories (including clerical staff, nurses, custodians, etc.) or district-level personnel. While an amount is given for professional development, some categories of non-personnel costs such as supplies and materials or student activities are not provided. Since the research-based figures do not provide a complete picture of necessary resources, APA provided the figures primarily as a starting point to stimulate discussion and allowed panelists to modify the figures as they saw fit based on their expertise and experience.

To account for the fact that EB figures were only calculated for one size of school, APA adjusted the starting figures according to the ratio of the PJ panels' hypothetical school enrollment to the evidence-based school of 500 students. For example, the EB research resource model shows 29 teachers needed for an elementary school of 500. If APA's PJ panel was asked to look at an elementary school of 300, the research-based starting figure would have been 17.4 teachers. Similarly, if the panel

[9] See, for example: "A State-of-the-Art Approach to School Finance in Kentucky," Odden, Fermanich and Picus, (February 2003) for the Kentucky Department of Education.

was working with an elementary school of 700 the research-based starting figure would be increased to 40.6 teachers.

Thus, in the categories of personnel (teachers, principals, instructional aides, teacher tutors) where research-based figures were given, panelists reviewed and adjusted these figures to fit the hypothetical school they were building. Then, as needed to meet standards, panelists added additional personnel in the categories where research-based figures were missing (like custodians, clinical aides, superintendents, or directors).

It is important to note that capital, transportation, food services, adult education, and community services were *excluded* from consideration. For a variety of reasons, these elements pose data gathering difficulties and are generally too cost-specific to the characteristics of an individual district to be usefully included in a PJ adequacy analysis.

For each panel, the figures recorded by APA represented a consensus among participating panel members. At the time of the meetings, no participant (either panel members or APA staff) had a precise idea of the costs of the resources that were being identified. Instead, the costing of resources by APA took place after the last panel meeting, which was the statewide overview panel. This is not to say that panel members were unaware that higher resource allocations would produce higher base cost figures or weights. Without specific price information and knowledge of how other panels were proceeding, however, it was impossible for any individual panel member or panel to suggest resource levels that would have led to a specific base cost figure or weight.

Once the panels completed their work, APA needed salary data to cost out the personnel component of resources. To calculate these costs, we used the results of a statewide salary survey conducted by the Montana School Boards Association (MTSBA) which asked districts to provide the 2006-07 salaries for the relevant positions. The district responses were then separated into their respective size category which allowed an average salary for each job category to be determined separately for small, moderate, large, and very large districts.

## Professional Judgment Results

This section describes the results produced by the PJ panels in Montana including some of the “raw” resources they identified, the prices that were attached to those resources, and the costs that were produced by combining resource quantities and resource prices. Specifically the section:

1. Discusses the resource needs identified by the PJ panels for hypothetical schools and school districts to meet state academic standards.

2. Describes how prices for the identified resources were determined.

3. Applies the prices to the identified resources to generate a series of school-level, district-level, and total base costs, as well as added costs for students with special needs.

It should be noted that the resources identified by the PJ panels are examples of how funds might be used to provide programs and services in hypothetical situations. APA cannot emphasize strongly enough that the resources identified are not the only way to provide programs and services to meet state standards. In fact, *there is no one best way to provide the needed services. No member of our panels would suggest that resources described in this report be deployed in schools and districts across the state precisely in the way the panels specified them. Instead, the purpose of the exercise is to estimate the overall cost of adequacy – not to specify the best way to services in schools and districts*. This is particularly true when the circumstances in an actual district differ from those associated with the hypothetical ones. With this in mind, the box that follows offers a series of cautions for the reader to consider when reviewing this chapter.

**Cautions Associated with the Professional Judgment Study**

1. The purpose of the exercise is to estimate the cost of adequacy, not to determine the best way to organize schools and school districts.
2. Figures are in full-time equivalent personnel terms and assume that schools can employ people on a part-time basis.
3. APA asked specific special needs panels to distinguish the extra resources that students with special needs require.
4. APA asked panels to be as precise as they could, but on occasion panel members found it difficult to precisely link resources to performance expectations.
5. APA treated each group of students with special needs as if they were independent. In reality, a particular student may fall into two or three special needs groups. For example, an ESL student might also be eligible for the free/reduced-price lunch program. This may lead to some double counting of resources.
6. Some resources do not appear at the school level because they are accounted for at the district level.
7. The cost estimates do not include transportation, food services, adult education or capital outlay and debt service related to facilities. Some panelists noted existing facilities might not accommodate the programs they designed for hypothetical schools.

Resource Needs Identified by the Professional Judgment Panels

While panels varied in the resources they identified as necessary for an adequate education, several key recommendations were seen across panels:

- Small class sizes: through either a lower teacher to pupil ratio, or additional support personnel for larger classes;
- Pre-School availability;
- Full-day kindergarten;
- Before/after school and summer school programs to help students that are behind;
- Other teachers or support staff, such as instructional aides, counselors or school resource officers, to address the needs of LEP and at-risk students; and
- Increased professional development for teachers and on-site instructional facilitators to work with teachers on a regular basis.

Again, the purpose of the PJ work is not to specify exactly how funding should be spent, but instead to estimate the level of funding necessary to provide programs and resources such as the ones mentioned above. The intent is that schools and districts have the power to decide how to use the funds once they are available.

Looking specifically at the work of individual panels, the figures shown in Tables III-2A-D indicate in detail the personnel needs of hypothetical elementary, middle, and high schools in the four hypothetical school districts. For example, looking at Table III-2B (the moderate size K-12 district), the panel identified the need for 5.8 classroom teachers for 116 middle school students. An additional 2.8 “other” teachers were also needed (to cover topics such as art, music, or language while

also providing classroom teachers with planning time). In addition, other personnel were needed to serve students with special needs (for example, one teacher and two instructional aides to provide assistance to the 46 at-risk students).

It should be noted that APA, with input from the statewide overview panel, standardized some of the work of the previous panels and combined personnel into categories that may have differed slightly from the specific titles used by the panels. While these titles may not appear in the tables, APA did include these positions in its calculations for overall personnel costs.

In order to make it easier to compare the resources identified for the different hypothetical schools and districts, we took some of the information shown in the tables and "adjusted" them so that figures could be shown in terms of "personnel per 1,000 students." For example, in Tables III-3A, 3B, and 3C the number of classroom teachers, pupil support staff and administrators (among others) are shown in such terms. Standardizing the personnel data in this way creates a better view of the relationship between personnel needs and district/school size. APA allowed unique staff configurations generated by the panels to stand, as found for teachers in Table III-3A, because the total configuration of staff (including instructional aides, other instructional staff and pupil support staff) remained well within cost expectations for the hypothetical district. In addition to personnel needs, the figures in Tables III-4A, 4B, and 4C show other resources needed in schools, including those associated with instructional supplies, materials and textbooks, technology, student activities and professional development. To develop the technology resources needed, the panels were given a standard list of equipment, based on recommendations of the Education Commission of the States (an interstate policy consortium of states of which Montana is a member). The panels modified this list as considered necessary.

Professional development funding is an important category of other needed resources. This particular cost area reflects the strong opinion of most panelists that one of the most important contributors to the future success of schools is the assurance that teachers have time to: become familiar with their students, form strong working relationships with their colleagues, participate in enrichment programs, visit other schools, take part in training sessions, and improve their knowledge of curriculum, technology, and research. APA's experience is that, as standards-based reform has become the approach most states have embraced to improve schools, educators and policy makers have concluded that teachers and other school personnel need more professional development opportunities than are currently available. In the case of Montana, panelists found it was necessary to provide $2,000 per teacher and a $1,000 per para-professional for professional development to cover time and other associated costs such as travel, supplies, presentation costs, and conference or speaker fees.

Tables III-5A, 5B, and 5C indicate the other kinds of services – such as a preschool program and before/after school programs – which the panels indicated were needed to meet state and federal performance expectations. Many of these programs are designed with the belief that investments made early, even before kindergarten, can

alleviate the need for some additional services later on. Other programs are designed to supplement services in higher grades, particularly for at-risk students.

## Resource Prices

The primary prices needed to cost out the resources identified by the panels are the *salaries and benefits of personnel* and the prices assigned to different kinds of *technology equipment* (see Table III-6). For personnel salaries, APA used average salaries for different personnel by size category as identified in the MTSBA statewide salary survey. A benefit rate of 27 percent was applied to all salaries to account for the costs associated with contributions to retirement, health care and other benefit programs. In determining technology costs, APA assumed equipment would be replaced every four years. Salaries and prices reported in Table III-6 are in 2006-07 dollars.

When APA conducts an adequacy study, an analysis of statewide average salaries is always undertaken. Depending on the results of that analysis, we have, when appropriate, adjusted the statewide average salaries used to estimate the cost of adequacy. This adjustment is made when we find that a state's average salaries are not competitive with other states, and therefore, it makes sense to raise salaries to make certain that qualified personnel can be hired. Table III-7 shows the results of that analysis.

In Montana, APA examined teacher salaries in five neighboring states (Idaho, North Dakota, South Dakota, Washington and Wyoming) as well as the seven other states in the western United States (Arizona, California, Colorado, Nevada, New Mexico, Oregon and Utah). As shown in Table III-7, APA estimated how much education (having more than a B.A. degree) and each year of experience was worth in the aforementioned states adjusted by cost of living differences. Then APA determined what the average salary would be in each of these states assuming a teacher had the same level of education and experience as the typical teacher in Montana.

With regard to teacher salaries, APA found the following.

1. Starting salary: Montana's average starting salary was lower than all of the comparative states, both neighboring and in the western region.[10]

2. Average salary (unadjusted): Montana's average, unadjusted salary was higher than two neighboring states and lower than the average, unadjusted salaries in the other states in the region.[11]

[10] From the AFT *Survey and Analysis of Teacher Salary Trends, 2004*, in starting salary for 2003-04 Montana ranked 49th nationally. Other states in the western region ranked as follows: Arizona (34th), California (5th), Colorado (19th), Nevada (36th), Idaho (44th), New Mexico (18th), North Dakota (48th), Oregon (14th), South Dakota (47th), Utah (42nd), Washington (24th) and Wyoming (29th).

3. Average salary (adjusted): Montana's adjusted average salary was higher than one neighboring state, and lower than the rest of the states in the region.

