



Augenblick, Palaich
and Associates, Inc.

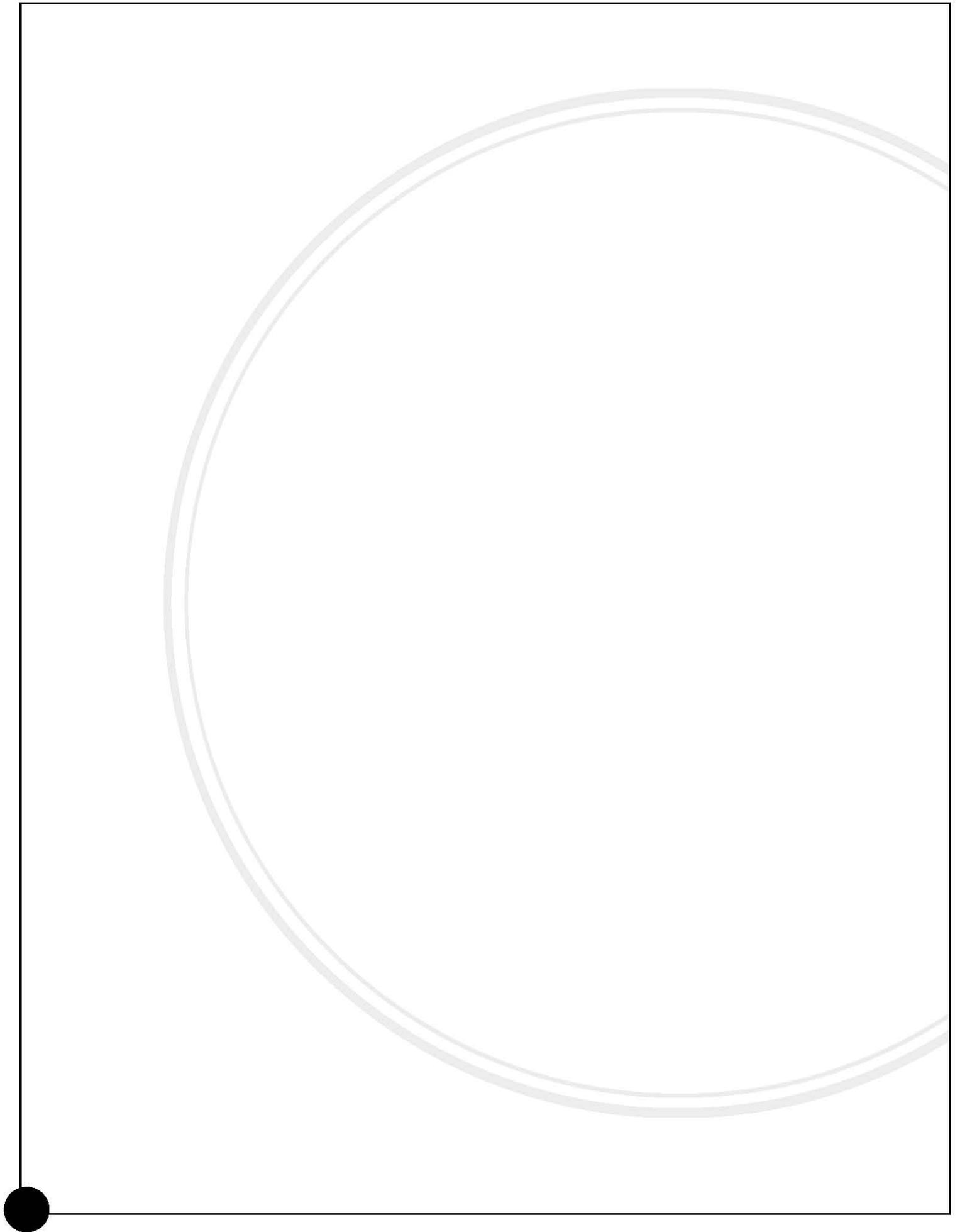
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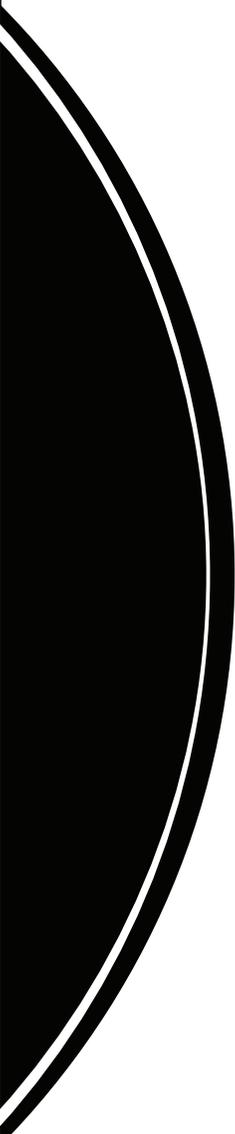
A COSTING OUT STUDY PREPARED
FOR THE PENNSYLVANIA
STATE BOARD OF EDUCATION

By Augenblick, Palaich and Associates, Inc. (APA)

Denver, Colorado

May 8, 2007





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INTRODUCTION

In October 2006, the Pennsylvania State Board of Education issued a request for proposals (RFP) seeking a contractor to conduct a statewide education “costing out” study. The RFP indicated the Board’s desire for an analysis of: 1) the level of equity in Pennsylvania’s school funding system and; 2) an answer to the fundamental question of the overall level of funding needed for students, schools and districts to meet state and federal performance expectations. The Board received bids from several contractors and, in mid-December, selected Augenblick, Palaich and Associates, Inc. (APA), a Denver-based private education policy consulting firm, to conduct the costing out study.

As part of its work for the Board, APA is required to submit this interim report in order to discuss work conducted and progress made to date in carrying out the costing out study. The report therefore focuses largely on APA’s efforts since mid December 2006, when the firm was officially selected to conduct the study. A final report, which will include the firm’s full findings and recommendations, is due to the Board by November 30, 2007.

It should be noted that the report does not include the interim results of analyses we are in the process of conducting since results may change as further analysis is undertaken — based on experience in other states, our view is that it would not be helpful in the long run to release incomplete results, since they could be misinterpreted or misused.



OVERVIEW OF COSTING OUT STUDY APPROACHES AND GOALS

In terms of determining the level of equity in Pennsylvania's school funding system, APA's proposal involved analyses from both student and taxpayer perspectives. From the student's perspective, equity will be measured by examining the extent of spending variation in school districts throughout the Commonwealth. From the taxpayer perspective, APA proposed to analyze combined property and other tax data along with district-by-district state aid levels to identify the overall level of variation in taxpayer effort, the relationship of this effort to local tax capacity, and the equity of state aid which districts receive.

In terms of determining the overall level of funding needed to meet performance expectations (sometimes referred to as the cost of "adequacy" or an "adequate" education), the Commonwealth's RFP required use of three nationally-recognized study approaches:

1. A "successful school district" (SSD) approach which identifies a base, per-student cost by examining high performing school districts as measured against state performance expectations.
2. A "professional judgment" (PJ) approach which relies on the expertise and experience of educators to specify the resources, staff, and programs that schools need to meet performance expectations.
3. An "evidence based" (EB) approach which uses education research to help provide answers about how resources should be deployed in schools so that students can meet performance expectations.

