Adequacy Cost Study:
An Interim Report on
Methodology and Progress

Prepared for
Maryland State Department of Education

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The Maryland General Assembly enacted Chapter 288, Acts of 2002 – the Bridge to Excellence in Public Schools Act, which established new primary state education aid formulas based on adequacy cost studies using the professional judgment and successful schools methods and other education finance analyses that were conducted in 2000 and 2001 under the purview of the Commission on Education Finance, Equity and Excellence. State funding to implement the Bridge to Excellence Act was phased in over six years, reaching full implementation in fiscal 2008. Chapter 288 required a follow up study of the adequacy of education funding in the State to be undertaken approximately 10 years after its enactment. The study must include, at a minimum, adequacy cost studies that identify a base funding level for students without special needs and per pupil weights for students with special needs to be applied to the base funding level and an analysis of the effects of concentrations of poverty on adequacy targets. The adequacy cost study will be based on the Maryland College and Career-Ready Standards (MCCRS) adopted by the State Board of Education and include two years of results from new state assessments aligned with the standards, which are scheduled to be administered beginning in the 2014-2015 school year.

There are several additional components mandated to be included in the study. These components include evaluations of: the impact of school size, the Supplemental Grants program, the use of Free and Reduced Price Meal eligibility as the proxy for identifying economic disadvantage, the federal Community Eligibility Program in Maryland, prekindergarten services and funding, the current wealth calculation, and the impact of increasing and decreasing enrollments on local school systems. The study must also include an update of the Maryland Geographic Cost of Education Index.

Augenblick, Palaich and Associates (APA), in partnership with Picus Odden and Associates (POA), and the Maryland Equity Project (MEP) at the University of Maryland, will submit a final report to the State no later than October 31, 2016.

This report, required under Section 3.2.1 of the Request for Proposals (RFP R00R4402342), provides a comprehensive progress report on the adequacy study components found in Section 3.2.1 of the RFP. The report begins with an overview of the adequacy study requirements outlined in the RFP, followed by an outline of APA's specific approach to determining adequacy. The report then gives a description of the work required for each of the adequacy study's components, a description of the work already underway or completed, a description of the work still to be started, and a timeline for the completion of the work.

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Introduction

In March 2014, the Maryland State Department of Education (MSDE) issued a Request for Proposals (RFP) for a school funding adequacy study "using at least two methods." Augenblick, Palaich and Associates (APA), in partnership with Picus Odden and Associates (POA) and the Maryland Equity Project (MEP) at the University of Maryland, responded with a proposal for a study making use of three of the four generally accepted approaches to measuring adequacy:

- evidence-based;

- professional judgment; and

- successful school/school district.

The RFP outlines the following specific requirements, to be addressed by the adequacy study:

- conduct an adequacy study using at least two approaches;

- calibrate the study to the funding required to implement the Maryland College and Career-Ready Standards;

- identify a per pupil base level of funding and per pupil weights for students with special needs, such as students in poverty, English Language Learners (ELL) and students eligible for special education services;

- analyze the effects of concentrations of poverty on the adequacy estimates;

- identify gaps in growth and achievement among student groups and make specific recommendations of programs that might address these gaps;

- correlate deficits in student performance with deficits in funding;

- assess the impact of quality prekindergarten on school readiness as a factor in the adequacy estimates;

- make recommendations on any other factors to be included as part of the adequacy study; and

- conduct a review of adequacy studies carried out in other states and report on best practices and recommendations for the Maryland study.

The approach APA's research team is using to address the study's requirements applies the evidence-based, professional judgment, and successful school/school district approaches. Another generally accepted approach, the cost function (CF) approach, is excluded from this study. The research team determined that CF is not suited to Maryland, since the state only has 24 school districts – not enough to produce statistically valid and reliable results. Further, there is no research to support a reliable estimation of a cost function at the school level.

Work on this study began in July 2014. In October 2016, a final report will present recommendations for an adequate per pupil base cost, as well as recommendations for weights for students with special needs.

This report is presented per the requirements of Section 3.2.1 of the Department's RFP, which calls for an interim report on the methodology and progress of the adequacy study. The sections that follow provide a brief overview of the three approaches APA's research team is using to estimate adequacy in Maryland, a description of APA's methodology for each approach, and a detailed update on the research team's progress in addressing each of the RFP's study requirements.

APA's Approach to Estimating Adequacy in Maryland

The concept of adequacy, as it relates to education funding, grew out of the standards-based reform movement (Hamilton, Stecher & Yuan, 2009). As states implemented specific learning standards and performance expectations for what students should know – along with consequences for districts and schools failing to meet these expectations (and, eventually, federal expectations imposed through No Child Left Behind) – the focus of school finance shifted to an examination of the resources necessary to provide districts, schools, and students with reasonable opportunity to achieve to state standards. Over the past two decades, researchers have developed four approaches to creating estimates for the level of funding necessary to provide all students with the opportunity to receive an adequate education. These approaches are the:

- evidence-based;

- professional judgment;

- successful school/school district; and

- cost function approach.

The following three sections briefly summarize the three approaches APA is using to estimate an adequate base cost amount and to estimate weights, or funding adjustments, for students with special needs.

Evidence-Based Approach (EB)

The EB approach assumes that information from research can be used to define the resource needs of a hypothetical school or district to ensure that the school or district can meet state standards. The approach not only estimates resource levels, but also specifies the programs and strategies by which such resources could be used effectively. The strength of the EB approach is that it incorporates the latest research on how resources can be used to positively influence student achievement. However, there are disadvantages to the EB approach, including questions of whether research applies to all demographic situations, lack of research information about many of the cost elements schools face, and concerns over the fact that the approach may not be state-specific. In recent years, the EB approach has made use of local panels of highly qualified educators, as well as case studies of high-performing schools in states, to tailor the approach to specific states.

Professional Judgment Approach (PJ)

The PJ approach relies on the views of experienced educational service providers to specify the kinds and quantities of resources needed to achieve a set of identified objectives. This input-based approach was originally developed to calculate a base cost amount in Wyoming, in response to the Wyoming Supreme Court's requirement that the school finance system reflect the cost of the "basket of quality educational goods and services" needed to assure that a high school graduate could be admitted to an institution of higher education in the state (Campbell County School District v. State, 1995). The approach uses panels of experts (PJ panels) to specify the types of education programs needed to meet state standards. Once the programs have been specified (with a focus on the number of personnel overall,

the number of personnel in specific roles, regular school programs, extended-day and extended-year programs, professional development, and technology), costs are attached and a per pupil cost is determined. Of the various approaches to adequacy studies, the PJ approach best reflects the experiences of the people who are actually responsible for delivering education services. Information about these experiences may be combined with research results to specify the resources required to produce a specific level of student performance.

The advantages of the PJ approach are that it reflects the views of actual education service providers and is easy to understand. The disadvantages are twofold: First, it tends to be based on current practice. Second, beyond individual experience, it may not provide evidence that the provision of money at the designated level, or even the deployment of resources as specified by the prototype models, will produce the anticipated outcomes.

Successful School/School District Approach (SSD)

The SSD approach takes the actual expenditure levels of those schools or districts that currently meet state performance objectives, then uses those levels to determine an adequate per pupil base cost amount. This approach assumes that every school and school district should have the same level of base funding that is available to the most successful schools and districts, along with additional funding to provide services and programs for students with special needs and for districts with special circumstances. The SSD approach is typically conducted at the district level. However, in Maryland, where there are relatively few school districts, the SSD approach will be applied at the school level.

The SSD approach is most useful when a state has specified its student performance expectations and schools meeting these objectives can be identified through aligned state assessments. The SSD approach can be characterized as follows:

- it is based on current practices to meet state standards;

- it is empirical and tangible, based on the spending of districts that are meeting the standard;

- it assumes that resources can be used in different ways in various successful districts;

- it focuses on the cost of providing services to students with no special needs, and in districts with no special circumstances; and

- it only generates a base cost figure.