These comparisons indicate that Montana falls behind almost all nearby states in terms of compensating its teachers, its key public education personnel. Left unchecked, this problem will over time cause recruitment and retention problems as highly qualified staff members depart for more lucrative positions in other states. The panelists in our professional judgment groups repeatedly stressed difficulties in attracting and retaining needed personnel largely due to low salaries. They also said this issue was not limited to the education sector but was also true for many other Montana industries.

Based on these analyses, noted comments from panel participants and detailed discussions with the overview panel, APA concluded that a salary increase of 6.1% was needed to make the average adjusted Montana teacher salary competitive with that of the comparison states. This figure is based on the comparison of Montana with the unweighted average of all 12 states in the western region. Typically, APA would recommend using the teacher-weighted average salary but that would have more directly compared Montana to California which has, by far, the largest number of teachers among states in the west. APA concluded that in the case of Montana, the comparison should be with the unweighted states of the west. As a consequence, an increase of 6.1% was applied to all personnel salaries used in cost estimations.[12]

## School and District-Level Costs

### *School Level Costs*

Tables III-8A, B, C, and D show the school-level costs that result from applying the prices discussed above to the resources specified by the PJ panels. Per student figures were calculated for regular students and for students 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 hypothetical 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, per-student spending; and (2) figures related to spending for

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[11] From the AFT *Survey and Analysis of Teacher Salary Trends, 2004*, in unadjusted average salary for 2003-04 Montana ranked 45th nationally. Other states in the western region ranked as follows: Arizona (27th), California (2nd), Colorado (21st), Nevada (22nd), Idaho (32nd), New Mexico (41st), North Dakota (48th), Oregon (13th), South Dakota (50th), Utah (38th), Washington (18th) and Wyoming (36th).

[12] In the three school years since the release of the AFT *Survey and Analysis of Teacher Salary Trends, 2004*, several states in the west, most notably Wyoming, have significantly raised the starting salaries for teachers. Over time this will increase statewide average teacher salaries and place additional pressure on Montana districts as they recruit new teachers.

students with special needs. Within the first category, we divided figures for regular programs (services available to all students, the costs of which include personnel, annually consumed supplies and materials, and ancillary school-based costs such as professional development), technology, and other programs. For all figures we show school-level costs and then combined costs across levels to calculate a district-wide figure based on an assumed distribution of students which was 46.1% in elementary schools, 23.1% in middle schools, and 30.8% percent in high schools.

For example, looking at moderate size schools in K-12 districts (Table III-8B), we found that the total base cost per student would include: (1) $6,630 for basic instruction, support, and administration; and (2) $254 for technology. Other programs for students with no special needs, like summer school, added $89 per student. These elements produce a total of $6,973 at the school level for every student. In addition, the added costs per student for students with particular special needs would be: (1) $4,912 for students with mild special education needs; (2) $8,856 for students with moderate special education needs; (3) $26,032 for students with severe special education needs; (4) $3,522 per at-risk student; and (5) $7,167 for LEP students.

*One should be careful in drawing conclusions based on school level costs since such costs exclude district level costs and different panels included different resources at the school and district levels*. It is really the combination of school and district costs that reflect the true, total cost of providing services and that permit the most appropriate comparison across school districts of different size.

*District Level Costs*

Complete cost figures for school districts of different size are shown in Table III-9. District costs are for central services, some of which affect all students – such as administration and facilities maintenance and operation (M&O). Other costs affect only students with special needs. The figures in Table III-9 indicate that district-level administration costs range between about $259 and $1,368 per student. Plant maintenance and operation costs range between $1,328 and $1,359 per student. Other costs ($219 to $541 per student) include such items as insurance, legal expenditures, textbooks purchased centrally, and so on. In the end, district-level costs are between 12-27% of total base costs (excluding added costs for special need students) depending upon the size of the district.

There are some district costs associated with students with special needs, that may reflect a specialized facility, such as an alternative setting school in large and very large districts (which would be attributable to the costs for at-risk students), central services for special education (including diagnostic services or services that are shared across schools), and the cost of language interpreters (attributable to the cost of LEP students). In the case of special education, it was difficult to distinguish which district-level costs were associated with mild, moderate, or severe levels of special education.

Table III-9 shows total spending after combining school and district spending. For example, in moderate size K-12 districts, combined school-level and district-level base costs are $9,459 per student. In addition, students with mild special education needs add $8,648, students with moderate special education needs add $12,592, and students with severe special education needs add $29,768. At-risk students add $3,720, and LEP students add $7,181 per student.

While this is the basic information produced by the PJ analysis, *the information in this form can not be used to estimate the cost of an adequate education in districts that have different characteristics from the hypothetical districts shown in this chapter*. The purpose of the next chapter is to explain how the information gained from the PJ approach can be used to calculate estimates of costs in Montana school districts of any size and with any proportion of special education students, at-risk students, and LEP students.

# TABLE III-1

## CHARACTERISTICS OF HYPOTHETICAL DISTRICTS AND SCHOOLS USED IN THE PROFESSIONAL JUDGMENT ANALYSIS IN MONTANA

| | Small | Moderate | Large | Very Large |
|---|---|---|---|---|
| **Total Enrollment in District** | 208 | 748 | 1,740 | 8,450 |
| **Number of Schools in District** | | | | |
| Elementary | 1 | 2 | 3 | 11 |
| Middle | 1 | 1 | 1 | 2 |
| High | 1 | 1 | 1 | 2 |
| **Size of School** | | | | |
| Elementary (K-5) | - | - | - | 360 |
| Elementary (K-6) | 112 | 200 | 310 | - |
| Middle (6-8) | - | - | - | 630 |
| Middle (7-8) | 32 | 116 | 270 | - |
| High (9-12) | 64 | 232 | 540 | 1,300 |
| **Proportion of Special Needs Students** | | | | |
| ***Special Education*** | | | | |
| Mild | 8.0% | 8.0% | 8.0% | 8.0% |
| Moderate | 3.0% | 3.0% | 3.0% | 3.0% |
| Severe | 1.0% | 1.0% | 1.0% | 1.0% |
| ***At-Risk*** | 37.0% | 40.0% | 35.0% | 24.0% |
| ***Limited English Proficient*** | 4.0% | 4.0% | 4.0% | 4.0% |

## TABLE III-2A

## PERSONNEL NEEDED BY ELEMENTARY, MIDDLE AND HIGH SCHOOLS IN *SMALL* K-12 DISTRICTS TO MEET ACCOUNTABILITY STANDARDS IN MONTANA

| **Elementary** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 112 | 9 | 3 | 1 | 41 | 5 |
| Personnel | | | | | | |
| Classroom Teachers | 7.5 | 0.5 | 0.4 | 0.1 | | |
| Other Instructional Staff | 2.8 | | | | 1.0 | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 0.6 | | | | 0.2 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 1.0 | 0.5 | 0.5 | 1.0 | 1.5 | |
| Clerical Staff | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 |
| Administrators | 0.5 | | | | | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

| **Middle School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 32 | 3 | 1 | 1 | 12 | 1 |
| Personnel | | | | | | |
| Classroom Teachers | 2.3 | 0.2 | 0.1 | 0.1 | | |
| Other Instructional Staff | 0.8 | | | | 0.2 | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 0.2 | | | | 0.1 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 0.3 | 0.2 | 0.2 | 1.0 | | |
| Clerical Staff | 0.3 | | | | | |
| Administrators | 0.3 | | | | | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

## TABLE III-2A Continued

| **High School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 64 | 5 | 2 | 1 | 24 | 3 |
| <u>Personnel</u> | | | | | | |
| Classroom Teachers | 8.2 | 0.3 | 0.2 | 0.1 | | |
| Other Instructional Staff<br>*-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | 1.0 | | | | 0.5 | |
| Pupil Support Staff<br>*-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | 0.3 | | | | 0.4 | |
| Paraprofessionals (Aides) | 0.8 | 0.3 | 0.3 | 1.0 | | |
| Clerical Staff | 1.0 | | | | | |
| Administrators<br>*-Incl. Principals, Assistant Principals and Directors* | 0.3 | | | | | |

Notes: -Some Pupil Support Staff in Small and Moderate districts, such as Psychologists, Nurses, and School Resource Officers, are included at the district-level and therefore not reflected in the figures above
- ELL resources in this Small district are at the district-level

## TABLE III-2B

## PERSONNEL NEEDED BY ELEMENTARY, MIDDLE AND HIGH SCHOOLS IN *MODERATE* K-12 DISTRICTS TO MEET ACCOUNTABILITY STANDARDS IN MONTANA

| **Elementary** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 200 | 16 | 6 | 2 | 80 | 8 |
| Personnel | | | | | | |
| Classroom Teachers | 14.0 | 0.5 | 0.4 | 0.1 | | |
| Other Instructional Staff | 4.5 | | | | 1.0 | 0.5 |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 1.0 | | | | 1.0 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | | 2.0 | 1.0 | 2.0 | 4.0 | 2.0 |
| Clerical Staff | 1.0 | | | | | |
| Administrators | 1.0 | | | | | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

| **Middle School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 116 | 9 | 4 | 1 | 46 | 5 |
| Personnel | | | | | | |
| Classroom Teachers | 5.8 | 0.6 | 0.2 | 0.1 | 1.0 | |
| Other Instructional Staff | 2.8 | | | | | 0.3 |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 0.6 | | | | 1.3 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 0.5 | 0.8 | 0.5 | 1.0 | 2.0 | 1.0 |
| Clerical Staff | 1.0 | | | | | |
| Administrators | 0.5 | | | | | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

## TABLE III-2B Continued

| **High School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 232 | 19 | 7 | 2 | 93 | 9 |
| <u>Personnel</u> | | | | | | |
| Classroom Teachers | 16.3 | 0.7 | 0.8 | 0.1 | 1.5 | 0.3 |
| Other Instructional Staff | 1.5 | | | | | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 1.2 | | | | 1.3 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | | 1.0 | 1.0 | 2.0 | 3.0 | 1.0 |
| Clerical Staff | 1.5 | | | | | |
| Administrators | 1.0 | | | | 0.5 | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

Note: Some Pupil Support Staff in Small and Moderate districts, such as Psychologists, Nurses, and School Resource Officers, are included at the district-level and therefore not reflected in the figures above