In response to the RFP, APA also proposed using a series of statistical analyses to support the three study approaches listed above and to provide primary data for other key costing out issues such as geographic cost of education differences, transportation costs, and certain district-driven cost differences including student population growth and decline and population scarcity or density issues.

The results produced through all these analyses will ultimately enable APA to identify the resources and associated costs which are required for the Commonwealth's education system to meet the goals expected of it.

It is important for readers to understand that none of the study approaches described above, by themselves, is sufficient to answer the questions posed by the Commonwealth's RFP. It is therefore a misuse of the multiple approaches to attempt using them individually to provide policymakers with a set of choices that may vary widely in cost. Rather, the proper methodology is to recognize that each approach is only capable of giving a partial cost picture and that only when results are combined together in a logical way can a single cost answer be produced.

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INITIAL APA WORK

APA began work immediately on the Commonwealth's costing out study. In late December staff members met with the costing-out committee of the State Board of Education and the committee's project manager in Harrisburg, as required by the contract with the Board. This meeting was used to clarify overall project goals and expectations, discuss methodological issues, and answer whatever questions committee members had regarding APA's proposed work. In January APA staff members again met with the committee in Harrisburg as required by the contract. During the course of the same trip, APA staff met with a group of education policy stakeholders identified by the Board to discuss the project and its objectives and methodologies. APA staff also met with several statewide education associations to solicit their participation in the process of selecting individuals who might participate in various aspects of the study process.

In addition to these meetings, the bulk of APA's initial work can be divided into three main categories:

1. Assembling and organizing needed data for the costing out study.
2. Securing and negotiating contracts with key subcontractors.
3. Researching and identifying the Commonwealth's performance standards and expectations for students, schools, and districts.

ASSEMBLING DATA

Upon award of the contract, APA began assembling a data request to present to Pennsylvania state agencies, including the Pennsylvania Department of Education. Robert Feir, who is serving as liaison between APA and the Board, played a crucial and effective role in working directly with the department to make sure that the data request was processed and responded to in an effective and timely manner.

The data request was put together in consultation with those experts which APA has subcontracted to conduct specific elements of the costing study including, for example, the transportation cost analysis. However, while subcontractors had input into the scope of the data request, all communication with Commonwealth agencies was handled directly by APA. By coordinating the request in this fashion, APA was able to eliminate any possibility of confusion concerning the data requested and could ensure that all parties involved work with the same data elements.

SECURING SUBCONTRACTORS

The requested data forms the backbone of several APA analyses including the successful school district (SSD), the transportation cost analysis, and various other statistical and equity-based analyses. APA's request, submitted to the Commonwealth by the end of January 2007, included six major categories:

1. District demography and enrollment
2. District revenue and expenditures
3. District performance data, including standardized testing performance, graduation and attendance rates, and percentage of graduates attending college.
4. District average salary and employee benefit information
5. District characteristics such as geographic size, residential and commercial property values, and tax rates
6. Transportation data including such items as numbers of pupils transported and miles transported, busing data, and transportation contractor data.

Most of the data requested was available only through agencies of the Commonwealth. These agencies responded efficiently and diligently to APA's request, and were able to supply almost all the required data by early March 2007. For a more complete list of the data that was requested, please see Appendix A of this report.

At the same time it put together its data request to the Commonwealth, APA also began work in January to secure subcontracts with organizations to help conduct specific pieces of the costing out study. These organizations were identified in APA's November 2006 proposal to the Board to conduct the statewide costing out study, and they had agreed in principle with APA to specific portions of the study's work. However, once the contract with the Board was awarded, specific subcontracts, including scopes of work and deliverable deadlines, had to be negotiated, drafted, and finalized with each subcontractor. Such subcontractors include:

- Educational Policy Improvement Center whose central role is in conducting work under the evidence-based (EB) approach discussed above.
- A New York University-based consulting team whose function is to assist APA with a series of statistical and cost function analyses.
- A Temple University-Based Consulting Team which is providing general advice and support for the professional judgment (PJ) analysis and is playing a key role in contacting and securing PJ panel participants.
- The Public Good, a Colorado-based consulting firm which will assist APA in its successful schools analysis.
- The Education Commission of the States (ECS), which is a national non-profit education policy organization of which Pennsylvania is currently a

member. ECS is providing staffing support to assist in carrying out PJ panel discussions.

- A Penn State University-based consultant, Dr. William Hartman, who is playing an important role in the transportation analysis conducted as part of the costing out study.
- A Muhlenberg College-based consultant, Dr. Michelle Moser Deegan, who is providing assistance in the SSD analysis and in conducting public outreach meetings as part of the costing out study.
- I. A. Design, a Pennsylvania company that will assist in APA's report printing and design.

IDENTIFYING PENNSYLVANIA'S PERFORMANCE STANDARDS

The final piece of APA's initial work efforts under its contract with the Board was to research, identify, and write a brief summary of the Commonwealth's current performance standards and expectations for its public schools. This required APA to review the state's education laws and policies and to identify any student performance and testing requirements, academic content standards, or other indicators used to measure school and district performance. It also required APA to analyze how the state's performance expectations mesh with those contained in the federal No Child Left Behind Act (NCLB). After conducting its research, APA produced a document for the Board's review and comment. This document received Board approval and was subsequently presented at a January 24th meeting of education policy stakeholders in Harrisburg, Pennsylvania. APA staff attended this meeting, presented and explained the standard, and was available to answer any questions which arose.

This finalized document, which APA refers to as the "Pennsylvania Standard," is shown in Appendix E. It plays a central role in several subsequent APA analyses for the Commonwealth's costing out study. In particular, elements of the standard are being used to guide the overall work for the three adequacy study approaches (SSD, PJ, EB) that APA is now conducting. APA is utilizing the standard to define the goals which each of the three approaches are designed to achieve. This is crucial to identifying a target level of desired performance and an associated cost with achieving that target.

To achieve a comprehensive look at the costs of meeting Pennsylvania's performance expectations, APA will utilize the three study approaches to take three different cost "snapshots." Each of the three study approaches will therefore be used to measure a chronologically different target. The advantage of doing this is that it allows APA to triangulate findings from the three study approaches. It also properly recognizes that the Commonwealth's expectations are currently designed to change and dramatically increase over time. For instance, with regard to student reading and math performance expectations, Pennsylvania currently requires that, for schools to meet adequate yearly progress goals, a minimum of 54 percent of students must score at the proficient level or above in reading and 45 percent must achieve such scores in math. By 2010, however, these targets respectively increase to 63 and 56 percent. And by 2014, the targets both increase to 100 percent, or near-universal proficiency.

The cost snapshots taken by each of the three approaches include:

1. SSD Approach. APA is using the SSD approach to identify the spending in those Pennsylvania school districts that *currently* meet high performance requirements.
2. PJ Approach. APA is using the PJ approach to identify the full costs required to enable all districts to meet *2014 performance expectations*. By 2014, 100 percent of students in the Commonwealth are expected to achieve proficiency in reading and math as measured by state assessments.