Since the SSD approach only estimates a base cost figure, adjustments must be made for students with special needs and for districts with special circumstances. Because the output of this approach is a per pupil base funding amount, it also does not offer schools or school districts a "theory of action," or set of recommendations, on how resources could be used to improve student achievement.

Work for this study is already underway, using the EB approach, the PJ approach, and the SSD approach. The following sections describe the research team's progress using each of these three approaches, as well as the progress on conducting the related analyses, as required by the RFP.

Study Progress Using the EB Approach

As noted in the "Evidence-Based Approach" section above, the EB approach assumes that information gathered from research exists to define the resource needs of a hypothetical school or school district to ensure that its students have the opportunity to meet state standards. The EB study includes three components:

- an EB conceptual model of effective schools and an accompanying research report that identifies the components of an adequate education program for Maryland, and an Excel spreadsheet-based simulation model that allows users to simulate alternative components to identify the costs of those alternatives;

- EB panels comprised of educational practitioners who can review the draft model to ensure that the EB recommendations reflect the needs and concerns of Maryland educators; and

- a set of case studies of high-performing or improving Maryland schools with which to compare the EB model and to identify effective programs currently being used in the state.

Development of the EB Model

The EB conceptual model of effective schools relies on a school improvement approach that allocates resources for educational strategies based on what current educational research suggests will lead to improvements in student learning. The model relies on two primary approaches to research:

1. One approach is to review research on effective educational strategies for inclusion in the EB conceptual model. In recent years, the EB conceptual model has incorporated a growing number of randomized controlled trials of different educational strategies to identify which strategies to include as components of the model.

2. Another approach is to conduct case studies of schools and districts that have dramatically improved student performance over a four- to six-year period, as measured by state assessments.

The EB conceptual model of school improvement includes 10 improvement strategies that, when adopted within a district, are suggested by research to lead to significant improvement in academic achievement for all students and also to substantially reduce student achievement gaps linked to demographic variables. The 10 school improvement strategies underpinning the approach are:

1. Analyze student data to become deeply knowledgeable about performance issues and to understand the nature of the achievement gap.

2. Set higher goals. These goals should include educating 95 percent of the students in the school to proficiency or higher on state assessments, seeing to it that a significant portion of students reach advanced levels of achievement, and making significant progress in closing achievement gaps linked to demographics.

3. Review evidence on good instruction and effective curriculum.

4. Invest heavily in teacher training, including intensive summer institutes and longer teacher contract years.

5. Support struggling students by providing some combination of tutoring and other supplemental Tier 2 interventions in one-to-one, one-to-three, or one-to-five tutor-student ratio formats, via the Response to Intervention (RTI) process. Support for struggling students also includes extended day, summer school, and formal English Language Development for ELL students.

6. Create smaller classes in early elementary grades, often lowering class sizes to 15 for students in kindergarten through grade three.

7. Restructure the school day to provide more effective ways to deliver instruction.

8. Provide strong leadership support to the principal and to teacher leaders around data-based decision making and improvements to the instructional program.

9. Foster professional school cultures characterized by ongoing discussions of good instruction and by teachers taking responsibility for, and responsiveness to, student performance.

10. Bring external professional knowledge into the school. For example, hire experts to provide training, adopt new, research-based curricula, discuss research on good instruction, and work with regional education service agencies, as well as with the state department of education.

The research team will revise the EB conceptual model to make it Maryland-specific by using an ongoing review of the research, EB panels (made up of Maryland educators who will review the model and recommend revisions), and twelve case studies on high-performing and improving Maryland schools (described in the "Case Studies of Improving Schools" section below). The EB research report that accompanies the model reviews the core resources needed for certain programmatic elements for both schools and districts. These elements include the number and compensation costs of staff; per pupil dollar amounts for various services such as professional development, instructional materials, and technology; district-level costs such as central office administration and maintenance and operations; and resources for struggling students and students with special needs.

The EB report reviews research on each of the topics identified above and updates previously published findings (see, for example Odden & Picus, 2014) used in other state studies. New research and findings have been incorporated into the model to determine how the per pupil base funding amount and the weights for students with special needs should be updated or modified to meet Maryland's specific context.

In addition to the research report, the research team will develop a Microsoft Excel-based simulation model to estimate the costs of the Maryland-specific EB conceptual model. The EB conceptual model relies on a prototypical district of 3,900 students with four elementary schools (kindergarten through grade five) of 450 students each, two middle schools (grade six through grade eight) of 450 students each, and two high schools (grade nine through grade 12) of 600 students each. The EB model estimates the resources needed in each prototypical school, then adds the additional resources needed for central office functions, operations and maintenance, and other district costs.

The process results in an estimated base per pupil funding level. The EB model is then used to estimate the per pupil costs of programs and services for students with special needs, such as services for at risk students, ELL services, and special education services. In Maryland, the per pupil costs of these programs and services serving students with special needs will be converted into weights to be used in the school finance formula. Finally, the EB model includes adjustments for small school districts to accommodate the diseconomies of scale associated with the operation of these districts. The EB model's standard district size of 3,900 students is appropriate for most states in the country, even states with many larger districts. In Maryland, however, virtually all districts have enrollments exceeding 3,900 students. To deal with these larger districts, the research team will either incorporate recommendations from the EB panels (described in the following section) to identify how resources in the EB model can best be prorated for larger school districts or adjust the prototypical district size to account for larger school districts.

The Microsoft Excel-based simulation model used to estimate the costs of the EB conceptual model will be designed so that each of the cost factors (e.g. class size or teacher salaries) can be modified to produce new per pupil figures. Once the base per pupil figure is determined, weighting factors for at risk, ELL and special education students can also be determined.

The development of the initial EB conceptual model, including the update to the model's research base, was completed in spring 2015. On June 23rd and 24th, 2015, four EB panels were convened across the state to review the EB conceptual model from a Maryland perspective. The research team also began work on constructing the Excel simulation model. The preliminary version of the Excel model will be completed in summer 2015, using data from the 2012-13 school year. The model will be updated with 2014-15 data, if available, in summer 2016. Next, the research team will revise the EB conceptual model using information gleaned from the EB panels and from the case studies of high-performing schools.

EB Panels

As part of the EB adequacy study, the research team will convene four EB panels across Maryland. The purpose of these panels is threefold:

- to share the elements of the EB model with panel members;
- to ask the panel members to reflect on those elements; and
- to provide the research team with Maryland-specific insights on how each of the elements will operate within the state.

 Based on the feedback from these EB panels, the EB model will be adjusted to reflect Maryland's unique circumstances.

The research team worked with the MSDE to identify participants for the EB panels. Participant identification and selection was completed in mid-May, 2015. Table 1, below, shows the types of participants who will serve on each of the four panels. For each panel, nearly half of the participants will be teachers. The research team and the MSDE sought to identify teachers who are recognized as being among the best in their schools. For more specific information on the participant selection process and the preferred characteristics of participants, see the "Selection of Panelists for EB and PJ Panels" section further in this report.