## TABLE III-2C

## PERSONNEL NEEDED BY ELEMENTARY, MIDDLE AND HIGH SCHOOLS IN *LARGE* K-12 DISTRICTS TO MEET ACCOUNTABILITY STANDARDS IN MONTANA

| **Elementary** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 310 | 25 | 9 | 3 | 109 | 12 |
| Personnel | | | | | | |
| Classroom Teachers | 18.5 | 1.0 | 1.0 | 1.0 | 2.3 | 1.0 |
| Other Instructional Staff | 7.5 | | | | 0.5 | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 2.8 | 0.8 | 0.4 | 0.4 | 0.2 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 5.0 | 1.0 | 2.0 | 1.0 | | |
| Clerical Staff | 1.0 | | | | | |
| Administrators | 1.5 | | | | | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

| **Middle School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 270 | 22 | 8 | 3 | 95 | 11 |
| Personnel | | | | | | |
| Classroom Teachers | 17.0 | 1.0 | 1.0 | 1.0 | 3.3 | 1.0 |
| Other Instructional Staff | 4.0 | | | | 0.5 | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 3.2 | 0.5 | 0.3 | 0.3 | 0.7 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 4.0 | 1.0 | 2.0 | 1.0 | 5.0 | |
| Clerical Staff | 1.5 | | | | | |
| Administrators | 1.8 | | | | 0.5 | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

## TABLE III-2C Continued

| **High School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 540 | 43 | 16 | 5 | 189 | 22 |
| Personnel | | | | | | |
| Classroom Teachers | 34.0 | 2.0 | 1.0 | 1.0 | 2.0 | 1.0 |
| Other Instructional Staff<br>*-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | 5.5 | 0.5 | 0.3 | 0.3 | 0.5 | |
| Pupil Support Staff<br>*-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | 5.2 | 0.3 | 0.1 | 0.1 | 1.0 | |
| Paraprofessionals (Aides) | 2.0 | 1.0 | 2.0 | 1.0 | | 1.0 |
| Clerical Staff | 4.5 | | | | | |
| Administrators<br>*-Incl. Principals, Assistant Principals and Directors* | 3.2 | | | | 0.5 | |

## TABLE III-2D

## PERSONNEL NEEDED BY ELEMENTARY, MIDDLE AND HIGH SCHOOLS IN *VERY LARGE* K-12 DISTRICTS TO MEET ACCOUNTABILITY STANDARDS IN MONTANA

| **Elementary** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 360 | 29 | 11 | 4 | 86 | 14 |
| Personnel | | | | | | |
| Classroom Teachers | 22.0 | 1.5 | 1.0 | 1.0 | 2.3 | 1.0 |
| Other Instructional Staff | 9.3 | | | | | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 3.0 | 0.8 | 0.4 | 0.4 | 0.7 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 6.0 | 1.0 | 2.0 | 1.0 | 2.5 | |
| Clerical Staff | 1.0 | | | | | |
| Administrators | 1.5 | | | | | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

| **Middle School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 630 | 50 | 19 | 6 | 151 | 25 |
| Personnel | | | | | | |
| Classroom Teachers | 39.0 | 2.0 | 1.8 | 1.3 | 7.5 | 1.0 |
| Other Instructional Staff | 8.0 | | | | | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 6.7 | 0.7 | 0.3 | 0.3 | 0.8 | 0.0 |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 7.3 | 2.0 | 2.0 | 1.0 | 6.0 | 1.0 |
| Clerical Staff | 3.0 | | | | | |
| Administrators | 2.5 | | | | 0.5 | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

## TABLE III-2D Continued

| **High School** | All Students | Mild Special Ed | Mod. Special Ed | Severe Special Ed | At-Risk | LEP |
|---|---|---|---|---|---|---|
| # of Students in Category | 1300 | 104 | 39 | 13 | 312 | 52 |
| Personnel | | | | | | |
| Classroom Teachers | 81.0 | 4.0 | 2.5 | 1.5 | 3.5 | 1.0 |
| Other Instructional Staff | 9.0 | 0.5 | 0.3 | 0.3 | 1.0 | |
| *-Incl. Other Teachers (Art, Music, PE, Enrichment, etc), Librarians/Media Specialists, Technologly Specialists, Work Study Coordinators, Instructional Facilitators (Mentors)* | | | | | | |
| Pupil Support Staff | 10.5 | 0.5 | 0.3 | 0.3 | 1.5 | |
| *-Incl. Counselors, Nurses, Psychologists, Social Workers, School Resource Officers, Speech Pathologists, and OT/PT* | | | | | | |
| Paraprofessionals (Aides) | 7.0 | 2.5 | 2.5 | 1.0 | | 2.0 |
| Clerical Staff | 9.0 | | | | | |
| Administrators | 3.0 | | | | 1.0 | |
| *-Incl. Principals, Assistant Principals and Directors* | | | | | | |

## TABLE III-3A

## *ELEMENTARY* SCHOOL-LEVEL PERSONNEL PER 1,000 STUDENTS

| | | K-6 | | | K-5 |
|---|---|---|---|---|---|
| | | Small District | Mod. District | Large District | Very Large District |
| (1) | Classroom Teachers | 67.0 | 70.0 | 59.7 | 61.1 |
| (2) | Other Instructional Staff | 25.0 | 22.3 | 24.2 | 25.8 |
| (3) | Pupil Support Staff | 5.4 | 5.0 | 9.0 | 8.4 |
| (4) | Paraprofessionals (Aides) | 8.9 | 0.0 | 16.1 | 16.7 |
| (5) | Clerical Staff | 8.9 | 5.0 | 3.2 | 2.8 |
| (6) | Administrators | 4.5 | 5.0 | 4.8 | 4.2 |

Note: Some Pupil Support Staff in Small and Moderate districts, such as Psychologists, Nurses, and School Resource Officers, are included at the district-level and therefore not reflected in the figures above

## TABLE III-3B

## *MIDDLE* SCHOOL PERSONNEL PER 1,000 STUDENTS

| | | 7-8* | | | 6-8* |
|---|---|---|---|---|---|
| | | Small District | Mod. District | Large District | Very Large District |
| (1) | Classroom Teachers | 71.9 | 50.0 | 63.0 | 61.9 |
| (2) | Other Instructional Staff | 23.4 | 23.7 | 14.8 | 12.7 |
| (3) | Pupil Support Staff* | 5.0 | 5.0 | 11.7 | 10.6 |
| (4) | Paraprofessionals (Aides) | 7.8 | 4.3 | 14.8 | 11.6 |
| (5) | Clerical Staff | 9.4 | 8.6 | 5.6 | 4.8 |
| (6) | Administrators | 7.8 | 4.3 | 6.7 | 4.0 |

* Grade configurations based on those seen on average in each Montana school system category
** Some Pupil Support Staff in Small and Moderate districts, such as Psychologists, Nurses, and School Resource Officers, are included at the district-level and therefore not reflected in the figures above

# TABLE III-3C

## *HIGH* SCHOOL PERSONNEL PER 1,000 STUDENTS

| | | 9-12 | | | |
|---|---|---|---|---|---|
| | | Small District | Mod. District | Large District | Very Large District |
| (1) | Classroom Teachers | 128.1 | 70.1 | 63.0 | 62.3 |
| (2) | Other Instructional Staff | 15.6 | 6.5 | 10.2 | 6.9 |
| (3) | Pupil Support Staff* | 5.0 | 5.0 | 9.6 | 8.1 |
| (4) | Paraprofessionals (Aides) | 11.7 | 0.0 | 3.7 | 5.4 |
| (5) | Clerical Staff | 15.6 | 6.5 | 8.3 | 6.9 |
| (6) | Administrators | 3.9 | 4.3 | 5.9 | 2.3 |

* Some Pupil Support Staff in Small and Moderate districts, such as Psychologists, Nurses, and School Resource Officers, are included at the district-level and therefore not reflected in the figures above

## TABLE III-4A

## NON-PERSONNEL COSTS NEEDED FOR A HYPOTHETICAL *ELEMENTARY* SCHOOL

| | | K-6* | | | K-5* |
|---|---|---|---|---|---|
| | | Small District | Mod. District | Large District | Very Large District |
| (1) | Instructional Supplies/Materials/ Textbooks | $450/stu. | $350/stu. | $300/stu. | $300/stu. |
| (2) | Technology** | $260/stu. | $235/stu. | $219/stu. | $215/stu. |
| (3) | Student Activities | $75/stu. | $75/stu. | $30/stu. | $30/stu. |
| (4) | Professional Development | $2,000/tch. $1,000/para | $2,000/tch. $1,000/para | $2,000/tch. $1,000/para | $2,000/tch. $1,000/para |

* Grade configurations based on those seen on average in each Montana school system category

** Technology figure derived from costing out the number of computers, laptops printers, servers, smartboards, etc. recommended by the panels for each school using a four year replacement cycle.

## TABLE III-4B

## NON-PERSONNEL COSTS NEEDED FOR A HYPOTHETICAL *MIDDLE* SCHOOL

| | | 7-8* | | | 6-8* |
|---|---|---|---|---|---|
| | | Small District | Mod. District | Large District | Very Large District |
| (1) | Instructional Supplies/Materials/ Textbooks | $475/stu. | $375/stu. | $375/stu. | $375/stu. |
| (2) | Technology** | $388/stu. | $266/stu. | $262/stu. | $215/stu. |
| (3) | Student Activities | $500/stu. | $500/stu. | $250/stu. | $250/stu. |
| (4) | Professional Development | $2,000/tch. $1,000/para | $2,000/tch. $1,000/para | $2,000/tch. $1,000/para | $2,000/tch. $1,000/para |

* Grade configurations based on those seen on average in each Montana school system category

** Technology figure derived from costing out the number of computers, laptops printers, servers, smartboards, etc. recommended by the panels for each school using a four year replacement cycle.

## TABLE III-4C

## NON-PERSONNEL COSTS NEEDED FOR A HYPOTHETICAL *HIGH* SCHOOL

| | | 9-12 | | | |
|---|---|---|---|---|---|
| | | Small District | Mod. District | Large District | Very Large District |
| (1) | Instructional Supplies/Materials/ Textbooks | $525/stu. | $400/stu. | $400/stu. | $400/stu. |
| (2) | Technology* | $388/stu. | $274/stu. | $207/stu. | $159/stu. |
| (3) | Student Activities | $1,500/stu. | $1,200/stu. | $600/stu. | $450/stu. |
| (4) | Professional Development | $2,000/tch.<br>$1,000/para | $2,000/tch.<br>$1,000/para | $2,000/tch.<br>$1,000/para | $2,000/tch.<br>$1,000/para |
| (5) | Career and Tech Ed | $150/stu. | $100/stu. | $100/stu. | $100/stu. |

* Note: Technology figure derived from costing out the number of computers, laptops printers, servers, smartboards, etc. recommended by the panels for each school using a four year replacement cycle.