3. EB Approach. The EB approach is being used to identify costs associated with meeting the Commonwealth's *2012 performance expectations*.

By using the three approaches in this manner, study findings can ultimately be combined to produce the most accurate estimate possible of the cost associated with meeting state and federal education performance goals and expectations.¹

This excludes capital expenditures because a separate, very expensive study would need to be used to estimate these costs. Such a study was not included in the Board's RFP.

The next section of this report offers further detail on APA's progress in carrying out each of the three study approaches.

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¹ It should be noted, however, that none of the three approaches address costs associated with student transportation or food services.



PROGRESS IN CONDUCTING SSD, PJ, AND EB ANALYSES

1. *The Successful School District (SSD) Approach*

As discussed earlier in this report, the successful school district (SSD) approach identifies a base, per-student cost by examining high performing districts as measured against state performance expectations. Only base costs can be identified through this analysis, and any additional per-student costs (such as those associated with serving low income (also referred to here as poverty), special education, or English language learner students) must be identified using another method, such as the PJ approach.

IDENTIFYING “SUCCESSFUL” DISTRICTS

A school district’s “success” or failure can be determined using any number of variables or criteria. In truth, districts deemed “successful” for purposes of this study are those which meet specific criteria selected by APA. There are, no doubt, other Pennsylvania districts which one might identify as successful or highly effective if different analysis criteria were selected. For instance, researchers could identify successful districts by surveying educators and other experts from around the state, by reviewing performance on standardized tests, or by taking into account other measures such as graduation or attendance rates. Districts can also be viewed differently depending on whether the researcher focuses on current performance or growth from year to year, or on whether current or future goals are selected as the defining target of success.

For Pennsylvania’s costing out study, APA selected a two-pronged approach to identify successful school districts. This approach includes:

1. An “absolute” standard: This identifies districts whose students currently meet a defined performance standard. For this study, the absolute standard was defined as those districts that currently achieve at levels high enough to comply with the Commonwealth’s reading and math standards for 2012. The 2012 standards require 81 percent of students to score proficient or

above on reading assessments and 78 percent proficient or above on math. The Pennsylvania System of School Assessments (PSSAs) are used to measure these results.

2. A “growth” standard: This identifies districts whose year-to-year growth in PSSA test scores indicate that they will have 100 percent of students scoring proficient or above by 2014 in both reading and math. For this study, the growth standard was measured by tracking the progress of specific cohorts of students. For example, APA tracked the PSSA scores of each district’s 5th graders in 2002, and then examined how those students fared three years later as 8th graders on the 2005 PSSAs. This level of analysis was possible because APA had access to the past five years of PSSA reading and math performance data. The cohorts which APA examined included:

- a. Student 5th grade scores in 2002 and 8th grade scores in 2005;
- b. Student 8th grade scores in 2002 and 11th grade scores in 2005;
- c. Student 5th grade scores in 2003 and 8th grade scores in 2006; and
- d. Student 8th grade scores in 2003 and 11th grade scores in 2006.

For each district, progress was measured by taking the average percentage increase in performance of all four cohorts combined. This process was done separately for reading and math scores. For example, if two district cohorts averaged a 2 percent performance increase per year in reading, and the other

two averaged 4 percent, the district was deemed to have an average reading growth rate of 3 percent per year. Based on current PSSA scores, this 3 percent could then be projected out to 2014 to determine if the district would reach 100 percent reading proficiency.

There are several advantages to using both of the above standards in conducting an SSD analysis. First, using the absolute standard alone could exclude districts which are making significant positive strides in educating their students. Such districts, which might not currently meet the absolute standard, could very well be on track to do so over time. These districts may also be confronted with larger numbers of low income, English language learner, or other special need students, and are worth including in the overall SSD analysis because of their verified ability to improve student performance over time. Second, using a growth standard by itself could result in the exclusion of districts which currently have very high performing students but whose overall growth in performance is slower. These districts may already be performing at such high levels that more rapid growth is extremely difficult to achieve. By combining absolute and growth standards, the resulting SSD analysis becomes more robust and benefits from two different means of defining success.

Finally, by incorporating a cohort analysis into the SSD approach, APA is able to track how actual groups of students are progressing as they move through school. This is a key piece of information to consider because it allows “success” to be defined, at least in part, by whether a district is able to maintain momentum over time in student learning. For example, the cohort approach allows APA to exclude districts where students may start

strong in 5th grade but then show performance decline in middle school. This again provides a more robust view of overall district effectiveness.

EXAMINING SUCCESSFUL DISTRICT SPENDING

There are several options to analyze the spending of districts identified as successful using the process described above. The most simple approach is to examine the base, per-student spending for each district, excluding spending for any students with special needs. Such an approach, however, does not allow for more detailed district comparisons including, most notably, those associated with spending efficiency. Such an efficiency analysis can help identify those districts that not only outperform others in the state academically, but also those that do so without spending significantly higher resources than their other successful peers.

Because the Pennsylvania State Board of Education is interested in examining such efficiency, APA is taking a more comprehensive approach to reviewing successful district spending. In particular, APA is using data provided by Pennsylvania to examine successful district resource efficiency in three key areas:

1. Instruction: Measured by the numbers of teachers per 1,000 students.

2. Administration: Measured by the number of administrators per 1,000 students.

3. Maintenance and Operations (M&O): Measured by overall M&O spending per student.

In each of these three areas, APA is conducting a separate analysis designed to compare the successful districts with each other. Comparisons are not being made to other school districts in the Commonwealth because the focus of our research, and the priority of this portion of the costing out study, is on understanding the spending associated only with those districts that are deemed successful in terms of producing a specific level of student achievement.

Once the basic, per-student spending levels are determined for those successful districts that pass the efficiency screens, an overall average will be generated. This base cost will then be used in conjunction with special need student cost weights generated through the professional judgment approach.

2. The Professional Judgment (PJ) Approach

APA's work on executing the PJ analysis to date has focused on several activities:

- 1) Analyzing statewide data to determine the enrollment characteristics of a series of hypothetical schools and districts.
- 2) Identifying and selecting PJ panel participants.
- 3) Conducting PJ panels.

With regard to the first activity, PJ participants use hypothetical schools and districts as part of a simulation exercise where they draw upon their own experience to determine the staffing and other resources needed to meet state and federal performance standards. To identify these hypotheticals APA examined statewide data to determine average school sizes, grade configurations, and enrollments of special need students among the Commonwealth's school districts. Based on observed characteristics in the data, hypothetical districts with specific special need student enrollments were designed for five different size groups: very small, small, moderate, large, and very large. These categories are shown in the table below. The table also shows the number of districts in Pennsylvania which fall in each category, the percentage of the state's district total and overall enrollment (ADM) by size category, as well as average special need student enrollment percentages.