Table 1: Characteristics and Counts of Maryland EB Panels and Participants

	Panel Type					Numbers of Participants by Role								
Panel Number	Level	School Type	Student Type	Time Needed (Days)	Location of Panel Meeting	Teacher/ Coordinator	Principal	District Superintent or Instructional Leader	Director of Special Ed, ELL, ECE or Student Services	Director or Assistant Supt. of Curriculum	Tech Specialist or Director	CFO or Business Manager	School Board Member	Total Participants per Panel
1	Multiple	Multiple	All	1.5	North Bel Air	1 Elementary Teacher 1 Middle School Teacher 1 High School Teacher 1 Preschool Teacher 1 SpEd Teacher 1 ELL Teacher 1 Lead Teacher - for example teacher team leader 1 Instructional Coach 1 Tutor	1 Elementary Principal 1 Middle School Principal 1 High School Principal	1	2	1	1	1	1	19
2	Multiple	Multiple	All	1.5	South Largo	1 Elementary Teacher 1 Middle School Teacher 1 High School Teacher 1 Preschool Teacher 1 SpEd Teacher 1 ELL Teacher 1 Lead Teacher - for example teacher team leader 1 Instructional Coach 1 Tutor	1 Elementary Principal 1 Middle School Principal 1 High School Principal	1	2	1	1	1	1	19
3	Multiple	Multiple	All	1.5	East Chester-town	1 Elementary Teacher 1 Middle School Teacher 1 High School Teacher 1 Preschool Teacher 1 SpEd Teacher 1 ELL Teacher 1 Lead Teacher - for example teacher team leader 1 Instructional Coach 1 Tutor	1 Elementary Principal 1 Middle School Principal 1 High School Principal	1	2	1	1	1	1	19
4	Multiple	Multiple	All	1.5	West Cumber-land	1 Elementary Teacher 1 Middle School Teacher 1 High School Teacher 1 Preschool Teacher 1 SpEd Teacher 1 ELL Teacher 1 Lead Teacher - for example teacher team leader 1 Instructional Coach 1 Tutor	1 Elementary Principal 1 Middle School Principal 1 High School Principal	1	2	1	1	1	1	19
TOTAL PARTICIPANTS						36	12	4	8	4	4	4	4	76

The four EB panel meetings were held in June, two on June 23, 2015 and two on June 24, 2015. One panel meeting was held on the Eastern Shore, one in western Maryland, one in northern Maryland, and one in southern Maryland. Table 2, below, provides additional information on the logistics of the EB panels.

Table 2: EB Panels

Date	Region	Location
June 23, 2015	Eastern Shore	Washington College 300 Washington Ave. Chestertown, Maryland
	Western Maryland	Allegany College of Maryland 12401 Willowbrook Rd. Cumberland, Maryland
June 24, 2015	Northern Maryland	Harford Community College 401 Thomas Run Rd. Bel Air, Maryland
	Southern Maryland	Prince George's Community College 301 Largo Rd. Largo, Maryland

At each meeting, members of the research team will describe the overall EB approach and the school improvement model on which the EB conceptual model is based. Next, members of the research team will present each component of the model to the panel. The research team will seek input as to whether the identified resources are sufficient to meet the needs of school districts in the area. The research team will also ask for recommendations (and the rationale behind those recommendations) for alternative approaches. These alternative approaches will be reviewed, and if supported by research evidence, may then be incorporated in the Excel simulation model.

Summary of the EB Approach

The purpose of the EB approach is to provide estimates for a per pupil base funding amount and for weights for students with special needs, like at risk, ELL and special education students. The final estimates, both for an adequate per pupil base amount and for special needs weights, will be completed during summer 2016. The draft final report is due to the MSDE by September 30, 2016, and the final report is due by October 31, 2016.

Study Progress Using the PJ Approach

Another method APA is using to assess school finance adequacy in Maryland is the PJ approach. This approach relies on the expertise of experienced educators in the state to specify the kinds and quantities of resources necessary for all students to achieve Maryland's College and Career-Ready Standards and other state requirements. This includes the additional resources necessary for students with special needs to meet the standards. Once the numbers of staff, materials and equipment, and other services have been specified, the costs of each are determined and translated into a per pupil base amount and a series of weights to represent the additional resources needed to serve students with identified special needs. This approach reflects the experiences of the people responsible for delivering education services, combining their expertise with research findings on effective practices. The PJ approach is a rational way to specify the resources required to produce a specific level of student performance.

The PJ Panel Process

The PJ approach will be implemented using a systematic process, as follows:

1. Develop background materials.

2. Select Maryland educators to serve on the panels.

3. Conduct a series of nine PJ panels to specify the resource elements necessary for schools and district central offices to provide adequate educational services.

4. Apply Maryland salaries and resource prices to the resource elements to develop a per pupil base cost and weights for students with identified special needs.

Developing Background Materials

Prior to the administration of the PJ panels, the research team will develop several analytical and informational documents. These documents include a literature review of effective instructional strategies; a summary of state standards; a determination of the appropriate district and school sizes for consideration by the PJ panels; and panel agendas, instructions, and resource spreadsheets.

Literature Review. The literature review of effective instructional strategies will aim to orient panel members to the task at hand. The literature review will provide a summary of key programs and strategies supported by education research. The review will give panel members examples of the types of resource elements they should consider during the panel process and will reinforce the expectation of rigor for the panels' recommendations. Unlike the EB approach, where research findings from the literature define the entire adequacy model, the literature review for the PJ panel process is used to initiate panel deliberations and to reinforce the notion that the panels' recommendations should be backed by evidence of effectiveness, whether from national research sources or from local, data-supported experience. The research team will complete an initial draft of this literature review during summer 2015. The final version of the literature review, to be completed in late summer 2015, will also incorporate relevant findings of effective approaches from the school case studies described later in this report.

Summary of State Standards. The theory of action for PJ panels is that expert practitioners have the experience and state-specific knowledge necessary to recommend the appropriate educational resources for meeting all state expectations. To further ensure that all panelists are acquainted with the state's expectations, the research team is developing a document that provides panelists with a clear and concise summary of Maryland's educational system requirements and performance expectations. This summary document outlines the levels of achievement expected of the schools and districts that the PJ panel members are resourcing. The summary document includes lists of items such as the College and Career-Ready Standards; compulsory education requirements; legal requirements around serving special education or ELL students; assessment requirements; and accountability requirements. At the start of each panel's working session, members of the research team will review this information with the panel members. The research team will complete this summary document in summer 2015.

Representative Schools and Districts. During the PJ panel process, panel members describe, in detail, the resources needed for students to successfully achieve state standards and other requirements. Panel members are asked to describe the numbers and types of staff and materials, supplies and equipment/technology for a representative range of schools and districts. To determine this representative range of schools and districts, the research team will analyze Maryland data (provided by the MSDE) on school and district enrollments, student demographics, and school grade configurations. The research team will complete this analysis in summer 2015.

Meeting Materials. At the start of each panel, panel members will receive an agenda, a description of the panel process, and a set of resource spreadsheets. These resource spreadsheets will be used to record the types and counts of school- and district-level resources suggested during the panel process.

Selecting Panel Members

The process for selecting panel members is described in the "Selection of Panelists for EB and PJ Panels" section further in this report.

Conducting PJ Panels

There will be nine different PJ panels, comprised of educational professionals ranging from classroom teachers to school principals to district superintendents to school board members. One representative of the MSDE's Division of Early Childhood Development will serve on the preschool panel.

The following list describes the nine PJ panels in terms of both the types of panels and the purpose of the panels. Table 3, below, provides detail on the number and makeup of participants for each of the panels. The PJ panels will include:

- one school-level preschool panel to address the resource needs of preschool programs located in public elementary schools;

- three school-level panels (one each dedicated to elementary, middle and high schools) to examine the school-level resources needed to meet state standards and to address the resource needs in different size elementary, middle, and high schools (with school size considerations based on average sizes of existing Maryland schools);

- two special needs panels to review the recommendations of the four school-level panels and to address the specific resources needed for schools and districts to adequately serve students with special needs (e.g. compensatory education, gifted education, ELL services, special education), with one each focusing on the resources required for either ELL or special education;

- one district-level panel to review the work of the six prior panels and to examine district-level staffing and resource needs for supporting schools;

- one district Chief Financial Officer (CFO) panel to review all school-level and district-level non-personnel costs; and

- one statewide overview panel to review all previous panel work, discuss resource prices, examine preliminary cost figures, and attempt to resolve any inconsistencies that may be identified.

APA plans to hold all of the nine PJ panel sessions in Baltimore, possibly at the MSDE office building. APA has scheduled the PJ panels as follows:

- school-level and special needs panels will convene in October 2015;

- the district-level panel will convene in November 2015; and

- CFO and state-level panels will convene in January 2016.