# TABLE III-5A

## PERCENT OF STUDENTS PARTICIPATING IN OTHER PROGRAMS NEEDED AT HYPOTHETICAL *ELEMENTARY* SCHOOLS

| | K-6 | | | K-5 |
|---|---|---|---|---|
| | Small District | Mod. District | Large District | Very Large District |
| *(1) Pre-School* | | | | |
| All Students | | | | |
| At-Risk Students | 100% | 100% | 100% | 100% |
| Special Education | 100% | 100% | 100% | 100% |
| LEP | 100% | 100% | 100% | 100% |
| *(2) Extended Day Programs** | | | | |
| All Students | 20% | 20% | 20% | 20% |
| At-Risk Students | | | 100% | 100% |
| Special Education | | | | |
| LEP | | | | |
| *(3) Summer School* | | | | |
| All Students | | | | |
| At-Risk Students | 100% | 100% | 100% | 100% |
| LEP | 100% | 100% | 100% | 100% |
| *(4) Extended School Year (ESY)*** | | | | |
| Special Education | 16% | 16% | 32% | 34% |

* Extended Day Programs include Before/After School, Homework Help and Enrichment
** ESY is offered for 100% of the students whose Individual Education Plans (IEPs) require it, in Small and Moderate Districts ESY is offered at the district-level

## TABLE III-5B

## PERCENT OF STUDENTS PARTICIPATING IN OTHER PROGRAMS NEEDED AT HYPOTHETICAL *MIDDLE* SCHOOLS

| | 7-8 | | | 6-8 |
|---|---|---|---|---|
| | Small District | Mod. District | Large District | Very Large District |
| *(1) Extended Day Programs** | | | | |
| All Students | 20% | 20% | 20% | 20% |
| At-Risk Students | | | | |
| Special Education | | | | |
| LEP | | | | |
| *(2) Summer School* | | | | |
| All Students | | | | |
| At-Risk Students | 100% | 100% | 100% | 100% |
| LEP | 100% | 100% | 100% | 100% |
| *(3) Extended School Year (ESY)*** | | | | |
| Special Education | 16% | 16% | 33% | 33% |

* Extended Day Programs include Before/After School, Homework Help and Enrichment

** ESY is offered for 100% of the students whose Individual Education Plans (IEPs) require it, in Small and Moderate Districts ESY is offered at the district-level

## TABLE III-5C

## PERCENT OF STUDENTS PARTICIPATING IN OTHER PROGRAMS NEEDED AT HYPOTHETICAL *HIGH* SCHOOLS

| | 9-12 | | | |
|---|---|---|---|---|
| | Small District | Mod. District | Large District | Very Large District |
| *(1) Extended Day Programs** | | | | |
| All Students | 15% | 15% | 15% | 15% |
| At-Risk Students | | | | |
| Special Education | | | | |
| LEP | | | | |
| *(2) Summer School* | | | | |
| All Students | | | | |
| At-Risk Students | 100% | 100% | 100% | 100% |
| LEP | 100% | 100% | 100% | 100% |
| *(3) Extend School Year (ESY)*** | | | | |
| Special Education | 16% | 16% | 13% | 13% |

* Extended Day Programs include Before/After School, Homework Help and Enrichment

** ESY is offered for 100% of the students whose Individual Education Plans (IEPs) require it, in Small and Moderate Districts is offered at the district-level

# TABLE III-6

## PRICES FOR HYPOTHETICAL SCHOOL AND DISTRICT RESOURCES IN 2006-07

Resource Element

(1) Salaries

| | Small District | Mod. District | Large District | Very Large District |
|---|---|---|---|---|
| Classroom Teachers | $33,388 | $38,487 | $40,669 | $44,024 |
| Other Teachers (incl. Teacher Tutor, Inst. Facilitator, etc.) | $33,388 | $38,487 | $40,669 | $44,024 |
| Librarians/Media Specialists | $31,696 | $42,950 | $42,826 | $48,889 |
| Technology Specialists | $35,065 | $44,546 | $47,416 | $49,325 |
| Counselors | $32,016 | $47,048 | $44,657 | $50,093 |
| Nurses | $26,180 | $28,618 | $30,031 | $36,358 |
| Psychologists | $43,076 | $41,466 | $44,840 | $52,089 |
| Social Workers | $44,464 | $44,464 | $44,464 | $44,464 |
| Aides (Instructional, Library, Clinical) | $13,391 | $13,428 | $13,990 | $14,263 |
| Clerical/Data Entry | $20,547 | $21,452 | $17,901 | $24,182 |
| Principal | $54,406 | $62,783 | $70,243 | $78,181 |
| Assistant Principal | $54,313 | $54,425 | $61,721 | $73,535 |
| Speech Pathologist/Therapists | $52,603 | $45,890 | $44,402 | $49,866 |
| School Resource Officer | $26,673 | $26,673 | $20,003 | $33,448 |
| Superintendent | $65,457 | $78,429 | $90,903 | $112,091 |
| Assistant Superintendent | $55,200 | $55,200 | $93,925 | $94,356 |
| Coordinator/Supervisor | $35,388 | $39,286 | $54,838 | $54,365 |
| Custodians/Maintenance Personnel | $24,719 | $21,004 | $21,004 | $26,065 |

(2) Technology

| | Cost Per Item |
|---|---|
| Computer | $1,000 |
| Laptop | $1,400 |
| Printer (Basic Laser) | $455 |
| Printer (Quality Laser) | $650 |
| Printer/Copier | $2,259 |
| Scanner | $100 |
| Digital Video Camera | $600 |
| Digital Camera | $400 |
| LCD Projector | $1,849 |
| Smart Board | $1,599 |
| Server | $5,000 |

Notes: - Salaries were averages for each district size category as determined by a statewide salary survey
- Technology prices were determined by APA's most current research, as reviewed most recently in Nevada 2006

# TABLE III-7

## COMPARISON OF 2003-04 STATEWIDE AVERAGE TEACHER SALARY IN MONTANA TO THAT OF 12 REGIONAL STATES ADJUSTING FOR TEACHER CHARACTERISTICS AND INTER-STATE COST-OF-LIVING DIFFERENCES

| | Numb. of Teachers 2003-04 | Starting Salary 2003-04 | Average Salary 2003-04 | Years of Exper. 2001-02 | Percent with More than a B.A. 1999-00 | Cost of Living 2005* | Adjusted Salary 2003-04 |
|---|---|---|---|---|---|---|---|
| **Montana** | **10,300** | **$24,032** | **$37,184** | **15.4** | **29.6%** | **.920** | **$40,417** |
| *(Cost Factors*)* | | | | *($671)* | *($134)* | | |
| 12 Regional States | | | | | | | |
| Arizona | 45,532 | $28,236 | $42,324 | 13.1 | 49.2% | .970 | $42,607 |
| *Rel. to MT + (Cost Factors)* | | *1.175* | *1.138* | *($633)* | *($127)* | | *1.054* |
| California | 305,855 | $35,135 | $56,444 | 13.5 | 38.5% | 1.160 | $48,763 |
| *Rel. to MT + (Cost Factors)* | | *1.462* | *1.518* | *($867)* | *($173)* | | *1.206* |
| Colorado | 44,926 | $31,296 | $43,318 | 14.7 | 54.2% | .980 | $42,175 |
| *Rel. to MT + (Cost Factors)* | | *1.302* | *1.165* | *($480)* | *($96)* | | *1.043* |
| Idaho | 14,071 | $25,908 | $40,111 | 14.6 | 29.7% | .920 | $44,185 |
| *Rel. to MT + (Cost Factors)* | | *1.078* | *1.079* | *($752)* | *($150)* | | *1.093* |
| New Mexico | 21,532 | $31,920 | $38,469 | 12.5 | 43.9% | .920 | $41,828 |
| *Rel. to MT + (Cost Factors)* | | *1.328* | *1.035* | *($335)* | *($67)* | | *1.035* |
| Nevada | 20,045 | $27,942 | $43,211 | 12.8 | 47.6% | .990 | $42,956 |
| *Rel. to MT + (Cost Factors)* | | *1.163* | *1.162* | *($691)* | *($138)* | | *1.063* |
| North Dakota | 7,662 | $24,108 | $35,411 | 16.2 | 22.2% | .880 | $40,663 |
| *Rel. to MT + (Cost Factors)* | | *1.003* | *.952* | *($622)* | *($124)* | | *1.006* |
| Oregon | 27,668 | $33,396 | $47,829 | 14.5 | 50.0% | 1.040 | $44,188 |
| *Rel. to MT + (Cost Factors)* | | *1.390* | *1.286* | *($566)* | *($113)* | | *1.093* |
| South Dakota | 9,031 | $25,504 | $33,236 | 14.8 | 24.6% | .890 | $38,049 |
| *Rel. to MT + (Cost Factors)* | | *1.061* | *.894* | *($441)* | *($88)* | | *.941* |
| Utah | 21,659 | $26,130 | $38,976 | 12.9 | 29.6% | .950 | $42,824 |
| *Rel. to MT + (Cost Factors)* | | *1.087* | *1.048* | *($718)* | *($144)* | | *1.060* |
| Washington | 52,911 | $30,159 | $45,437 | 15.0 | 54.0% | 1.000 | $42,784 |
| *Rel. to MT + (Cost Factors)* | | *1.255* | *1.222* | *($592)* | *($118)* | | *1.079* |
| Wyoming | 6,513 | $28,900 | $39,537 | 15.9 | 30.2% | .900 | $43,596 |
| *Rel. to MT + (Cost Factors)* | | *1.203* | *1.063* | *($539)* | *($108)* | | *1.079* |

# TABLE III-7 (Continued)

| | Starting Salary 2003-04 | Average Salary 2003-04 | Years of Exper. 2001-02 | with More than a B.A. 1999-00 | Adjusted Salary 2003-04 |
|---|---|---|---|---|---|
| *Average Salary of 12 Regional States* | | | | | |
| Unweighted | $29,053 | $42,025 | 14.2 | 39.5% | $42,885 |
| *Relative to Montana* | *1.209* | *1.130* | *($603)* | *($121)* | *1.061* |
| Weighted by Number of Teachers | $32,453 | $49,872 | 13.8 | 42.0% | $45,870 |
| *Relative to Montana* | *1.350* | *1.341* | *($731)* | *($146)* | *1.135* |

* Cost factors for all states are shown adjusted for a national cost-of-living average of 1.000.