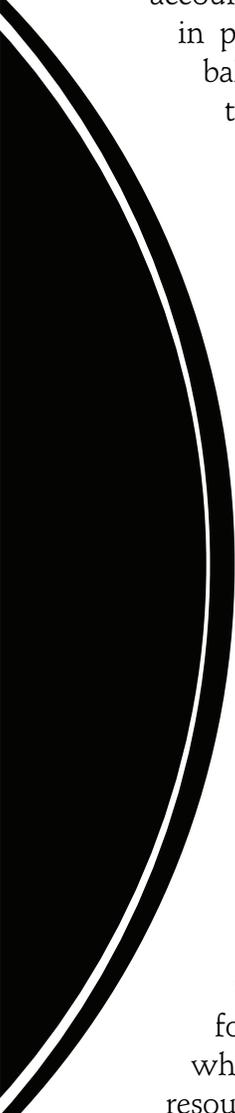
Grouping the hypothetical districts by size serves two important functions. First, it

allows the PJ analysis to take into account how size and enrollment differences might effect the staffing and resources needed for different schools and districts. Second, it allows PJ panelists, who are themselves selected from districts of varying sizes, to better relate to the hypothetical situations placed before them. To see the hypothetical schools which panelists analyzed at the first set of PJ meetings held by APA in March 2006, please see Appendix B. This appendix shows the student enrollments for each hypothetical district size category along with the types of schools (elementary, middle, high) found in those districts. These hypotheticals were reviewed by the Pennsylvania State Board of Education and were reviewed and discussed at additional stakeholder meetings conducted by APA staff in Pennsylvania.

With regard to identifying and selecting PJ panel participants, APA is working in cooperation with the State Board's project manager to identify those persons (including superintendents, principals, teachers, business managers, special need student experts) required

Distribution of Actual Pennsylvania Districts Using Hypothetical Size Categories

Size	Range in Size	Number of Districts	% Districts	% ADM	Size of Hypothetical	% Poverty	% Special Education		% Gifted	% ELL
							Mild	Sev.		
Very Small	< 1,000	65	13.0%	2.8%	715	38.4%	15%	2%	2.5%	0.4%
Small	1,000-2,500	203	40.5%	19.2%	1,820	32.5%	13%	2%	3.2%	0.9%
Moderate	2,500-5,000	153	30.5%	29.7%	3,380	23.0%	12%	2%	4.0%	1.1%
Large	5,000-10,000	64	12.8%	24.1%	6,500	24.3%	13%	2%	4.4%	2.1%
Very Large	> 10,000	15	3.0%	12.6%	15,600	35.2%	13%	2%	4.3%	5.7%



to create balanced panel representation. APA plans to conduct a total of ten panels including a statewide review panel. In constructing these panels, APA is attempting to take into account geographic diversity and diversity in panelists' grade-level expertise. Such balance on the panels will help ensure that the process taps the widest range of available expertise.

For more detailed information on the process APA is using to identify and select PJ panelists and for the overall strategy for organizing panels, please see Appendix C. Also, Appendix D contains a copy of the phone guide designed by APA for use in contacting prospective PJ participants. These processes were used to organize and conduct a first series of school-level PJ panels in Harrisburg during the week of March 26. Three separate panels were convened at that time: 1) A panel which examined the school and district-level resources needed for very small districts to meet the Commonwealth's 2014 student performance expectations; 2) a panel which examined the school-level resources needed for small sized districts to meet 2014 performance expectations; and 3) a panel which examined the school-level resources needed for moderate, large, and very large districts. Each panel was facilitated by two APA staff members.

APA staff also presented all panelists with information regarding the purpose of the

costing out study, and how the PJ process is designed to work. Panelists reviewed the summary of Pennsylvania performance standards (shown in Appendix E of this report) and were instructed to equip their hypothetical schools and districts with only those resources deemed necessary to meet 2014 performance expectations.

A second set of PJ panels was conducted in Harrisburg the week of April 16th, and a third set will be conducted the week of May 7th in Pittsburgh and Philadelphia. A statewide review panel, which will review all work of the earlier panels, will be conducted at a later date.

While PJ panels are being held in three of the nine regions of the state, participants have been selected from all of the regions. In addition, APA personnel are conducting informal discussions with school board members, parents, and business representatives in the other six regions.

3. Evidence Based (EB) Analysis

APA is working closely with the Educational Policy Improvement Center (EPIC) at the University of Oregon to carry out an EB analysis as part of the Commonwealth's costing out study. The main focus of the EB work is the construction of online simulations for elementary, middle school, and high school prototypes that allow simulation participants to weigh what the research says about effective programmatic changes at the school level. Participants in the simulation then select the most appropriate programs and other changes needed to meet school and district performance expectations. The selection of such changes allows APA and EPIC to then determine adequate compensation, FTE, and other required spending.

The online simulations, which are currently being constructed, will be completed by May 25th, 2007. The development work which has taken place thus far includes the compilation and organization of accurate baseline data that includes information on student enrollments, staff, and expenditures. APA has worked to develop and provide this data to EPIC staff. This work has entailed collecting and analyzing the salary information and FTE counts for all staff categories and collecting and organizing district expenditures by function and object.

APA has now also begun the process of identifying and selecting Pennsylvanians to participate in the online simulation. These participants will include approximately 60 school and district level leaders (such as principals, superintendents, and business managers). There will also be a group of 20 business leaders selected from around the

Commonwealth, and 20 school board members. The pool of 60 education leaders has been identified using the same process that was utilized to identify PJ panel participants. The group of 20 business leaders and 20 school board members are currently being identified in consultation with the Board's project manager. All participants will be working on the simulation exercise between late May and mid-June.

Another key contribution from EPIC thus far in the study has been helping to identify research-based resource starting points for use in APA's PJ panels. The starting points, which are shown in the table below, are being shown to PJ panelists in order to give them an idea of the levels of certain personnel in different settings (based on size and grade span) that research suggests is needed to reach state and federal performance standards.

EB Resource Starting Points for PJ Panel Discussions

Regular Education Personnel	Very Small District		Small District			Moderate, Large, Very Large District			
	K-6	7-12	K-5	6-8	High School	K-5	6-8	High School 1080 Pupils	High School 1800 Pupils
<i>Classroom Teachers</i>	22.3	13.2	24.4	16.8	22.4	24.9	30.0	43.2	72.0
<i>Other Teachers</i>	4.5	2.6	4.9	3.4	4.5	5.0	6.0	8.6	14.3
<i>Librarians/Media Specialists</i>	1.0	0.5	1.0	0.5	0.5	1.0	1.0	1.0	1.5
<i>Technology Specialists</i>	1.0	0.5	1.0	0.5	0.5	1.0	1.0	1.0	1.5
<i>Counselors</i>	1.0	1.0	1.0	1.0	1.5	1.0	2.0	3.0	5.0
<i>Principal</i>	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
<i>Assistant Principal</i>				0.5	1.0		0.5	2.0	4.0
<i>Instructional Facilitator</i>	1.0	1.0	1.0	1.0	1.5	1.0	2.0	3.0	5.0
<i>Teacher Tutor</i>	1.0	0.5	1.0	1.0	1.0	1.0	1.5	2.0	3.0
Other Costs									
<i>Professional Development</i>	\$46,200	\$39,600	\$50,400	\$50,400	\$67,200	\$51,480	\$90,000	\$129,600	\$216,000

APA has found that providing such research-based personnel numbers offers a useful means of starting PJ panel discussions. While EPIC reviewed the Pennsylvania student performance goals provided by APA (and shown in Appendix E) it should be noted that these numbers are drawn from studies not necessarily conducted in Pennsylvania or focused on Commonwealth schools and do not necessarily benefit from the input of Pennsylvania education experts. The numbers are therefore more useful as PJ discussion starting points than as definitive answers regarding the levels of resources required to meet Pennsylvania's specific performance goals.