Costing Out the Panel Recommendations

After the PJ panel members have identified and rigorously reviewed school- and district-level resources, the research team will apply Maryland salaries and prices to the identified resources. This will allow the research team to identify the cost of serving students with no special needs ("base cost"), as well as the additional costs associated with serving students with identified special needs in each representative school and district. All of these analyses will be performed using Microsoft Excel software.

The MSDE is providing the data the research team will use to cost out the model. These include data files with enrollment and student demographic counts, staff salaries, and district-level expenditures disaggregated by category, program and activity. Prices for employee fringe benefits and technology will be based on State of Maryland contract prices, also provided by the MSDE. The research team will construct an initial Excel simulation model using data from 2012-13 or 2013-14, depending on when the more recent data become available. The team will update this initial model with 2014-15 data, if 2014-15 data are available by mid-summer 2016, to produce final estimates for a per pupil base cost and for special needs weights.

Summary

Work on the PJ study is already underway. Much of the work of developing materials to support the work of the panels and collecting initial data for the PJ model is in progress or nearing completion. A total of nine different panels will be convened starting in October 2015 and running through January 2016. The research team will create final estimates for an adequate per pupil base amount and for special needs weights during summer 2016. The draft final report is due to the MSDE by September 30, 2016, and the final report is due by October 31, 2016.

Table 3: Characteristics and Counts of Maryland PJ Panels and Panel Members

	Panel Type					Numbers of Participants by Role								
Panel Number	Level	School Type	Student Type	Time Needed (Days)	Location of Panel Meeting	Teacher/ Coordinator	Principal	District Superintent or Instructional Leader	Director of Special Ed, ELL, ECE or Student Services	Tech Specialist or Director	CFO or Business Manager	School Board Member	Representative of MSDE, the Division of Early Childhood Development (Office of Childcare)	Total Participants per Panel
1	School	Preschool	Regular, At-Risk	1.0	Balt.	2 Preschool Teachers/Coordinators	3 Elementary Principals	1	1 Director of Preschool /ECE		1		1	9
2	School	Elementary	Regular, At-Risk	1.5	Balt.	2 Elementary Teachers	3 Elementary Principals	1		1	1			8
3	School	Middle	Regular, At-Risk	1.5	Balt.	2 Middle School Teachers	3 Middle School Principals	1		1	1			8
4	School	High School	Regular, At-Risk	1.5	Balt.	2 High School Teachers	3 High School Principals	1		1	1			8
5	Special Need	Elementary, Middle, HS	ELL	1.0	Balt.	1 Elementary ELL Lead Teacher Coordinator 1 Middle School ELL Lead Teacher/Coordinator 1 High School ELL Lead Teacher/Coordinator	1 Elementary Principal, 1 Middle School Principal, 1 High School Principal	1	1 Director of ELL		1			9
6	Special Need	Elementary, Middle, HS	Special Education	1.0	Balt.	1 Elementary SpEd Lead Teacher/Coordinator 1 Middle School SpEd Lead Teacher/Coordinator 1 High School SpEd Lead Teacher/Coordinator	1 Elementary Principal, 1 Middle School Principal, 1 High School Principal	1	1 Director of Special Ed		1			9
7	District	All	All	2.0	Balt.	1	1 Elementary Principal, 1 Secondary Principal	3	1 Director of Student Services	1	1	1		10
8	CFO	All	All	1.0	Balt.						6			6
9	Statewide	All	All	1.0	Balt.	1	1 Elementary Principal, 1 Secondary Principal	3	1		2	1		10
TOTAL PARTICIPANTS						16	22	12	5	4	15	2	1	77

Study Progress Using the SSD Approach

The SSD approach is another method used to assess the adequacy of Maryland's school finance system. To determine an adequate per pupil base cost amount, this approach makes use of the actual expenditure levels of schools that are currently meeting or exceeding state performance objectives. This approach assumes that every school and school district should have the same level of base funding that is available to the most successful schools and districts. This approach, however, does not provide a means of determining what additional funding is needed to provide services and programs for students with special needs (e.g. at risk, ELL, and students with disabilities) and for districts with special circumstances. Other methods, such as the PJ or EB approaches, are used to estimate what these additional funding levels should be. The SSD approach is typically conducted at the district level. However, in Maryland, where there are relatively few school districts, the approach will be applied at the school level.

Identifying High-Performing Schools

APA is in the process of selecting high-performing schools for this study. To select these schools, the research team is using an approach similar to that used to select schools for the case studies, described in the "Case Studies of Improving Schools" section below. The selected schools each fall into one of four performance categories:

- High-Performing: schools with very high percentages of students achieving at the proficient or advanced levels on state assessments;

- High-Growth: schools achieving high levels of average growth in student performance across all student groups;

- Reducing the Poverty Gap: schools successful in significantly reducing the achievement gap between low-income students – those identified as eligible for Free and Reduced Price Meals (FARMS) – and the overall population of students in the school, including both FARMS-eligible students and non-FARMS students;[1] and

- High-Growth for Student Groups: schools selected on the basis of how well they have improved achievement for ethnic/minority, FARMS, ELL, and special education students.

Maryland School Assessment (MSA) and High School Assessment (HSA) results will be used to measure school performance in the same way they were used to select case study schools. However, in a significant departure from the criteria used for selecting case study schools, schools in all four of the performance categories will be required to have significantly higher overall levels of performance than was required for the case study schools selection. For example, schools selected as case study sites in the high-growth, reducing the poverty gap, and high-growth for student groups performance categories, needed a minimum of 60 percent of students achieving to proficient or advanced levels on state assessments. Establishing a minimum overall performance criteria prevented schools that were still very low-performing overall from being included in the study, regardless of their performance on the other

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[1] The assessment data used for this analysis provided scores for FARMS students and for all students, but not for non-FARMS students. As a result, a comparison of FARMS to non-FARMS students was not possible.

metrics. In contrast, the research team's initial selection for the SSD study established minimum percentages of 80 percent to 90 percent – thresholds that may yet be raised as APA refines the selection criteria.

Another difference in the selection criteria between the two studies pertains to the student demographics of schools. When selecting schools for case studies, the research team filtered for schools with higher concentrations of ethnic/minority students, ELL students, FARMS-eligible students, and special education students. In this way, the research team aimed to identify effective strategies for improving the performance of all students. Because the successful schools study is used only to estimate the base funding amount that applies to all students, student need is not a factor in school selection. Thus, the selection criteria do not take student demographics into consideration.

The RFP also calls for researchers to consider the requirements of the new state standards and performance expectations of the Partnership for Assessment of Readiness for College and Careers (PARCC) assessments when determining adequacy. The new PARCC assessment data is expected to become available statewide for the first time in summer or fall 2015. To incorporate these new PARCC data, the research team will re-evaluate the schools that were previously identified as high-performing (using MSA and HSA data), this time incorporating results from the PARCC assessments. The research team will conduct a similar re-evaluation around the same time in 2016 – not long before final project reports are due. If any of the identified successful schools have performances that decrease dramatically (compared to other schools) when they are re-evaluated using PARCC assessment data, then these schools may be removed from the successful schools database and the expenditure calculations rerun. The exact criteria for excluding schools cannot be determined until after the new PARCC data become available and are analyzed.

Selection Criteria

To identify a first round of potential schools for the study, the research team used specific criteria for each school performance category:

- High-Performing: At least 93 percent of all students are proficient or above for each of the six years from 2007-2012 (2008-2013 for high schools).

- High-Growth: Growth of at least 40 percent from 2006-2012 (2008-2013 for high schools), with a minimum of 80 percent of students achieving at proficient or above in 2012.