Note: To calculate each state's cost factors for experience and education: (1) multiply years of experience by five and add the product to the percent of teachers with more than a B.A. (if experience is 14.3 years and percent with more than a B.A. is 38.9, total is 110.4); (2) divide the difference between average salary and starting salary by this total; (3) divide the result by the relative cost-of-living factor to get the factor for the percentage of teachers with more than a B.A.; and (4) multiply this by five to get the factor for average years of experience. For example, if a state's average salary was $38,600, its starting salary was $28,000, the average years of teacher experience was 14.3, the proportion of teachers with more than a B.A. was 38.9 percent, and its relative cost of living was .912, the cost factor for percent of teachers with more than a B.A. would be $105 and the cost factor for years of experience would be $526.

To calculate the adjusted salary for each state: (1) divide the starting salary by the cost-of-living factor: (2) multiply the experience cost factor and the education cost factor for the comparison state by the levels of experience and education of the target state; and (3) add the results of steps (1) and (2). For example, if the comparison state had a starting salary of $29,000, an average salary of $37,500, a cost-of-living factor of .95, an experience cost factor of $400 and an education cost factor of $80 and the target state had 15 years of experience and 50 percent of its teachers had more than a bachelors degree, then the comparison state's adjusted salary would be $40,526.

Sources: Digest of Education Statistics, 2002, Thomas D. Snyder and Charlene M. Hoffman (National Center for Education Statistics, U.S. Department of Education: Washington, DC, June 2003), Table 69.

Survey and Analysis of Teacher Salary Trends, 2004, F. Howard Nelson and Rachel Drown (American Federation of Teachers: Washington, DC, 2003), Table II-2.

Estimates of School Statistics, National Education Association

Douglas Rose, Augenblick, Palaich and Associates, Inc. (internal document, September 2006)

## TABLE III-8A

## SCHOOL-LEVEL COSTS FOR *SMALL* K-12 SCHOOL DISTRICTS BASED ON THE WORK OF THE MONTANA PROFESSIONAL JUDGMENT PANELS IN 2006-07

| | Elem. School | Middle School | High School | Total |
|---|---|---|---|---|
| (1) Enrollment | 112 | 32 | 64 | - |
| (2) Base Spending | | | | |
| Regular* | $6,103 | $7,960 | $10,771 | $7,965 |
| Technology | $260 | $388 | $388 | $329 |
| Other Programs for Students with No Special Needs: | $107 | $183 | $91 | $120 |
| (3) Added Spending for Special Student Populations** | | | | |
| Special Education: | | | | |
| - *Mild* | $4,824 | $5,017 | $4,570 | $4,791 |
| - *Moderate* | $11,528 | $10,013 | $9,361 | $10,513 |
| - *Severe* | $27,491 | $26,940 | $27,240 | $27,287 |
| At-Risk Students: | $2,971 | $1,371 | $1,816 | $2,246 |
| LEP Students***: | $896 | $162 | $137 | $494 |

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

** Costs are shown per student in the program.

*** All LEP costs except those of the pre-school and summer school program are at the district-level

Note: Combined figures are based on the following proportions of students: elementary schools, 46.1%, middle schools, 23.1%, and high schools, 30.8%.

# TABLE III-8B

## SCHOOL-LEVEL COSTS FOR *MODERATE* K-12 SCHOOL DISTRICTS BASED ON THE WORK OF THE MONTANA PROFESSIONAL JUDGMENT PANELS IN 2006-07

| | Elem. School | Middle School | High School | Total |
|---|---|---|---|---|
| (1) Enrollment | 200 | 116 | 232 | - |
| (2) Base Spending | | | | |
| Regular* | $6,588 | $6,256 | $6,976 | $6,630 |
| Technology | $235 | $266 | $274 | $254 |
| Other Programs for Students with No Special Needs: | $97 | $125 | $49 | $89 |
| (3) Added Spending for Special Student Populations** | | | | |
| Special Education: | | | | |
| - *Mild* | $5,454 | $5,797 | $3,431 | $4,912 |
| - *Moderate* | $9,050 | $6,536 | $10,311 | $8,856 |
| - *Severe* | $25,739 | $27,677 | $25,235 | $26,032 |
| At-Risk Students: | $3,497 | $3,897 | $3,275 | $3,522 |
| LEP Students: | $9,426 | $6,882 | $3,983 | $7,167 |

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

** Costs are shown per student in the program.

Note: Combined figures are based on the following proportions of students: elementary schools, 46.1%, middle schools, 23.1%, and high schools, 30.8%.

# TABLE III-8C

## SCHOOL-LEVEL COSTS FOR *LARGE* K-12 SCHOOL DISTRICTS BASED ON THE WORK OF THE MONTANA PROFESSIONAL JUDGMENT PANELS IN 2006-07

| | Elem. School | Middle School | High School | Total |
|---|---|---|---|---|
| (1) Enrollment | 310 | 270 | 540 | - |
| (2) Base Spending | | | | |
| Regular* | $6,548 | $6,987 | $6,732 | $6,723 |
| Technology | $219 | $262 | $207 | $226 |
| Other Programs for Students with No Special Needs: | $40 | $103 | $59 | $60 |
| (3) Added Spending for Special Student Populations** | | | | |
| Special Education: | | | | |
| - *Mild* | $5,970 | $5,095 | $4,464 | $5,305 |
| - *Moderate* | $14,462 | $14,285 | $7,834 | $12,386 |
| - *Severe* | $34,891 | $31,154 | $20,939 | $29,745 |
| At-Risk Students: | $2,753 | $4,460 | $2,870 | $3,183 |
| LEP Students: | $5,856 | $5,533 | $3,772 | $5,141 |

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

** Costs are shown per student in the program.

Note: Combined figures are based on the following proportions of students: elementary schools, 46.1%, middle schools, 23.1%, and high schools, 30.8%.

# TABLE III-8D

## SCHOOL-LEVEL COSTS FOR *VERY LARGE* K-12 SCHOOL DISTRICTS BASED ON THE WORK OF THE MONTANA PROFESSIONAL JUDGMENT PANELS IN 2006-07

| | Elem. School | Middle School | High School | Total |
|---|---|---|---|---|
| (1) Enrollment | 360 | 630 | 1,300 | - |
| (2) Base Spending | | | | |
| Regular* | $7,357 | $6,801 | $6,482 | $6,960 |
| Technology | $215 | $215 | $159 | $198 |
| Other Programs for Students with No Special Needs: | $56 | $85 | $67 | $66 |
| (3) Added Spending for Special Student Populations** | | | | |
| Special Education: | | | | |
| - *Mild* | $6,834 | $4,314 | $3,570 | $5,250 |
| - *Moderate* | $12,856 | $8,956 | $6,192 | $9,910 |
| - *Severe* | $28,469 | $19,578 | $11,462 | $21,194 |
| At-Risk Students: | $4,184 | $4,816 | $4,687 | $4,485 |
| LEP Students: | $5,677 | $3,634 | $2,270 | $4,159 |

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

** Costs are shown per student in the program.

Note: Combined figures are based on the following proportions of students: elementary schools, 46.1%, middle schools, 23.1%, and high schools, 30.8%.

## TABLE III-9

## DISTRICT-LEVEL COSTS BASED ON THE WORK OF THE MONTANA PROFESSIONAL JUDGMENT PANELS IN 2006-07

| | | Small | Mod. | Large | Very Large |
|---|---|---|---|---|---|
| (1) | Enrollment | 208 | 748 | 1,740 | 8,450 |
| (2) | District Level Spending | | | | |
| | Basic | | | | |
| | Administration | $1,368 | $875 | $406 | $259 |
| | Plant M & O | $1,359 | $1,328 | $1,328 | $1,328 |
| | Other* | $541 | $283 | $285 | $219 |
| | Special Needs | | | | |
| | *Special Education* | $4,133 | $3,736 | $955 | $1,115 |
| | *At-Risk Students* | $620 | $198 | $133 | $52 |
| | *LEP Students* | $8,816 | $14 | $277 | $313 |
| (3) | Total Spending | | | | |
| | Base Spending | | | | |
| | School Level | $8,414 | $6,973 | $7,009 | $7,224 |
| | District Level | $3,268 | $2,486 | $2,019 | $1,807 |
| | **Total Base Cost** | **$11,682** | **$9,459** | **$9,028** | **$9,030** |
| | Added Cost of Spec. Need Student | | | | |
| | ***Special Education*** | | | | |
| | ***Mild*** | ***$8,924*** | ***$8,648*** | ***$6,260*** | ***$6,365*** |
| | ***Moderate*** | ***$14,646*** | ***$12,592*** | ***$13,341*** | ***$11,025*** |
| | ***Severe*** | ***$31,420*** | ***$29,768*** | ***$30,700*** | ***$22,309*** |
| | ***At-Risk Students*** | ***$2,866*** | ***$3,720*** | ***$3,316*** | ***$4,537*** |
| | ***LEP Students*** | ***$9,310*** | ***$7,181*** | ***$5,418*** | ***$4,472*** |

* Includes legal, insurance, central office technology, and other items placed at the district level (textbooks and tuition, in some cases).

# IV. ESTIMATING THE COST OF ADEQUACY IN MONTANA

This chapter discusses how APA used the professional judgment analysis to estimate the cost of adequacy for school systems with various demographic characteristics.

## Base Cost Figure

The professional judgment approach produces results for the hypothetical districts. That information, however, needs to be translated so it can be applied to school systems with any set of demographic characteristics. For these purposes, several specific questions need to be addressed:

(1) What is the PJ base cost figure?
(2) Does the base cost differ by district size?
(3) How can the costs of serving students with special needs be used to create student weights?