In determining the resource starting points, EPIC drew from two main sources:

- 1) Existing adequacy funding research performed in other states; and
- 2) Its own established database of more than 400 education research studies.

Regarding the first source of information, EPIC reviewed and assembled information from adequacy funding models in six states: Hawaii, Kentucky, Oregon, Washington (2007), Wisconsin, and Wyoming. Each of these adequacy studies based their results at least in part, on a review of educational research. EPIC researchers classified staffing quantities and expenditures from each study into personnel

categories identified for use by APA's Pennsylvania PJ panels. When the personnel categories did not match exactly, researchers made notes regarding what was included in the category. After reviewing each model, adjusting the staff or expenditures based on proportional enrollments between models, and adjusting for inflation, EPIC averaged quantities of resources specified by each model. In some categories, EPIC averaged the adjusted quantities from all six models. In other categories, it was not possible to average across all of the models because one or more of the models did not provide specific data for that category or included the data in a manner that could not be disaggregated. Data that were clear outliers were excluded from the averages. In categories where no data was available from any model, EPIC relied on research evidence whenever possible.

Regarding the second source of information, EPIC drew upon an extensive database of research on effective educational practices. This database, which draws on more than 400 studies on education practices, was developed as part of the 2007 Washington Adequacy Funding Study. EPIC relied on this database to find research sources for many of the personnel categories included in the Pennsylvania PJ panel discussions. These sources were used to further inform adequate resource needs for each category and were especially useful for categories in which the funding models provided little or no information.

EPIC assimilated data from the six models and information from the research database to estimate staffing quantities and expenditure amounts for specific personnel cate-

gories to be used in the Pennsylvania PJ discussions. There were a few categories that were not addressed by the six reviewed models or any conclusive research. In these instances, EPIC relied on its own professional judgment to estimate what resources were necessary for the hypothetical school.

IV

SUPPORTING STATISTICAL, COST FUNCTION, AND TRANSPORTATION ANALYSES

Supporting statistical and cost function analyses are currently being conducted by a subcontracted team of experts from New York University. This team requested and received from APA 2005-06 school year expenditure data as well as data on: outputs (test scores, graduation rates, AP test taking, SAT test taking and scores), student educational characteristics (percent or numbers of ELL, poor, disabled, gifted students), district characteristics (urban, rural, size, property values), district demographic characteristics (education, income, housing values etc.) and teacher salaries.

Using this data, the NYU team has decided on the order of school cost function estimates, and has begun producing estimates for the simplest models. Next steps in the NYU team's work include:

- Estimating more complex models that include taking into account the endogeneity of test scores and that try various ways to include multiple outputs.
- When a best-estimated equation is identified, writing a report that describes

the cost function and analyzes the results in policy terms addressed to an informed non-economist.

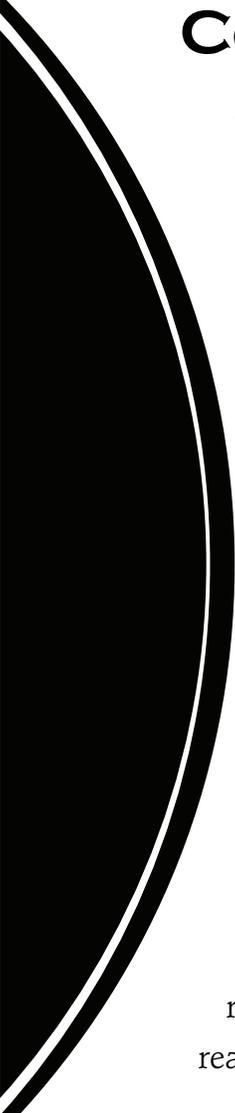
- Providing a technical appendix that documents exact procedures, provides advice about how the cost function analysis can be used to determine adequate school financing, and analyzes the efficiency of districts.

The NYU team is on schedule to finish its portion of the study by July 1, 2007.

With regard to undertaking transportation cost analyses, APA's activities to date have involved three main categories.

1. Specifying and obtaining data: The data elements that were needed to conduct the transportation analyses were identified and submitted to the Pennsylvania Department of Education. These included: number of pupils in various groupings; bus data; detailed expenditure data; transportation subsidy data; and other district characteristics. All of these elements were requested for each district and in an electronic spreadsheet format.
2. Data analysis: Using the data provided by PDE, a series of analyses were carried out to provide descriptive statistics about the costs of transportation. Many of the analyses had total results as well as by rural and urban districts. The analyses included:
 - *Expenditures by total, current, support, and transportation categories.*
 - *Percentage of transportation expenditures of total, current, and support expenditures.*

- *Density comparisons, both ADM and district population per square mile.*
 - *Pupils transported, by number, type and share of pupils with breakouts by public and nonpublic pupils.*
 - *Cost per student, state subsidy per pupil, and net cost to district per pupil, and district percent share of transportation costs.*
3. Panel of experts: On April 10, 2007, a meeting of transportation experts was held to provide additional input for the analyses. Through prior arrangements, the PASBO Transportation Committee served as the panel of experts. They were charged with several tasks including: review of analyses to date, discussion of cost drivers for transportation, recommendations for ways of improving efficiency, and suggestions for indicators and benchmarks for performance in transportation.



CONCLUSION

This report is intended to update the Pennsylvania State Board of Education as to APA's progress thus far in conducting the Commonwealth's statewide costing out study. APA wishes to stress that this report does not attempt to describe the interim results of analyses conducted to date, because the release of such incomplete results can be misleading and can lend themselves to misinterpretation and unproductive speculation. Instead, this interim report describes the groundwork which APA has laid for carrying out the main analyses of the costing out study.

This groundwork has placed the study on a firm footing for final results to be produced and released to the Board on schedule by November 30, 2007. These final results will include full findings from the three major study approaches (SSD, PJ, and EB), supporting statistical and cost function work, and transportation cost analyses. All these findings will be integrated together to produce a single estimate of the cost of providing the resources necessary for the Commonwealth's districts and schools to reach state and federal performance expectations.

APPENDIX A

List of Data Requested by APA from Pennsylvania State Agencies

DEMOGRAPHIC DATA

All Data in this category was for the District Level. In some cases grade level breakdowns were requested.