- Reducing the Poverty Gap: Elementary and middle schools had to achieve a minimum achievement gap reduction of at least two standard deviations from 2007-2012, with a minimum of 90 percent of all students achieving proficient or above in 2012. High schools had to achieve a minimum achievement gap reduction of at least two standard deviations from 2008-2013, with a minimum of 80 percent of all students achieving proficient or above in 2013.

- High-Growth for Student Groups: All school levels had to meet the performance criteria for at least two of the four student subcategories of ethnic/minority students, FARMS-eligible students, ELL students, or special education students. Elementary and middle schools had to achieve at least 50 percent growth from 2007-2012, with a minimum of 90 percent of all students scoring proficient or above in 2012. High schools had to achieve at least 50 percent

growth from 2008-2013, with a minimum of 80 percent of all students scoring proficient or above in 2013.

Using these criteria, 188 schools were selected. In cases where a school qualified for more than one performance category, the school was placed in the category where it had the strongest performance or the category where the fewest schools had been selected. The selected schools include 114 elementary schools, 42 middle schools, and 32 high schools. Table 4, below, summarizes the number of schools in each of the performance categories, by grade level. Relatively few middle and high schools qualified for performance categories other than high-performing. Only 15 schools qualified as high-growth and 14 qualified as high-growth for student groups.

Table 4: Initial Successful Schools Selection

Performance Category	Elementary Schools	Middle Schools	High Schools	Total Schools
High-Performing	58	26	26	110
High-Growth	10	4	1	15
Reducing the Poverty Gap	39	6	4	49
High-Growth for Student Groups	7	6	1	14
Total Eligible Schools	114	42	32	188
Total Schools in Maryland, by Level	867	227	252	1,346

The 188 schools selected in this first round represent more than twice the number of schools the research team intends to use in the study (a maximum of 90 schools). This compares to 59 schools selected in the original 2001 study for the Thornton Commission. The research team will reduce the overall number of schools to the planned count of 90 by increasing the selectivity of the criteria.

Efficiency Screen

The final step in the school selection process is a check on the fiscal efficiency of each selected school. The purpose of this efficiency screen is to avoid biasing the base cost estimate by removing from the roster of successful schools those schools whose efficiency measures are significantly different from the mean for all of the selected schools, e.g. schools that are either very inefficient or unusually efficient in the use of their resources. The efficiency screen consists of three measures:

- the school's staffing ratio for instruction;
- the school's staffing ratio for administration; and
- the school's per pupil costs, both personnel and non-personnel, for operations and maintenance functions.

A school must only meet one of the screening criteria listed above to be included in the study. However, only the expenditures from the spending areas for which a school meets the efficiency criteria (instruction, administration, or operations and maintenance) will be included in the spending analysis. For example, a school whose expenditures for administration and operations and maintenance are

outside of the acceptable efficiency range will only have its expenditures for instruction included in the expenditure analysis. A school whose expenditures in all three program areas meet the efficiency criteria will have expenditures from all three areas included in the analysis.

Schools that are more than 1.5 standard deviations above or more than 2.0 standard deviations below the mean for all selected schools on any of these three measures will be excluded from the selection for those expenditure areas. These benchmarks were established based on analyses of school expenditures in several states and are intended to exclude only extreme outliers. In excluding these schools – thus excluding schools whose level of efficiency is well outside the norm of other schools – the research team will avoid bias in its creation of a per pupil base cost estimate.

Collection and Analysis of School Level Expenditure Data

When the high-performing schools have been identified, the research team will turn to collecting school expenditure data. This data collection is expected to begin in fall 2015, when finalized expenditure data for the 2014-15 school year is available. The research team expects to complete data collection by early winter 2015-16.

The MSDE only collects spending data at the district level, rather than at the school level. To account for the lack of data at the school level, the research team will develop a school expenditure data collection tool, similar to that used in APA's earlier study for the Thornton Commission. In this earlier study, APA developed a tool for gathering comprehensive and accurate school-level expenditure data. Based on the tool used in the earlier study, the research team created an initial draft of a tool for the current study, with minor updates to reflect changes in Maryland expenditure data collection.

The updated data collection tool is designed to gather general data on schools and districts and on five specific financial areas:

1. District administration: This area collects information on central office staffing levels and on expenditures for district administration, including general, centralized and business support services, and instructional program administration and supervision. These data will be used to determine overall district administration costs, which can then be allocated to schools on a per pupil basis.

2. School administration: This area collects information on staffing and cost data for the office of the principal, including principals and assistant principals; clerical staff; and office supplies, equipment and contracted services.

3. School instruction: This section gathers data on the costs of a school's instructional programs. These data include the number of staff and associated costs for instructional and instructional support staff, textbooks and other instructional materials and equipment.

4. General information: This section of the tool collects information on a school's grade span and enrollment, district enrollment, and teacher characteristics at the school and district levels.

5. This section of the tool is used to collect all other school-based costs such as operations and maintenance, student personnel and health services, and community services.

Where current year data are available, school and district data elements will be pre-populated to reduce the amount of time required to complete the tool by district staff.

The MSDE staff will provide an initial vetting of the draft data collection tool. Following this review, the research team will hold a WebEx virtual conference with district budget administrators to obtain direct feedback from the professionals who will be completing the data collection tool in the fall. This review is expected to be completed in July 2015. The research team is also exploring whether the use of technology, such as a web-based survey tool, may facilitate the collection of data from the larger number of schools expected to be included in the study.

Determining a Per Pupil Base Cost

After the school-level expenditure data have been collected, the research team will compile the data in a Microsoft Excel database for analysis. Because the SSD approach is used only for determining an adequate per pupil base cost, spending on programs for students with special needs are excluded from the analysis. To facilitate comparability of data across districts and schools, the categorization of expenditure data is standardized across the participating schools and a weighted average base cost per pupil[2] is calculated for each school level – elementary, middle, and high. From these, a single base cost per pupil will be derived that is weighted by the distribution of students across the three levels of schooling.

Data Verification

To ensure the accuracy of the expenditure data reported on the data collection tool, the research team will analyze the school-level expenditures data compiled in the Excel database. The research team will compare the data to each school's district expenditures, as well as to comparable schools' expenditure data. In cases where a school's reported expenditures differ significantly from its district's budget or from the expenditures in comparable schools, the research team will contact the individual who completed the data collection tool for that school (in most cases, the district's chief budget officer) to verify or assist in correcting the data.

Base Cost Estimates

An initial estimate of the per pupil base cost will be completed by late 2015 or early 2016. To ensure that the base cost estimate appropriately reflects the costs of high performance on the new state standards, the research team will re-evaluate the data using composite scores from the new PARCC assessments for the 2015 and 2016 school years. Performance data for the 2015 administration of the PARCC assessments are expected to become available in fall 2015, while 2016 PARCC assessment data must be available by mid-summer 2016 if they are to be used in this analysis. Schools where performance declines significantly between results from MSA and HSA assessments and results from PARCC assessments will be removed from the database. The cost analysis will then be rerun without

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[2] The purpose of calculating a weighted average per pupil base cost is to prevent outlier schools, such as a very small school with high per pupil spending, from unduly influencing the average base cost. The weighted average per pupil base cost is calculated by multiplying school enrollment by the base cost for each school included in the study, summing the result, and then dividing this by the total enrollment of all schools in the study.

these schools. The final estimate must be completed in time for inclusion in the draft final report, due at the end of September 2016.

Summary

The SSD study is one of three approaches the research team is using to estimate the cost of an adequate education in Maryland's public schools. This approach is used to estimate an adequate per pupil base cost by analyzing the actual spending of schools that are performing successfully on current state standards and assessments. In June 2015, the research team will complete the selection of up to 90 successful schools. Between fall 2015 and early winter 2015, the research team will collect school-level operating expenditures. The research team will complete an initial base cost estimate, based on school performance on the current MSA and HSA state assessments, by spring 2016. In summer 2016, the research team will update the estimate to incorporate information from school performances on the new PARCC assessments.