Once these questions are answered, it is possible to create formulas that could be used to estimate the cost of adequacy for any school system in Montana. The base cost figures for the PJ range from a high of $11,682 (in the smallest hypothetical district) to a low of approximately $9,030 (in the large and very large hypothetical districts). For purposes of the report, the $9,030 is set as the base cost figure with the other figures used to create size adjustments.

## Developing Formulas for Base Cost Adjustment Factors: Size and Special Need Students

The PJ produced base cost figures for K-12 districts of *varying size*. The PJ approach also provided APA with information needed to generate a series of weights regarding the cost of *serving special need students*. As discussed at the beginning of Chapter III, such student weights are designed to reflect the cost of serving students with special needs relative to the base cost.

The PJ-derived figures shown in Table IV-1 indicate that the per-student base cost for the hypothetical K-12 districts varies based on school district size. They also show the different levels of cost involved with adequately educating special need students. As shown in the table, the total base cost per student is highest in small districts. This is not surprising, since these districts have fewer students across which to spread a variety of fixed education costs. Conversely, the base cost drops as district size increases and economies of scale are realized. The table also generally shows that the cost of serving students with special needs drops as district size increases and districts are able to realize some economies of scale and to centralize more services.

## Table IV-1
### School System Level Costs Including Adjustments for Size and Special Need Students
(Based on PJ Panel Work)

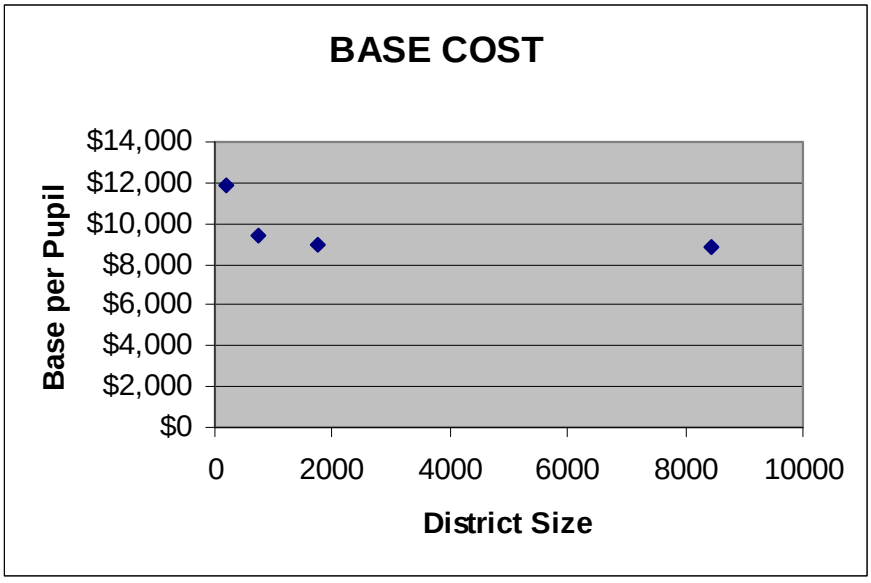
| Hypothetical District Size | Small | Moderate | Large | Very Large |
|---|---|---|---|---|
| Enrollment | 208 | 748 | 1,740 | 8,450 |
| Total Base Cost | $11,682 | $9,459 | $9,028 | $9,030 |
| Added Cost of Special Need Students | | | | |
| ***Special Education*** | | | | |
| ***Mild*** | ***$8,924*** | ***$8,648*** | ***$6,260*** | ***$6,365*** |
| ***Moderate*** | ***$14,646*** | ***$12,592*** | ***$13,341*** | ***$11,025*** |
| ***Severe*** | ***$31,420*** | ***$29,768*** | ***$30,700*** | ***$22,309*** |
| | | | | |
| ***At-Risk Students*** | ***$2,866*** | ***$3,720*** | ***$3,316*** | ***$4,537*** |
| ***LEP Students*** | ***$9,310*** | ***$7,181*** | ***$5,418*** | ***$4,472*** |

Based on the figures in Table IV-1, APA generated a series of cost weights to help reflect the cost impact of different special need student categories in different sized districts. These weights were generated simply by dividing the added cost figure for each category by the total base cost. So, for instance, to generate a mild special education student weight for small districts, one would divide $8,924 by the base cost of $11,682. This yields a cost weight of .76. Using this process, all the resulting student weights are shown in Table IV-2 below.

APA used the cost weights shown in Table IV-2 to generate a series of formulas to calculate the full PJ cost of an adequate education (including both the base and any adjustments for district size and special need students) for school systems in Montana. These are shown in the box on the following page. It is important to note that it was not feasible to run an individual PJ panel for every existing system size in Montana. APA's PJ-derived data was therefore limited to a range of 208 students (at the small district end) and 8,450 students (at the very large district end).

| Table IV-2<br>Special Need Student Cost Weights by Size<br>(Based on PJ Panel Work) | | | | |
|---|---|---|---|---|
| **Hypothetical District Size** | **Small** | **Moderate** | **Large** | **Very Large** |
| Enrollment | 208 | 748 | 1,740 | 8,450 |
| Total Base Cost | $11,682 | $9,459 | $9,028 | $9,030 |
| Added Cost of Special Need Students | | | | |
| ***Special Education*** | | | | |
| ***Mild*** | ***0.76*** | ***0.91*** | ***0.69*** | ***0.70*** |
| ***Moderate*** | ***1.25*** | ***1.33*** | ***1.48*** | ***1.22*** |
| ***Severe*** | ***2.69*** | ***3.15*** | ***3.40*** | ***2.47*** |
| | | | | |
| ***At-Risk Students*** | ***0.25*** | ***0.39*** | ***0.37*** | ***0.50*** |
| ***LEP Students*** | ***0.80*** | ***0.76*** | ***0.60*** | ***0.50*** |

APA used the base cost figures from the PJ analysis to create a size adjustment for Montana. The formula created was based on the four points that are shown graphically below.



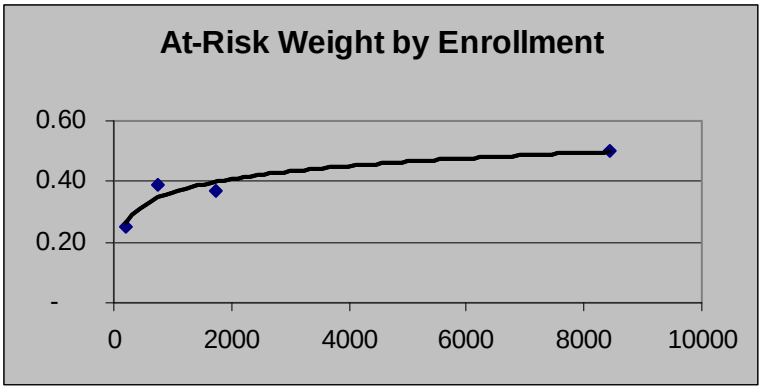
The formula that best fit this graph is the following. For any school system whose enrollment is below 1,740 students:

Base Cost = -$1,289 * Ln (Enrollment) + $18,399, ($r^2$ = 0.9369).

For any district above 1,740 students, the base cost is $9,030 per student.

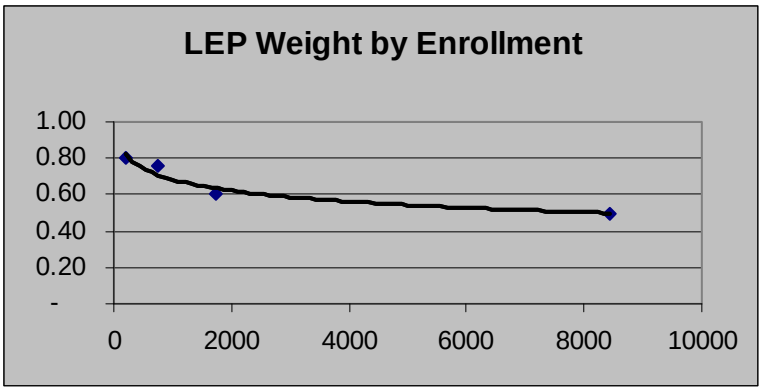
In cases where the weights were similar and did not show a relationship, APA blended them together into a single weight. For example, in mild special education there were minimal differences in the weights across size category, and therefore, APA decided to use the same weight, .77, regardless of size. Similarly, for moderate special education, APA decided to use the weight of 1.32 regardless of size. There was slightly more variation for severe special education weights determined by the panels but that variation appeared unrelated to size. As a consequence, APA decided to create a constant severe special education weight. Research around the country has shown that special education costs often are between 90% and 130% higher than the cost of a basic education. APA took this information, the two weights for mild and moderate special education and the weights developed in the hypothetical districts to create a constant severe special education weight of 2.93.

APA created formulas that generate different weights based on the size of the district for both the at-risk and LEP weights. The graphs below show both the results from the PJ panel work, the formula created as a best fit for PJ work and the lines that represent the formulas for the two special need areas.




Based on the above graph the at-risk weight formula is:

At-risk Weight = 0.0627 * Ln (Enrollment) - 0.0685, ($r^2$ = 0.9039).




Based on the above graph the LEP weight formula is:

LEP Weight = -0.0867 * Ln (Enrollment) + 1.2818, ($r^2$ = 0.9271).

# V. COMPARING THE COST OF ADEQUACY TO CURRENT SPENDING IN MONTANA

Tables V-1A and V-1B compare the cost of adequacy to actual, comparable spending in Montana for 2006-07, excluding capital, transportation, and food service. Table V-1A presents the results for K-12 school systems and V-1B shows the results for K-8 systems. Given the varied governance relationships between districts in Montana and the availability of resources from special levies, the calculation of comparable spending in Montana for 2006-07 is not easy. The figures presented in V-1A are disaggregated into four size categories of school systems: (1) small, which includes school systems of under 500 students; (2) moderate size, which includes school systems with 500-1,200 students; (3) large, which includes school systems with 1,201- 3,000 students; and (4) very large, which includes school systems above 3,000 students. The figures in V-1B are presented as a single category that includes all K-8 school systems.

Section I of Tables V-1A and B shows the demographic characteristics of the Montana school systems presented in each table. In V-1A there are 165 K-12 school systems divided into 113 small, 26 moderate, 19 large, and 7 very large school systems. Of the 130,350 students enrolled in K-12 school systems, 22,335 are enrolled in small systems, 18,308 students are in moderate systems, 31,279 are in large systems and 58,428 are in very large school systems. In V-1B there are 163 K-8 school systems enrolling a total of 16,105 students.