1. 10 years District Level ADM
2. Charter School Enrollment
3. Home School Enrollment
4. Intermediate Unit Enrollment
5. Voc/Tech Enrollment
6. Gender Breakdown
7. Race Breakdown
8. Migrant Status
9. English language learner counts by Spanish and non-Spanish Speakers
10. Weighted ADM
11. Gifted

EXPENDITURE/REVENUE DATA

All Data in this category was for the District Level

1. Expenditures broken out by as many spending areas as possible.
2. State aid

PERFORMANCE DATA

All Data in this category was for the District Level

1. Percent scoring in each category for state tests for the current and the past 4 years
2. Percent scoring in each category for state tests for the current and the past 4 years broken out by poverty, English language learner, Race, special education, and migrant status.
3. Graduation rates for the current and prior year
4. Number of 8th graders four and five years prior
5. GED numbers for the current year
6. Age at graduation for the current year
7. K-8 retention for the current year
8. Drop out rates for the current year
9. Attendance rates by grade for the current year
10. Percent of graduates who attend college for the current year
11. Advanced Placement enrollment for grades 10-12 in the current year
12. Percent of seniors taking SAT in the current year
13. Combined SAT score for the current year.

INPUT PRICES

All Data in this category was for the District Level.

1. Average Teacher Salary for current and prior 4 years
2. Average Salary by education and experience level for current and prior 4 years
3. Average salary for all other job categories available, including professional and non-professional staff in current and prior 4 years.
4. Information on the average supplemental pay for employees if not included in average salary.
5. Information on the average benefit rate.

DISTRICT ENVIRONMENTAL

All Data in this category was for the District Level

1. Area in square miles
2. Population for current and prior 4 years
3. Crime rates
4. Suspension rates
5. Median Income
6. Percentage of homeowners
7. Median House Value
8. Assessed Value, residential and commercial broken out if possible
9. Other district income

10. Percentage of female-headed households
11. Participation in pre/post school activities
12. Average class size
13. Tax rates

TRANSPORTATION

Transportation Formula

Complete description of transportation subsidy formula

Current

Changes over last three years

Elements

Number of public school pupils transported and miles transported

Number of nonpublic school pupils transported and miles transported

Number of public school pupils transported because of hazardous walking conditions

Number of nonreimbursable pupils transported on contracted vehicles

Number of nonreimbursable pupils transported on district-owned vehicles

Number of pupils transported to charter schools outside the district

Number of pupils transported to charter schools within the district

District bus data

Number of buses operated by district
Either the total or district average
bus data

- Year of manufacture
- Pupil seating capacity
- Pupils assigned
- Total annual miles
- Daily miles with pupils
- Daily miles without pupils
- Number of days
- Congested time
- Layover time
- One-way trip
- Activity run

Spare vehicles

- Total annual miles

Contracted services with contractors

- Number of contractors
- By contractor:
 - Amount paid
 - Vehicle count

Fare based service

- By public transportation company
- Amount paid

Transportation cost index — latest 10 years

District expenditures for transportation

Student transportation services with additional breakdown if available

By 3rd level function

- 2710 Supervision
- 2720 Vehicle operation
- 2730 Monitoring
- 2740 Vehicle servicing and maintenance
- 2750 Nonpublic transportation
- 2790 Other student transportation

By Object

- 100 Salaries
- 200 Fringe benefits
- 300 Purchased professional and technical services
- 400 Purchased property services
- 500 Other purchased services
- 510 Student transportation
 - 511 Student transport from another district
 - 513 Contracted carriers
 - 515 Public carriers
 - 516 Student transportation services from the IU

Support services

Current expenditures

Total expenditures

APPENDIX B

Characteristics of Hypothetical Schools

VERY SMALL DISTRICT PANEL

715 Students

	<u>Elementary (1)</u>	<u>High School (1)</u>
Enrollment	385	330
Grade Span	K-6	7-12
Percent in Special Education		
— Mild	15.0% (58)	15.0% (50)
— Severe	2.0% (8)	2.0% (7)
Percent Poverty	38.4% (148)	38.4% (127)
Percent ELL	0.4% (2)	0.4% (1)
Percent Gifted	2.5% (10)	2.5% (8)

Characteristics of Hypothetical Schools

SMALL DISTRICT PANEL

1,820 Students

	<u>Elementary (2)</u>	<u>Middle (1)</u>	<u>High School (1)</u>
Enrollment	420	420	560
Grade Span	K-5	6-8	9-12
Percent in Special Education			
— Mild	13.0% (55)	13.0% (55)	13.0% (73)
— Severe	2.0% (8)	2.0% (8)	2.0% (11)
Percent Poverty	32.5% (137)	32.5% (137)	32.5% (182)
Percent ELL	0.9% (4)	0.9% (4)	0.9% (5)
Percent Gifted	3.2% (13)	3.2% (13)	3.2% (18)

Characteristics of Hypothetical Schools

MODERATE/LARGE/VERY LARGE DISTRICT PANEL

Moderate: 3,380 students
Large: 6,500 students
Very Large: 15,600 students

	<u>Elementary</u>	<u>Middle</u>
Enrollment	429	750
Grade Span	K-5	6-8
Percent in Special Education		
— Mild	13.0% (56)	13.0% (98)
— Severe	2.0% (9)	2.0% (15)
Percent Poverty	23.0% (99)	23.0% (173)
Percent ELL	3.0% (13)	3.0% (23)
Percent Gifted	4.2% (18)	4.2% (32)
	<u>High School A</u>	<u>High School B</u>
Enrollment	1080	1800
Grade Span	9-12	9-12
Percent in Special Education		
— Mild	13.0% (140)	13.0% (234)
— Severe	2.0% (22)	2.0% (36)
Percent Poverty	23.0% (248)	23.0% (414)
Percent ELL	3.0% (32)	3.0% (54)
Percent Gifted	4.2% (45)	4.2% (76)

APPENDIX C

*Description of the Selection/ Contact Process for Participants in the Basic Professional Judgment Panels of the Pennsylvania Costing-Out Study**

1. This document describes the process that APA will use in identifying, selecting, and contacting individuals who will participate in the professional judgment (PJ) panels.
2. APA will use PJ panels to generate the resource needs of K-12 school districts based on school-level resources, resources for students with special needs, and district-level resources. APA uses hypothetical schools and districts as the basis of generating the resource levels that will be costed out. The most important factor used to configure PJ panels is district size, which has a significant impact on the cost of providing education services. APA has divided Pennsylvania's 501 school districts into five size groups: Very Small (less than 1,000 students); Small (1,000-2,500 students); Moderate (2,500-5,000 students); Large (5,000-10,000 students); and Very Large (more than 10,000 students). APA has also examined the characteristics of schools within those size groups (Philadelphia personnel will be included in the school-level and special needs panels, and there will be a separate analysis of Philadelphia's district-level administrative resources).
3. APA's PJ process requires different panels that focus on: (1) school-level resources; (2) the resources associated with students who have special needs (special education, poverty, and English-language learners [ELL]); and (3) district-level administrative resources. The school-level panels specify the resource needs of elementary, middle, and high schools, excluding special education. The special needs panels review and modify the school-level information and add resources for special education. The district-level panels review the work of the school-level and special needs panels and add resources for district administration, including district-administered programs such as alternative schools (plant maintenance and operation and transportation come from other analyses). In addition, a statewide review panel will examine the costs APA estimates, resolve any inconsistencies APA identifies, and address other issues, such as those associated with salaries and benefits.
4. The 10 PJ panels will be organized as follows:
 - A. Panel 1 will focus on the school-level, special, and district-level needs of *Very Small* districts.
 - B. Panel 2 will focus on the school-level resources of *Small* districts.
 - C. Panel 3 will focus on the school-level needs of *Moderate*, *Large*, and *Very Large* districts.
 - D. Panel 4 will focus on the specials needs of schools in *Small* districts.
 - E. Panel 5 will focus on the special needs of schools in *Moderate*, *Large*, and *Very Large* districts.
 - F. Panel 6 will focus on the district-level needs of *Small* districts (and review corresponding school-level resources).