Reconciling Multiple Adequacy Study Results

APA's application of three adequacy approaches allows for the triangulation of results. The multiple studies serve as a validity check on the results of each study – a distinct advantage of this approach. However, it is likely that each study will arrive at different figures – all three will estimate a per pupil base amount and the EB and PJ approaches will provide estimates of weights for students with special needs. Based on prior experience with using multiple approaches in a single study, it is unlikely that the estimates will vary greatly, but differences among the three approaches will occur and will require reconciliation so that a single recommendation may be presented to the MSDE in the fall of 2016. The following describes the approach the research team proposes to use for integrating the three results. Variations of this method have been used effectively in prior studies where multiple adequacy approaches were used.

The first step involves a thorough analysis by the research team to fully understand the factors driving any variation in the findings across the three studies. This analysis involves reviewing the processes and data used to generate the findings of each approach. For example, there will likely be programmatic differences between the school and district models developed through the EB and PJ approaches because of the unique processes each uses to build the models (the EB starting with a general model that is modified by the EB panels and case studies, the PJ building its model based on the recommendations of the PJ panels). These differing approaches may result in differences in cost elements such as staff counts or the types and amount of instructional materials required which will impact the overall cost estimates.

In the second step, the research team will work to develop a single recommendation for the MSDE and its partners once all of the key differences among the approaches are fully understood. In this process, the research team will take into consideration what it has learned about Maryland's state performance expectations, student need, current spending levels, the school staffing and expenditure information collected in the SSD study, and the instructional programs for students with special needs suggested by the EB and PJ panels and the school case studies.

In the final step, the recommendation will be presented to the MSDE and its partners and to the Stakeholder Advisory Group for discussion.

This reconciliation process will occur during the summer of 2016.

Selection of Panelists for EB and PJ Panels

The EB and PJ approaches both make use of practitioner panels, or PJ panels, to make recommendations about the types and quantities of educational resources needed for schools and districts to successfully teach all students to state standards. Although both the PJ and EB approaches make use of such panels, the roles of the panels are very different in each approach. In an EB study, panels are presented with an adequacy model based on selected research evidence or generally accepted best practices. The panels evaluate the adequacy model within the context of Maryland's educational system and suggest changes to better accommodate the state's unique characteristics. In a PJ study, panel members use their expertise to build the adequacy model from the ground up, taking into account the performance expectations and needs of the state's students. The PJ panels to be used in the two studies call for 153 participants, including teachers, principals, superintendents and other district central office administrators, school board members, and one administrator from the MSDE.

The EB study will convene four panels in four different regions of the state during the week of June 22 to June 26, 2015. The PJ study will convene nine different panels between October 2015 and January 2016. Table 5 below summarizes the makeup of both sets of PJ panels.

It can be challenging to select educators and administrators who possess the knowledge, experience and types of dispositions necessary to be effective panel members. APA is working with the MSDE staff to solicit nominations of qualified staff from school districts using a process the MSDE developed for selecting a state-wide cadre of master teachers. The APA research team provided the MSDE with a list of the types and numbers of educator positions needed for both sets of panels, along with a list of general qualifications. MSDE then submitted this information to the leadership of all 24 of Maryland's school districts. The districts have been submitting names and contact information of qualified staff back to the MSDE. The MSDE has then been compiling a master list from which panel participants will be selected. This pool of potential participants should be fully populated by the time this report is released.

Table 5: Types and Counts of Panelists, by Study

Position	Number of PJ Panel Participants	Number of EB Panel Participants	Total Number of Participants
District Superintendent or Instructional Leader	12	4	16
School Board Member	2	4	6
Chief Financial Officer or Business Manager	15	4	19
Other Central Office Administrators	9	16	25
Principals	22	12	34
Teachers	16	36	52
Representative from the MSDE Division of Early Childhood Development	1	0	1
Totals	**77**	**76**	**153**

In general, the research team is looking for educators with the following experiences and qualifications for participants:

- experience, preferably in more than one school or district;

- recognition as being successful educators who have effectively contributed to the success of their students, schools, and districts;

- in the aggregate, representative of all regions of the state; and

- where possible, possess indicators of excellence, such as past professional awards (e.g. superintendent of the year, principal of the year), National Board for Professional Teaching Standards certification, or active involvement or leadership in a professional association.

The following points describe the selection criteria for each of the panel positions:

- District Superintendent or Instructional Leader

    o Seven years minimum of experience in education
    o Three years minimum of district leadership experience

- School Board Member

    o Three years minimum of serving on a school board

- Director or Assistant Superintendent of Curriculum

    o Seven years minimum of experience in education

- o Three years minimum of curriculum development experience

- Chief Financial Officer or Business Manager

  - o Seven years minimum of experience in education
  - o Three years minimum of school finance experience

- Director of Special Education, ELL, At Risk Programs, or Student Services

  - o Seven years of minimum experience in education
  - o Three years minimum of leadership in the specified field of special need

- Director of Preschool or Early Childhood Education Programs

  - o Seven years minimum of experience in education
  - o Three years minimum of leadership in preschool or early childhood education programs

- Technology Specialist or Director of Technology

  - o Three years minimum of experience working in technology in a school or district
  - o Demonstrated knowledge of instructional technology needs for educational achievement

- Principal (needed for all school levels, e.g. elementary, middle, and high)

  - o Seven years minimum of experience in education
  - o Three years minimum of experience in school-level administrative leadership, including at least one year as principal
  - o Highly qualified assistant principals may be substituted if they possess the same level of experience, e.g. seven years minimum of education experience, three years minimum of experience in school-level administrative leadership, and at least one year as an assistant principal

- Teacher Leader/Coordinator (needed for all school levels, e.g. elementary, middle, and high; includes specialized teacher positions, e.g. as master teacher, teacher leader, preschool program coordinator, ELL teacher leader/coordinator, special education lead teacher/coordinator)

  - o Five years minimum of teaching experience, with at least two years in Maryland
  - o If the teacher leader being selected holds a specialized position such as ELL or special education teacher leader or coordinator, at least one year in the specialized role in addition to four years of general teaching experience

- Instructional Coach

  - o Three years minimum of instructional coaching experience
  - o Track record of increasing teacher quality

- Teacher (needed for all school levels, e.g. elementary, middle, and high; includes general education teachers, preschool teachers, ELL teachers, special education teachers, Title I teachers, etc.)

  - o Five years minimum of teaching experience, with at least two years in Maryland

- o If the teacher being selected holds a specialized teaching position such as an ELL teacher or special education teacher, at least one year in the specialized role in addition to four years of general teaching experience.

- Tutor

  - o Should be a certificated teacher, not a teacher's aide or classroom volunteer
  - o Three years minimum of tutoring experience
  - o Track record of increasing student performance

When the pool is complete, the MSDE will forward names and contact information of the selected staff to the research team. The team will then send invitations to panel members with information about the dates, times, locations, and structures of the day or days the panels will meet.

Case Studies of Improving Schools

Between October 2014 and March 2015, the Maryland Equity Project, along with POA, conducted multiple case studies of high-performing and improving schools in Maryland. These case studies were intended to inform several adequacy study components about successful instructional programs and strategies and the costs of these programs and strategies. The studies investigated the programs and strategies effective in raising the achievement levels of all students, especially students with special needs. Findings from these case studies will be used to make adjustments, where appropriate, to the EB and PJ models.

Selection of Case Study Schools

Case study schools were selected on the basis of their performance on Maryland state assessments. For elementary and middle schools, performance data were taken from MSA tests. For high schools, achievement data were taken from HSA tests. The primary metric used was the percentage of students who scored proficient or advanced in each school. This same metric is also being used to select schools for the SSD adequacy study, although some modifications are being made to the criteria for the SSD study to increase selectivity. These modifications are described further in the "Study Progress Using the SSD Approach" section earlier in this report.