Section II of Tables V-1A and B indicates the total cost of adequacy for the Montana K-12 school systems as a whole in 2006-07 based on the PJ approach. For example, in Table V-1A the total cost of an adequate education in 2006-07 would be about $1,648.4 million ($1.6 billion). The cost of providing base services to all students would be $1,245.9 million ($1.2 billion). The added cost to serve students with special needs would be: $172.6 million to serve special education students; $151.3 million to serve at-risk students; $43.7 million to serve LEP students; and $34.9 million to serve Native American students. Taken together, these costs equate to $12,646 per student as shown in Section III of Table V-1A ($13,159 for K-8 systems as shown in Section III of Table V-1B).

Section IV of Tables V-1A and B display actual, comparable spending in 2006-07. These figures were calculated using 2004-05 data (which is the most current spending data available) then inflating those figures by the National Consumer Price Index (CPI) for the last two years to bring the data up to date. In the example of Table V-1A, for the given year, the 165 K-12 school systems will spend $1,024.2 million ($1.0 billion), or $7,857 per student. These figures suggest that Montana's K-12 school systems would need to spend $624.2 million more than what they are spending in order to reach an adequate level of spending not including those districts currently spending either at or above adequate levels.

To gain a better understanding of variations in resources currently available to school systems, it is important to examine separately those school systems that appear to be spending above adequate levels and those spending below adequate levels. Section V of Tables V-1A and B shows school systems spending more than the amount estimated to be adequate in 2006-07. Using the same example of Table V-1A, of the 165 school systems, 12 are spending above PJ-adequate levels. Those school systems, which enrolled 655 students, are spending $3.6 million over PJ adequacy, or $5,480 per student, on average. The school systems that are spending more than adequacy are in the small size category. Section VI of Tables V-1A and B show those school systems that are spending less than the PJ adequate level. In the example of Table V-1A, the data shows that 153 school systems are spending below adequacy and would need a total of $627.8 million, or $4,841 per student, on average, to bring them up to the PJ adequacy level.

As mentioned in Chapter III, a 6.1% salary increase was applied to all salaries in order to bring them in line with neighboring states. This adjustment is reflected in all PJ figures presented up until this point. Two alternative increases were also considered as a result of the salary comparison; Wyoming at 7.9% and Idaho at 9.3%. By using these alternative increases to calculate separate adequacy figures, it allows the analysis to ask, what if Montana were to pay its teachers like Wyoming or Idaho? Using the original 6.1% increase, the PJ adequacy totals are $1,648.4 million ($1.65 billion) for K-12 school systems, as mentioned above, and $211.9 million for K-8 school systems. If instead an increase of 7.9% comparable to Wyoming was used, the PJ adequacy figures would be $1,667.6 million ($1.67 billion) for K-12 school systems and $213.3 million for K-8 school systems. Similarly, if an alternative increase of 9.3% comparable to Idaho was used, the resulting PJ adequacy figures would be $1,682.3 million ($1.68 billion) for K-12 school systems and $214.8 million for K-8 systems.

**TABLE V-1A**

**ESTIMATING THE COST OF ADEQUACY FOR MONTANA *K-12* SCHOOL SYSTEMS USING THE PROFESSIONAL JUDGMENT BASE IN 2006-07**

| | Small | Moderate | Large | Very Large | **TOTAL** |
|---|---|---|---|---|---|
| I. School System Characteristics | | | | | |
| Range in Size of School System (Students) | < 500 | 500-1,200 | 1,201 - 3,000 | > 3,000 | |
| Number of School Systems | 113 | 26 | 19 | 7 | 165 |
| Number of Students | 22,335 | 18,308 | 31,279 | 58,428 | 130,350 |
| II. Estimated Aggregate Cost of Adequacy (millions)* | | | | | |
| Base Cost | $253.1 | $181.5 | $283.7 | $527.6 | **$1,245.9** |
| Special Education | $36.2 | $24.7 | $38.7 | $73.1 | **$172.6** |
| At-Risk | $25.7 | $23.9 | $38.5 | $63.3 | **$151.3** |
| LEP | $17.9 | $10.3 | $11.9 | $3.6 | **$43.7** |
| Native American | $8.4 | $9.0 | $10.9 | $6.6 | **$34.9** |
| Grand Total | $341.3 | $249.3 | $383.7 | $674.2 | **$1,648.4** |
| III. Estimated Cost of Adequacy Per Student* | | | | | |
| *Grand Total* | *$15,280* | *$13,616* | *$12,267* | *$11,539* | ***$12,646*** |
| IV. Actual Comparable Spending* | | | | | |
| Aggregate Total (millions) | $227.4 | $150.6 | $232.4 | $413.8 | **$1,024.2** |
| *Per Student Total* | *$10,181* | *$8,227* | *$7,430* | *$7,082* | ***$7,857*** |

**TABLE V-1A (Continued)**

| | Small | Moderate | Large | Very Large | **TOTAL** |
|---|---|---|---|---|---|
| | < 500 | 500-1,200 | 1,201 - 3,000 | > 3,000 | |
| V. School Systems with ***Higher*** Spending than the Amount Estimated to be Adequate | | | | | |
| Number of School Systems | 12 | 0 | 0 | 0 | **12** |
| Number of Students | 655 | -- | -- | -- | **655** |
| Estimated 2003-04 Adequate Spending (Aggregate in millions)* | 10.5 | -- | -- | -- | **10.5** |
| Actual 2003-04 Spending (Aggregate in millions)* | 14.1 | -- | -- | -- | **14.1** |
| Actual Spending *Over* Adequacy (Aggregate in millions)* | 3.6 | -- | -- | -- | **3.6** |
| Per Student Spending *Over* Adequacy | *$5,480* | -- | -- | -- | ***$5,480*** |

**TABLE V-1A (Continued)**

| | Small | Moderate | Large | Very Large | **TOTAL** |
|---|---|---|---|---|---|
| | < 500 | 500-1,200 | 1,201 - 3,000 | > 3,000 | |
| VI. School Systems with ***Lower*** Spending than the Amount Calculated to be Adequate | | | | | |
| Number of School Systems | 101 | 26 | 19 | 7 | **153** |
| Number of Students | 21,680 | 18,308 | 31,279 | 58,428 | **129,695** |
| Estimated 2003-04 Adequate Spending (Aggregate in millions)* | $330.8 | $249.3 | $383.7 | $674.2 | **$1,637.9** |
| Actual 2003-04 Spending (Aggregate in millions)* | $213.3 | $150.6 | $232.4 | $413.8 | **$1,010.1** |
| Actual Spending *Under* Adequacy (Aggregate in millions)* | $117.5 | $98.7 | $151.3 | $260.4 | **$627.8** |
| Per Student Spending *Under* Adequacy | *$5,419* | *$5,389* | *$4,837* | *$4,457* | ***$4,841*** |

* Figures exclude spending for capital, transportation, and food service

## TABLE V-1B

## ESTIMATING THE COST OF ADEQUACY FOR MONTANA *K-8* SCHOOL SYSTEMS USING THE PROFESSIONAL JUDGMENT BASE IN 2006-07

I. School System Characteristics

| Range in Size of School System (Students) | All K-8 Districts |
|---|---|
| Number of School Systems | 163 |
| Number of Students | 16,105 |

II. Estimated Aggregate Cost of Adequacy (millions)*

| | |
|---|---|
| Base Cost | $168.9 |
| Special Education | $25.0 |
| At-Risk | $15.2 |
| LEP | $2.8 |
| Native American | $0.0 |
| Grand Total | $211.9 |

III. Estimated Cost of Adequacy Per Student*

| | |
|---|---|
| *Grand Total* | *$13,159* |

IV. Actual Comparable Spending*

| | |
|---|---|
| Aggregate Total (millions) | $111.0 |
| *Per Student Total* | *$6,894* |

## TABLE V-1B (Continued)

| | All K-8 Districts |
|---|---|
| V. School Systems with ***Higher*** Spending than the Amount Estimated to be Adequate | |
| Number of School Systems | 6 |
| Number of Students | 119 |
| Estimated 2003-04 Adequate Spending (Aggregate in millions)* | $2.2 |
| Actual 2003-04 Spending (Aggregate in millions)* | $3.5 |
| Actual Spending *Over* Adequacy (Aggregate in millions)* | $1.3 |
| Per Student Spending *Over* Adequacy | *$11,228* |

**TABLE V-1B (Continued)**

| | All K-8 Districts |
|---|---|
| VI. School Systems with ***Lower*** Spending than the Amount Calculated to be Adequate | |
| Number of School Systems | 157 |
| Number of Students | 15,986 |
| Estimated 2003-04 Adequate Spending (Aggregate in millions)* | $209.8 |
| Actual 2003-04 Spending (Aggregate in millions)* | $107.5 |
| Actual Spending *Under* Adequacy (Aggregate in millions)* | $102.2 |
| Per Student Spending *Under* Adequacy | *$6,395* |