- G. Panel 7 will focus on the district-level needs of *Moderate* districts (and review appropriate school-level resources).
 - H. Panel 8 will focus on the district-level needs of *Large* districts (and review appropriate school-level resources).
 - I. Panel 9 will focus on the district-level needs of *Very Large* districts (and review appropriate school-level resources).
 - J. Panel 10 is the statewide review panel.
5. PJ participants will come from districts of a particular range in size (panels 3, 5, and 10 have broad size ranges and Panel 9 should exclude people from Philadelphia, as its district-level administrative resources will be analyzed separately).
6. The process of selecting participants will work as follows:
- A. The Pennsylvania State Board of Education will identify a set of statewide groups to nominate potential PJ participants.
 - B. The statewide groups will meet on January 24, 2007 to review information provided by APA.
 - C. The statewide groups will nominate a total of five individuals for each of the 72 positions on the 9 PJ panels and 1 individual for the 10th panel (a total of 368 people) by February 16, 2007. The State Board's Project Manager will work with the nominating groups to ensure the correct number of nominees but will not rate, rank, or otherwise screen nominees.
 - D. APA will select a primary participant and a secondary participant based on geographic distribution, meeting site location, and other factors.
7. The process of contacting participants will work as follows:
- A. APA will send a list of the names of the primary and secondary participants to the State Board Project Manager, and letters will be sent to primary and secondary participants notifying them that they will be contacted by APA (using a letter that APA will provide in draft form).
 - B. APA will also send a list of the primary and secondary participants to Temple University.
 - C. Temple University will contact primary participants for the panels to confirm their participation. Temple University will contact secondary participants if primary participants cannot attend the meeting. Secondary participants not needed will be contacted to confirm that they are not being asked to participate.
 - D. Should it be necessary, a nominee other than the primary or secondary nominee may be contacted to fill a position when the primary and secondary nominees cannot attend.
 - E. A list of expected participants will be sent to the State Board Project Manager for information purposes only a week ahead of each meeting, and a final contact will be made by Temple University to confirm participation.
- * In addition PJ-like panels will be organized to look at K-8 schools, administration resources in a district as large as Philadelphia, and student transportation.

APPENDIX D

Phone Guide for Temple to Make Initial Phone Contact With Potential PJ Participants in the March 2007 PJ Panels

Hello, my name is XXXXX and I'm calling from Temple University on behalf of the Pennsylvania State Board of Education.

You have been nominated to serve as a member of a professional judgment panel, which is meeting as part of a statewide education cost study being conducted by the State Board of Education. The panel will consist of 7-8 highly qualified educators who have been selected to discuss the resources schools need to meet state requirements and student performance expectations.

The meeting will be held in Harrisburg on March 27 and 28. Your school district has been sent information about the study and should support your participation.

Please call xxx-xxx-xxxx to let me know whether you can participate. Once confirmed as a panelist, you will receive further information from Augenblick, Palaich and Associates (APA), the consulting firm that has been retained by the State Board of Education to conduct the study.

Questions that might arise in the conversation:

1. How did I get nominated?

Several statewide organizations were asked to identify highly qualified educators to fill particular openings on the panel. APA made the final selection in order to assure that the panels are broad both in terms of expertise and geographic representation.

2. Where and when will the meetings be held?

APA will provide detailed information about the exact location and times of the meetings.

3. My district will allow me to participate but it won't pay for travel costs — what should I do?

There is a small fund available to pay for travel by car, hotel, and board. APA can let you know about the details.

4. Do I need to take anything with me, such as my school or district budget information?

Unless you are a school district business official, you do not need to take any materials with you. Nor is any specific preparation required for the meeting. If you are a school district business official, you could take your district's budget along.

5. What is the purpose of the study?

The State Board has commissioned the study to estimate the district-by-district cost of providing those personnel, programs, and services that either are required by law, or that are deemed necessary so that students can perform at levels required by the state and federal government. The study utilizes the experience and "professional judgment"

of educators such as yourself to help determine what level of programs, personnel, and services are needed.

6. Do I need to know anything about how much resources or programs cost?

No. Unless you are a school business official, you do not need to have any knowledge of how much programs and services cost, how much your district spends, or where revenues come from to pay for education.

7. Will my name be associated with the study?

No panelist will be quoted in any report released through the study. The study report will simply list the names of all panelists who participated and the type of panel on which they served.

8. Where should I stay if I need to spend a night near the meeting site?

There are hotels near the meeting site. APA will provide a list of hotels where you can make overnight reservations.

APPENDIX E

Summary of Pennsylvania Performance Standards

The Pennsylvania Accountability System applies to all public schools and districts. It is based upon the Commonwealth's content and achievement standards, student testing, and other key indicators of school and district performance such as attendance and graduation rates. The system's key goals are that 100 percent of students: 1) *master state standards in 12 academic areas*; and 2) *score "proficient" or above on reading and math assessments by the year 2014*.

Reading and math skills are assessed using the annually administered Pennsylvania System of School Assessment (PSSA) which is a criterion-referenced test used to assess a student's mastery of specific skills.ⁱ Schools are evaluated on a minimum target level of improvement called Adequate Yearly Progress (AYP) and there are a series of rewards and consequences based on school and district performance.ⁱⁱ The 2014 reading and math 100 percent proficiency target is the same end goal contained in the federal No Child Left Behind Act.

ASSESSMENT GRADES AND SUBJECTS ⁱⁱⁱ

Pennsylvania has adopted academic content standards in 12 main areas: 1) arts and humanities; 2) career education and work; 3) civics and government; 4) economics; 5) environment and ecology; 6) family and consumer sciences; 7) geography; 8) health, safety and physical education; 9) history; 10) mathematics; 11) reading, writing, speaking and listening; and 12) science and technology.^{iv} These standards identify what a student should know and be able to do at varying grade levels. All students in the Commonwealth must master these 12 standards as evidenced by locally devised assessments. School districts are given the freedom to design curriculum and instruction to ensure that students meet or exceed the standards' expectations.

The Commonwealth currently uses the PSSA to test student performance in three areas (reading, writing, and mathematics) to measure attainment of the academic standards. Every Pennsylvania student in grades 3-8 and grade 11 is assessed in reading and math. Every Pennsylvania student in grades 5, 8, and 11 is assessed in writing. As required by NCLB, the Commonwealth is also now developing grade-span assessments in science. Science field tests will be conducted April-May 2007 in grades 4, 8, and 11 and full implementation for these three grades is expected by the 2007-2008 school year. Pennsylvania plans to engage in a standards-setting process to determine specific science performance expectations and to adjust intermediate performance goals as additional grades are added.^v

Performance against the standards is measured using the level descriptors shown in the following table. Student achievement is classified as either advanced, proficient, basic, or

below basic. For schools and districts to meet Adequate Yearly Progress requirements as discussed below, students must perform at the “proficient” level or above.