Performance Categories and Selection Criteria

In the interest of selecting schools to represent a range of performance (e.g. status versus growth over time), the research team selected schools from the following four performance categories:

- High Performing: These are schools with a very high percentage of students achieving at the proficient or advanced levels. Specifically, to be selected in this category, at least 90 percent of all students in a school had to achieve proficient or better over a six year period.

- High Growth: Schools selected in this category had to achieve at least 50 percent growth over the six year period. That is, the percentage of students scoring proficient or advanced on the test had to increase by at least 50 percent between the first year and the sixth (for example from 50 percent to 75 percent). These schools were also required to have at least 60 percent of all students achieving proficient or above in the most recent year of data used.

- Reducing the Poverty Gap: In this category, the research team was interested in selecting schools that were successful in significantly reducing the achievement gap between low income students – those identified as eligible for FARMS – and all students in the school.[3] The research team used a benchmark of a 2 standard deviation decrease in the achievement gap (approximately 14 percentage points) over 6 years. These schools were also required to have at least 60 percent of all students achieving proficient or above in the most recent year of data used.

- High Growth for Student Groups. Schools in this category were selected on the basis of how well they had improved achievement for ethnic/minority students, FARMS students, ELL students,

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[3] The assessment data used for this analysis provided scores for FARMS students and for all students, but not for non-FARMS students. As a result, a comparison of FARMS to non-FARMS students was not possible.

and special education students. The specific criteria for selecting these schools was at least 50 percent growth in at least two of the subgroups. These schools were also required to have at least 60 percent of all students achieving proficient or above in the most recent year of data used.

The selection process used MSA assessment data from 2007-2012 and HSA assessment data from 2008-2013. More recent MSA data were not used because Maryland adopted its Common Core-based College and Career-Ready Standards effective in the 2012-2013 school year. Because new assessments were not yet available, the state continued to use the MSA and HSA, though these assessments are not fully aligned with the new standards. This resulted in a decline in MSA and HSA scores across the state. For this reason, upon the recommendation of the MSDE, 2013 and 2014 MSA data were not included in the initial selection of schools. The implementation of Common Core standards resulted in less of an impact on HSA scores, so the most recent available at the time, 2013 data, were used when selecting high schools.

As a check to assess whether schools that were high-performing through 2012 continued to perform at a high level, the research team applied one more performance criteria when selecting elementary and middle schools. The MSA scores for 2012 and 2014 were compared and if the 2014 score decreased by more than one standard deviation, the school was eliminated from the sample.

Finally, the research team wanted to ensure that the selected schools were successful with all students. The research team analyzed schools' student demographics and selected schools with higher concentrations of FARMS-eligible students, ELL students, special education students, and ethnic/minority students. While the research team did not use specific benchmarks across the board – which would have been especially challenging at the high school level – schools with at least 50 percent FARMS-eligible students, 50 percent ethnic/minority students, 10 percent ELL students, and 15 percent special education students were preferred.

Assessment Data

The MSDE provided the research team with school-level files of assessment scores, disaggregated by student groups (ethnic/minority, FARMS-eligible, ELL, and special education) for the years 2006-2012 (MSA) and 2008-2013 (HSA).

These files were also disaggregated by grade level and subject. The MSA included scores for reading, math and science. Depending on the grade, the HSA included scores for English, algebra and biology. To simplify comparisons across schools, the research team calculated a set of composite scores for each school by aggregating all of the scores by grade and subject into a single all subjects/all grades score for each student group within each school. The final composite scores used to select schools consisted of a FARMS composite, ELL composite, special education composite, and an aggregated all students composite.

School Selections

Twelve schools were selected, with approval by the MSDE, for inclusion in the case studies. The MSDE approved two of the twelve schools in October 2014 so that site visits could be used as part of the

researcher training in the case study method described below. The MSDE approved the remaining 10 schools in December 2014 and the research team then contacted those schools to schedule site visits between mid-December 2014 and January 2015. The goal was to include three schools in each of the four performance categories. However, one school in the Reducing the Poverty Gap category could not be scheduled. As a result, the final selection consists of two Reducing the Poverty Gap schools and four High-Growth for Student Groups schools. Table 6 provides a summary of the case study school characteristics.

Table 6: Characteristics of Case Study Schools

School Level	Enrollment	FARMS	ELL	Special Education	Performance Category
Elementary	250	85%	30%	6%	High-Growth
Middle	900	50%	10%	10%	High-Growth
Middle	400	75%	<=5	20%	High-Growth
Elementary	210	50%	<=5	15%	High-Performing
Elementary	500	80%	20%	10%	High-Performing
High	1,300	50%	<=5	10%	High-Performing
Elementary	300	70%	15%	30%	High-Growth for Student Groups
Elementary	670	80%	20%	15%	High-Growth for Student Groups
Middle	800	45%	10%	10%	High-Growth for Student Groups
High	850	65%	<=5	15%	High-Growth for Student Groups
Elementary	600	45%	15%	7%	Reducing the Poverty Gap
Middle	500	40%	10%	10%	Reducing the Poverty Gap

Case Study Training and Site Visits

On October 29, 2014, POA conducted a training session on the school case study methodology with the Maryland Equity Project (MEP) staff and graduate students who were going to lead the site visit work. The training focused on the link between the EB funding model elements, the components of the theory of school improvement embedded in the EB approach, and the key aspects of the interview protocol that structures the interviews and data collection in each of the case study schools.

In conjunction with the case study training, the first two site visits were completed on October 28, 2014. Both elementary schools were approved as site visit schools by the MSDE. Scheduling for the remaining 10 site visits occurred in January, with site visits taking place between January 2015 and March 2015.

Some schools were visited twice or rescheduled because of inclement weather. Because one of the selected schools did not provide permission to conduct a visit, another site was selected and approved in late February 2015 and visited in March.

Before each case site visit, a request was sent to the school to provide documents for the case researchers to review prior to the site visit. To reduce the burden on school staff, only documents in a format that could sent via email were requested. These documents included a school's school improvement plan, descriptions of its curriculum and instructional approaches, daily and weekly bell schedules, a listing of all staff, and any other documents the school thought would be useful as background for the case researchers. Materials on the schools' websites, when available, were also reviewed prior to the site visit. While the documents received from the schools varied, generally the materials helped the case researchers know more about the context of the school and its overall curriculum and instructional approach before conducting the interviews.

The school site visits consisted of multiple interviews with individual school administrators and teachers or with small teacher focus groups. An interview with the principal was typically scheduled during the first 90 minutes of each visit. This was followed by interviews during student-free periods with lead teachers; classroom teachers emphasizing math, reading/English/language arts/writing, and science; instructional coaches; and other key staff providing instruction in special education, Tier 2 interventions and ELL. The actual types and numbers of teachers and the length of interviews varied by school and the school's schedule.

Following each site visit, the case researchers drafted a case study report summarizing the information learned from the document review and site interviews. Each case study report undergoes a rigorous internal review according to the following process:

1. case study researchers produce an initial draft report;

2. senior POA and MEP staff internally review the initial draft;

3. case study researchers revise the draft based on feedback and resubmit it for review;

4. the draft document is sent to the principal for review and comment;

5. the draft is revised again to incorporate the principal's comments and is reviewed internally; and

6. the final draft is submitted to APA for review, and then to the MSDE for final review.

To date, nine of the case study reports have been drafted. Seven of these have undergone the initial internal review and were sent to the schools' principals for their review and comments. Four of these drafts have been returned by the principals and are undergoing the second internal review. One report has been submitted for review by the MSDE.

The final step of the case study process will be to conduct a cross case analysis to identify common themes and findings across the 12 sites. The case study report writing and review process and cross case

analysis will be completed by fall 2015. The final reports will be included with the draft final and final adequacy reports due in fall 2016.