* Figures exclude spending for capital, transportation, and food service

# APPENDIX A

## Professional Judgment Panelists

| | | | | |
|---|---|---|---|---|
| **September 27th Panel** | Cameron | Dick | Superintendent | Broadus |
| | Carroll | Sharon | Teacher | Ekalaka |
| | Johnson | Sue | Principal | Philipsburg |
| | Koterba | Wayne | Principal | Westby |
| | LaSorte | Marilyn | Curriculum Director | Columbia Falls |
| | McCormick | Cathy | Teacher | Corvallis |
| | Miley | Patti | Teacher | Havre |
| | Olszewski | Chris | Curriculum | Golden Triangle Curriculum Coop. |
| | Powell | Rick | Principal | Miles City |
| | Redfern | Sharon | Principal | Lewistown |
| | Rispens | Dan | Principal | East Helena |
| | Rogers | Jim | Teacher | Polson |
| | Sailer | Sue | Teacher | Chester/JI |
| | Sandberg | Sarah | Business Manager | Livingston |
| | Sessions | Cathy | Teacher | Choteau |
| | Surber | Rita | Principal | Chinook |
| **September 28th Panel** | Applegate | Sharon | Teacher | Kalispell |
| | Bremer | Lori | Teacher | Red Lodge |
| | Carlson | Randy | Principal | Helena |
| | Farnum | Kip | Principal | Billings |
| | Harris | Kim | Business Manager | Helena |
| | Haverlandt | Carol | Teacher | Great Falls |
| | Jensen | Don | Principal | Thompson Falls |
| | Kelly | Dan | Teacher | Deer Lodge |
| | Kirn | Wanda | Business Manager | Poplar |
| | Last Name | First Name | Title | District |
| | Long | Vince | Teacher | Billings |
| | Lynch | Tina | Principal | Red Lodge |
| | Rapkcoch | Joe | Principal | Shelby |
| | Skiles | Carol | Special Programs Director | Dillon |
| | Thane | Mark | Principal | Missoula County |
| | Toavs | Patricia | Teacher | Wolf Point |
| | Wortman | Chris | Curriculum Director | Great Falls |
| **October 11th Panel** | Berryman | Don | Special Education | Butte |
| | Brown | Tom | Indian Education/LEP | Poplar |
| | Bushman | Judy | Special Education | Wibeaux |
| | Caye | Leslie | Indian Education/LEP | Ronan |
| | Denson | Doug | Title 1 | Twin Bridges |
| | Hagstrom | Roberta | Title 1 | Roundup |
| | Harper | Thomas | Business Manager | Billings |
| | Holmlund | Greg | Business Manager | Rocky Boy |
| | Johnson | Belinda | Special Education | Columbus |
| | Jonsson | Christine | LEP | Bozeman |
| | Muir | Patty | Special Education | Laurel |
| | Thiel | Carrie | At Risk | Kalispell |

| | Last Name | First Name | Position | District |
|---|---|---|---|---|
| **October 12th Panel** | Andersen | Gwyn | Business Manager | Browning |
| | Barnes | Bob | Superintendent | Shepherd |
| | Barrows | Brian | Principal | Sunburst |
| | Brown | Charlie | Superintendent | Lewistown |
| | Carmichael | Gary | Teacher of the Year | Whitefish |
| | Eyer | TJ | Principal | Boulder |
| | Farber | Ross | Principal | Glendive |
| | Farr | Dan | Curriculum Director | Sidney |
| | Gerhart | Beth | Principal | Great Falls |
| | Johnson | Steve | Business Manager | Bozeman |
| | Matt | John | Superintendent | Hamilton |
| | Mike | Alyson | Teacher of the Year | East Helena |
| | Raffety | Patti | Business Manager | Three Forks |
| | Redburn | Mike | Superintendent | Bozeman |
| | Riley | Barb | Trustee | Columbia Falls |
| | Schrupp | Joanne | Trustee | Colstrip |
| | Shreeve | Dave | Superintendent | Forsyth |
| | Walker | Jule | Superintendent | Plevna |
| | Watne | Suzi | Library/Media Coordinator | Helena |
| **December 9th Panel** | | | | |
| (Expert Overview Panel) | Bilodeau | Tom | Director of Pesearch and Bargaining | MEA-MFT |
| | Johnson | Steve | Assistant Superintendent | Bozeman |
| | McNeal | John | Retired Superintendent | |
| | Messinger | Bruce | Superintendent | Helena |
| | Miller | Krik | Superintendent, State Board Member | Havre |
| | Schmidt | Joan | School Board | Fairfield |

**APPENDIX B**

# MONTANA STANDARDS SUMMARY

## Accreditation

The State Board of Public Education is responsible for establishing standards of accreditation to which all schools must adhere and ensuring that schools meet those standards in order to maintain their accreditation. Schools may be accredited for a period of 1, 2, 3, 4 or 5 school years. A requirement of accreditation is for all school districts to develop, implement, evaluate, and revise a five year comprehensive education plan that demonstrates how schools will be meeting or achieving the state contend standards. In addition, in 2005 the Montana legislature defined a basic system of free quality public elementary and secondary schools.

## Student Assessment

Montana assesses all students via two types of tests annually, criterion-referenced tests and norm-referenced tests:

1. The Iowa Tests, norm-referenced tests (NRT) compare student achievement to achievement of a national norm group. The Iowa Tests (NRT) are administered in grades 4, 8, and 11 in Reading, Language Arts, Mathematics, Social Studies and Science.

2. The criterion-referenced tests (CRT) are required by the No Child Left Behind Act and compare student achievement to MT's state content standards. Montana's CRTs are administered in grades 4, 8, and 10 in Reading and Mathematics.

As required by the No Child Left Behind Act of 2001, all students who are identified as "Limited English Proficient" must be assessed annually for English proficiency in the five domains of speaking, listening, reading, writing, and comprehension. This language assessment does not replace the State's Criterion Referenced Tests (CRTs) or the Norm Referenced Tests (NRTs) as required by state law. All LEP students must participate in the state assessments as well as the assessment of English Language proficiency.

Similarly, as required by IDEA, all students who are identified as needing special education services must participate in the state assessments. To ensure the participation of all students in the state's accountability system, Montana has developed the Criterion-Referenced Test Alternate Assessment (CRT-Alternate). The CRT Alternate is an evidence-based test that is aligned with Montana's content standards through expanded benchmarks and measures student performance based on alternate achievement standards.

It is expected that only those IDEA-eligible students with the most significant cognitive disabilities will participate in the CRT-Alternate.

**CRT Test Implementation Schedule**

| | Reading | Math | Science |
|---|---|---|---|
| **Spring 2006: Grades 3- 8, 10** | X | X | |
| **Spring 2007: Grades 3-8, 10** | X | X | |
| **Spring 2008: Grades 3-8, 10** | X | X | |
| **Spring 2008: Grades 4, 8, 10** | | | X |

**Performance Indicators on the CRT**

The following performance indicators have been developed by the state for the CRT. Students meeting the proficient or advanced indicator have also met AYP.

- **Advanced:** This level denotes superior performance.
- **Proficient:** This level denotes solid academic performance for each benchmark. Students reading this level have demonstrated competency over challenging subject matter.
- **Nearing proficiency:** This level denotes students who have partially mastered tested knowledge and skills.
- **Novice:** This level denotes students that have begun to attain prerequisite knowledge and skills but need fundamental help to meet the benchmarks.

**NRT Testing**

The NRT tests students annually in grades 4, 8, and 11 in the Fall and Spring across five subjects: reading, language arts, math, social studies, and science.

## Content & Performance Standards

Montana has developed content and performance standards in the following areas that guide the type of instruction schools must provide. With the exception of Career & Vocational Technical Education, benchmarks have been created that define where the state expects students to be in each of these areas by grades 4, 8, and 12. For career and technical education, the benchmarks are slightly different, as noted below. Student progress in meeting Math, Science, and Reading standards are tested with the CRT exams.

- **Arts**
- **Career & Vocational-Technical Education**

    - Benchmarks define expectations for students' knowledge, skills and abilities along a developmental continuum focused at three points—at the end of grade 8, the end of one high school course, and the completion of six units of vocational coursework.

- **Communication Arts (includes the following five subjects):**
    - Reading
    - Literature
    - Media Literacy
    - Speaking & Listening
    - Writing
- **Health Enhancement**
- **Library Media**
- **Mathematics**
- **Science**
- **Social Studies**
- **Technology**
- **Workplace Competencies**
- **World Languages**

## High School Graduation Requirements

A school district can establish its own requirements for graduation. The minimum graduation requirements are established by the Montana Board of Public Education and are found in ARM 10.55.905. A student has to complete a minimum of 20 credits in order to receive a Montana high school diploma with 13 credits in the following courses:

(a) 4 credits of English language arts;
(b) 2 credits of mathematics;
(c) 2 credits of social studies;
(d) 2 credits of science;
(e) 1 credit of health enhancement, with 1/2 credit each year for two years;
(f) 1 credit of arts;
(g) 1 credit of vocational/technical education

## Five-Year Old Schooling and Preschool Programs

Elementary school districts are required to establish or make available a program capable of accommodating all children in the district who will be 5 years old on or before September 10 of each school year. The program must be an integral part of the elementary school and must be financed and governed accordingly.

School districts may also elect to establish a free preschool program for children between the ages of 3-5; however, financing of such programs may not be supported by money available from state equalization aid.

## Minimum # of Hours of Instruction Per Year

The school fiscal year begins on July 1 and ends on June 30. The minimum aggregate hours that must be conducted during each school fiscal year are:

(a) 720 hours for grades 1 through 3; and
(b) 1,080 hours for grades 4 through 12.

## No Child Left Behind Federal Requirements

Adequate Yearly Progress requirements:

- Schools are required to have at least 95% of all students participate on the state CRT tests in math and reading in order to meet the AYP requirements.
- High schools must show an 80% graduation rate (or improvement toward that goal) in order to make AYP.
- Elementary and middle schools mush have an 80% attendance rate (or improvement toward that goal).

## Adequate Yearly Progress Performance Targets

Montana has yet to set its incremental performance targets between now and 2013-14 school year when the goal is to have 100% of Montana students scoring proficient or above in reading and mathematics. According to the Montana Consolidated State Application Accountability Workbook, the intermediate goals will be established using the school year 2005-06 data from grades 3-8 and 10 as soon as it is available.

The targets that the state set for the 2005-06 tests were: 55% proficient or above in reading and 40% proficient or above in math.

## 2004 CRT Results

The following table displays the percentage of students meeting or exceeding proficiency levels in reading & math on the 2004 CRTs and attendance and graduation rates. Data are displayed for all students combined and for economically disadvantaged students (students qualifying for free and reduced price lunch).

| Group of students | Reading proficiency score | Math proficiency score | Attendance rate | Graduation rate |
|---|---|---|---|---|
| All students | 68% | 59% | 94% | 83% |
| Economically disadvantaged students | 55% | 44% | NA | NA |

What is unusual about the numbers in the table above is that the percentage of students scoring proficient or above in reading and math on the 2004-05 tests exceed the targets for 2005-06 for all students and for those who are economically disadvantaged. As noted in the previous page, the targets that the state set for the 2005-06 tests were: 55% proficient or above in reading and 40% proficient or above in math. So, assuming kids do as well in 2005-06 as they did in 2004-05, they should have no problem meeting the state's AYP goals. However, between now and 2013-14 considerable progress needs to be made in order to reach the goal of 100% proficiency for all students. Data were unavailable regarding the percentage of economically disadvantaged students' attendance and graduation rates so it is uncertain how those kids are doing in meeting AYP as compared to the group as a whole.