Table 1: Pennsylvania’s General Performance Level Descriptors

Advanced

The Advanced Level reflects superior academic performance. Advanced work indicates an in-depth understanding and exemplary display of the skills included in the Pennsylvania Academic Content Standards.

Proficient (students must perform at this level or above to be considered as having reached the Commonwealth’s performance expectations)

The Proficient Level reflects satisfactory academic performance. Proficient work indicates a solid understanding and adequate display of the skills included in the Pennsylvania Academic Content Standards.

Basic

The Basic Level reflects marginal academic performance. Basic work indicates a partial understanding and limited display of the skills included in the Pennsylvania Academic Content Standards. This work is approaching satisfactory performance, but has not been reached. There is a need for additional instructional opportunities and/or increased student academic commitment to achieve the Proficient Level.

Below Basic

The Below Basic Level reflects inadequate academic performance. Below Basic work indicates little understanding and minimal display of the skills included in the Pennsylvania Academic Content Standards. There is a major need for additional instructional opportunities and/or increased student academic commitment to achieve the Proficient Level.

ADEQUATE YEARLY PROGRESS (AYP)

The Commonwealth has developed a system to measure whether districts and schools are on track to meet the state’s performance expectations. Each year, school and district performance is analyzed and a determination is made by the state as to whether “Adequate Yearly Progress,” or AYP, is being made. Three main criteria are used to determine AYP status:

1. PSSA test results (year-by-year performance goals are shown in Table 2). AYP is judged based either on a subgroup’s, school’s or LEA’s current test score, or its two-year average, whichever is higher;
2. Participation rates on the PSSA (schools must show at least a 95% student participation rate). Schools must test at least 95% of the various individual student groups, including students with disabilities and those with limited

English Proficiency. Accommodations may include reading tests to students or allowing extra time to interpret tests. In the future, the Department will offer native language versions of the assessments for limited English proficient groups numbering 5000 or more; and

3. One additional performance measure depending on grade span:

a. Elementary/middle schools must have 90% average student attendance or show an attendance rate improvement over the prior year.

b. High schools must have an 80% graduation rate or show improvement in the graduation rate from the prior year. To graduate, students must demonstrate proficiency in reading, writing and math. To measure such proficiency, a school entity may use either: 1) proficient or better performance on the PSSA administered in grade 11 or 12; or 2) proficient or better performance on a local assessment aligned with the academic standards

and the PSSA. Local assessments may be a single exam or a combination of assessment strategies, but proficiency is expected to be comparable with proficiency on the PSSA.^{vi}

c. Districts must meet, or show growth in, both the attendance and graduation rate targets across all schools in their jurisdictions.

The three criteria listed above apply not only to the school or district as a whole, but also to the performance of subgroups, including racial/ethnic categories, low-income students, students with disabilities, and English Language Learners.

As Table 2 shows, the Commonwealth requires that, by 2014, all its students must reach the proficient level or above in reading and math. Between now and 2014, the state has established an escalating series of intermediate performance goals designed to prompt schools and districts to move toward the ultimate goal of 100% proficiency. Schools must meet or exceed these intermediate yearly goals to make AYP each year.

Table 2: AYP Requirements for Student Performance on Reading and Math PSSA^{vii}

Year	2002-04	2005-07	2008-10	2011	2012	2013	2014
Percent Proficient in Reading	45	54	63	72	81	91	100
Percent Proficient in Math	35	45	56	67	78	89	100

Pennsylvania has also established a series of consequences for failing to reach the AYP goals shown in Table 2. These consequences apply to both schools and districts. In the first year of not meeting AYP, a school or district is placed in “warning” status. Warning means that the school fell short of the AYP targets but has another year to achieve them. These schools are not subject to consequences. Instead, they are required to examine, and

where necessary modify, their improvement strategies so they will meet targets next year. If a school does not meet its AYP for two consecutive years, it is designated as needing improvement and is placed in one of the categories described in Table 3.^v A school or district can exit School Improvement or Corrective Action status by meeting AYP targets for two consecutive years.

Table 3: Consequences for Failing to Make AYP

School Improvement I

AYP failure for 2 consecutive years. If a school does not meet its AYP for two years in a row, students will be eligible for school choice, school officials will develop an improvement plan to turn around the school, and the school will receive technical assistance to help it get back on the right track. The school choice provision means that the school/district is required to offer parents the option of sending their child to another public school (including charter schools) within the school district. If no other school within the district is available, a district must, to the extent practical, enter into a cooperative agreement with another district that will allow students to transfer.

School Improvement II

AYP failure for 3 consecutive years. If a school or district does not meet its AYP for three years in a row, it must continue to offer public school choice and plan improvements. Additionally, the school or district will need to offer supplemental education services such as tutoring, after-school, or summer school support. The district will be responsible for paying for these additional services.

Corrective Action I

AYP failure for 4 consecutive years. A school or district is categorized in Corrective Action I when it does not meet its AYP for four consecutive years. At this level, schools are eligible for various levels of technical assistance and are subject to escalating consequences (e.g., changes in curriculum, leadership, professional development).

Corrective Action II

AYP failure for 5 consecutive years. If a school or district does not meet its AYP for five years in a row, it is subject to governance changes such as reconstitution, chartering, and privatization. In the meantime, improvement plans, school choice, and supplemental education services are still required.

- i Source: Pennsylvania Department of Education. Retrieved January 5, 2007 from the World Wide Web. http://www.pde.state.pa.us/a_and_t/site/default.asp
- ii Source: Pennsylvania Department of Education. Retrieved January 5, 2007 from the World Wide Web. <http://www.pde.state.pa.us/pas/cwp/view.asp?a=3&Q=94580&pasNav=|6132|&pasNav=|6325|>
- iii Source: Pennsylvania Department of Education. Retrieved January 5, 2007 from the World Wide Web. http://www.pde.state.pa.us/a_and_t/site/default.asp
- iv Source: Pennsylvania Department of Education. Retrieved January 8, 2007 from the World Wide Web. http://www.pde.state.pa.us/stateboard_ed/cwp/view.asp?a=3&Q=76716
- v Pennsylvania Consolidated State Application Accountability Workbook, (Revised May 30, 2006), page 55. http://www.pde.state.pa.us/nclb/lib/nclb/Accountability_Workbook_revised_2006.pdf
- vi Source: Pennsylvania Department of Education. Retrieved January 8, 2007 from the World Wide Web. <http://www.pde.state.pa.us/k12/cwp/view.asp?A=11&Q=85767;>
<http://www.pde.state.pa.us/k12/cwp/view.asp?a=85&Q=74007>
- vii Source: Pennsylvania Department of Education. Retrieved January 5, 2007 from the World Wide Web. <http://www.pde.state.pa.us/pas/cwp/view.asp?a=3&Q=94580&pasNav=|6132|&pasNav=|6325|>
- viii Id.

FOR MORE INFORMATION REGARDING THIS REPORT, PLEASE CONTACT
THE PENNSYLVANIA STATE BOARD OF EDUCATION.