Other Adequacy Study Components

The RFP commissioning this adequacy study includes a series of sub-analyses focused on specific issues of concern identified by stakeholders (Sections 3.2.1.5 through 3.2.1.9). These analyses will be used to supplement and inform the three adequacy approaches at the core of the adequacy study. The sub-analyses address the following issues:

- the effect of concentrations of poverty on the adequacy targets;

- the gaps in growth and achievement among student groups, disaggregated by race and income, with recommendations on specific programs to address the gaps in growth or achievement;

- the relationship between deficits in student performance and deficits in funding;

- the impact of quality prekindergarten on school readiness as a factor in the adequacy cost study;

- other factors that may impact the adequacy estimates; and

- a review of adequacy studies conducted in other states, with recommendations on best practices for the study methods used in the Maryland study.

The Effect of Concentrations of Poverty on the Adequacy Targets

Both the EB and PJ approaches will make recommendations for additional resources for students in poverty. Under both models, schools with high concentrations of poverty typically receive a significant amount of additional resources. However, in past studies, both methods have assumed that this increase in resources is linear, where each eligible low-income student generates the same additional amount of funding, whether the concentration of poverty of a school is 5 percent or 100 percent. This analysis is intended to address the question of whether, as concentrations of poverty increase, the types and number of services, and thus the costs, required to enable these students to be successful increase in a non-linear manner. By non-linear, the research team means that, as the concentration of low-income students in a school increases, the amount of funding per eligible student must also increase to provide the necessary services and programs.

This analysis begins with a review of the relevant literature to determine if there is research support for a non-linear funding mechanism, and if so, at what concentration, or concentrations, should additional per pupil funding be triggered. This literature review was submitted to the MSDE as a separate report on June 30, 2015.

This question will also be raised with the panels convened for both the EB and PJ adequacy studies. The cross-case analysis of the school case studies will also look for evidence of non-linear need from the programmatic and resource data gathered from the site visits.

Based on the findings from these analyses, the research team will make a determination of whether a non-linear funding mechanism is warranted to provide the necessary programs and services and what specific form this adjustment should take. The final recommendation will be made with input from both the MSDE and the Stakeholder Advisory Group and incorporated into APA's final recommendation for a compensatory education weight due in fall 2016.

Identify Gaps in Growth and Achievement among Student Groups

This work is scheduled to commence during winter 2015-16, with recommendations due as part of the draft final and final adequacy reports in fall 2016. The first task to be undertaken by the research team is to analyze state and district level assessment data disaggregated by student subgroups, including ethnic/minority, low income, ELL, and special education. Five years of MSA and HSA disaggregated assessment data (for school years 2008-12 for the MSA and 2009-13 for HSA) provided by the MSDE will be used for this initial analysis. This analysis will be used to identify where achievement gaps exist and their magnitude. Specific strategies for addressing the achievement gaps identified through this analysis will be culled from the recommendations of the EB and PJ studies and the school case studies, particularly the cases of schools successful in reducing achievement gaps. The results of this study will be presented in the draft final and final adequacy study reports due in fall 2016.

Correlate Deficits in Student Performance with Deficits in Funding

This analysis is also scheduled to begin during winter 2015-16. Past research on this subject has found a relatively weak relationship between school funding and student outcomes. In fact, because many states' school funding formulas, as well as federal funding programs such as Title I, provide additional funding for students with special needs, lower performing schools and districts with higher numbers of students with special needs may have higher per pupil funding than higher achieving but lower need schools and districts. Given the structure of Maryland's school funding formula, this is likely the case here. This analysis will be further constrained by the lack of school level expenditure data. Out of necessity, this analysis will be conducted at the district level using MSA and HSA assessment data and district expenditure data provided by the MSDE.

The research team's proposed lens for this analysis will focus more on the question of the types of strategies and programs needed to ensure that all students can be successful rather than the statistical correlation between performance and funding. By understanding the costs of these programs and strategies, the research team will be able to identify the necessary funding levels for higher need schools and districts. This information will be provided primarily by the findings of the EB and PJ adequacy studies. The findings from these studies and from the school case studies may also point to the types of strategies and programs that are the most cost effective, thereby providing guidance for schools and districts on how to use resources most efficiently.

Consider the Impact of Quality Prekindergarten on School Readiness as a Factor in the Adequacy Cost Study

Much of the work for this study will be undertaken in conjunction with the Prekindergarten Services and Funding study described in section 3.2.3.2 of the RFP. In that study, the research team will identify the elements of quality prekindergarten programs, estimate their costs, and assess the potential benefits of higher quality programs based on national cost-benefit research. The findings of this research, along with the preschool recommendations from the EB and PJ studies, will provide an estimate of the costs of providing high quality prekindergarten programs. The cost-benefit analysis from the larger prekindergarten study may also suggest potential future savings in other areas of school funding

resulting from greater access to high quality prekindergarten programs, for example lower special education incidence, which could impact adequacy estimates in the future.

Data collection for the prekindergarten analysis is currently underway. The prekindergarten research team has collected data on Maryland's prekindergarten and childcare programs' capacity, enrollment, and quality indicators. Data analysis and the cost-benefit analysis will be completed by fall 2015. The prekindergarten recommendations from the two adequacy studies will be developed by the summer 2016. All of these inputs will be analyzed and used to guide the final adequacy recommendations due in fall 2016.

Recommendations for Other Factors Impacting Adequacy

To date the research team has not identified any other factors not already under consideration. The research team will continue to work with MSDE staff and the Stakeholder Advisory Group to identify any additional factors related to adequacy in Maryland.

Review of Previous Adequacy Studies

Section 3.2.1.10 of the RFP requires a review of adequacy study reports prepared for other states and a report on best practices garnered from the studies that could be applied to the Maryland study. The research team undertook a review of 39 adequacy studies from 24 states conducted since 2003 and submitted a report to the MSDE that summarized information on how the studies were conducted, what the estimated adequate funding levels were, the policy impact the studies had in the states (where this information was available), and recommendations on seven best practices for the design of adequacy studies. The report also confirmed the research team's original proposal for estimating adequacy for Maryland using three study approaches: 1) EB, 2) PJ, and 3) SSD.

The seven "best practices" for the design of adequacy studies identified in the report are:

- maintain a clear focus on improvement of student performance;

- the value of case studies in future work;

- the importance of involving state policy makers and local stakeholders in the process;

- combining multiple methods in each state study;

- improvements in the selection of PJ panels;

- the number of PJ panels used in PJ studies; and

- accurately representing compensation in the analysis.

Based on its analysis of the 39 studies, the research team concluded that over time, the methods for costing out adequacy have become more sophisticated and are now better tailored to the specific needs and circumstances of each state commissioning such a study. For example, the use of PJ panels has become more sophisticated, comprising both school level educators as well as district- and state-level professionals to review the recommendations and provide resource recommendations for central office and other district level functions.

For more detail on the seven best practices identified in this report, please see the report *A Comprehensive Review of State Adequacy Studies Since 2003* (Aportela, Picus, Odden, & Fermanich, 2014).

Summary

The purpose of this report is to provide an update on the methods used for the adequacy study and other related studies required under Section 3.2.1 of the RFP and to describe the progress made on each component of the study at the close of Phase I of the Maryland study. As described in APA's original proposal, the research team will employ three different approaches for estimating school funding adequacy in the State of Maryland: the EB, PJ and SSD approaches. A significant amount of progress has been made on these studies since work began in July 2014, including completion of the initial data collection, selection and administration of 12 case studies of high-performing and improving schools, initial selection of over 180 high-performing schools for the SSD study, an update and first draft of the EB report, and other preliminary work across all three adequacy approaches. Two previous reports related the adequacy study have also been submitted to and accepted by the MSDE: *A Comprehensive Review of State Adequacy Studies Since 2003* (Aportela et al., 2014) and *Proposed Methodology for Establishing Adequate Funding Levels in the State of Maryland* (Fermanich, Picus & Odden, 2014).

At the time of this report, all of the analyses are moving forward according to the timeline approved by the MSDE. The research team does not foresee any problem with maintaining this timeline as the study moves on to the work required in Phase II.

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