21st Century School Facilities Commission

Martin G. Knott, Jr., Chair

Agenda
October 13, 2016
10:00 a.m.
House Office Building, Room 120
Annapolis, Maryland

I. Call to Order and Chair's Opening Remarks

II. Discussion of School Construction Approval Process

- Rich Hall, former member of the Interagency Committee on School Construction
- Andy Zuckerman, Chief Operating Officer, Montgomery County Public Schools
- Seth Adams, Director of the Division of Construction, Montgomery County Public Schools
- Mike Frenz, Executive Director, Maryland Stadium Authority
- Gary McGuigan, Senior Vice President, Maryland Stadium Authority

III. School Maintenance and Inspections/Building Maintenance Plans

Interagency Committee on School Construction Process

- Joan Schaefer, Acting Executive Director, Interagency Committee on School Construction
- William Levy, Program Manager, Public School Construction Program

Baltimore City Schools Revitalization Program – Use of Building Maintenance Plans and Commissioning

- Gary McGuigan, Senior Vice President, Maryland Stadium Authority
- Eric Johnson, Vice President, Maryland Stadium Authority
- Mignon Anthony, Executive Director 21st Century Buildings, Baltimore City Public Schools
- Lynette Washington, Executive Director of Facilities, Baltimore City Public Schools

IV. Public Testimony

V. Chair's Closing Remarks and Adjournment

Montgomery County Public Schools

School Construction in Montgomery County, Maryland

21st Century School Facilities Commission
October 13, 2016

MCPS Montgomery County Public Schools

Malcolm Baldrige National Quality Award
2010 Award Recipient

Introduction

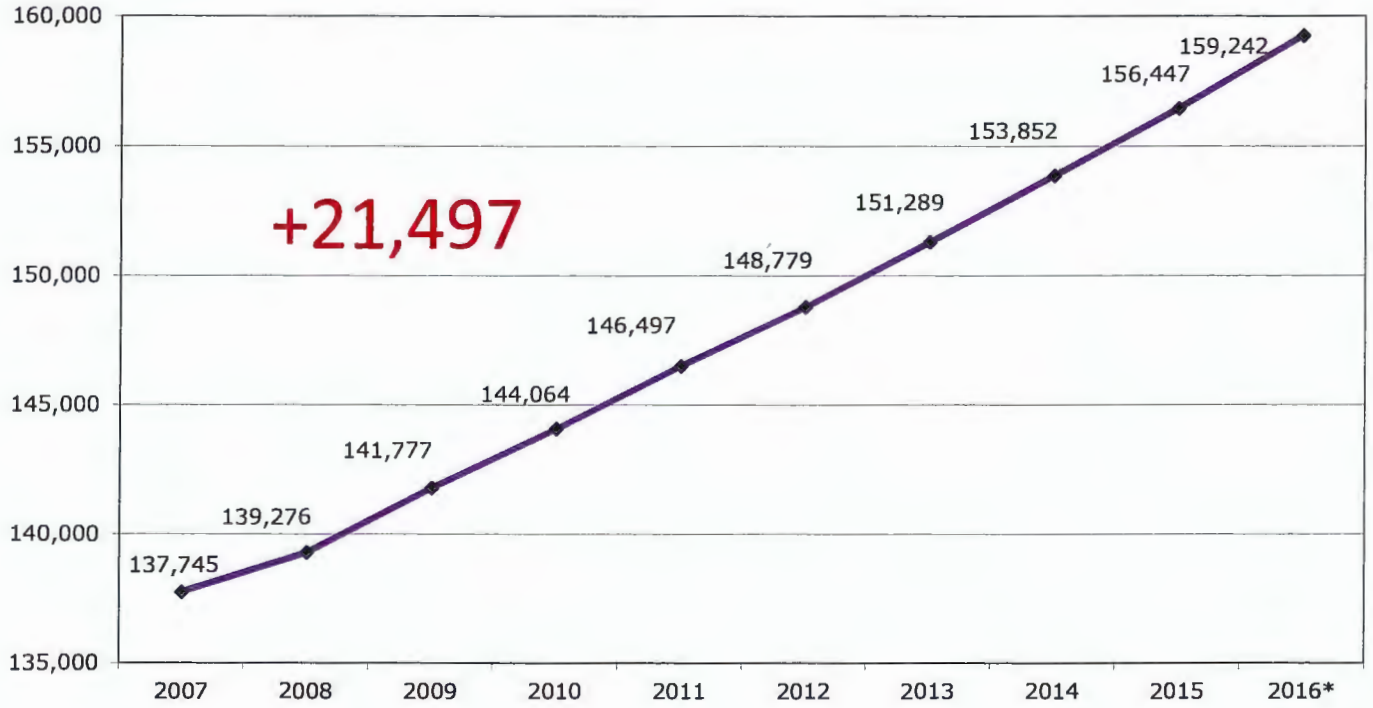
- **Dr. Andrew Zuckerman, Chief Operating Officer**
- **Seth Adams, Director, Division of Construction**

Capital Improvements Program

- **Key Priorities**
  - Compliance Projects
  - Capital Maintenance Projects
  - Capacity Projects
  - Revitalization/Expansion Projects
  - System Infrastructure Projects
  - Technology Modernization Project

Student Enrollment

Total MCPS Enrollment: SY 2007–2016 (Preliminary)



Context

State and Local

Rules, Regulations, and Procedures

Project Example

Hallie Wells Middle School

- 150,089 Square Foot, Prototype Design, located in Clarksburg, MD
- Community Development consisting of 3,600 Single Family and 1,100 Townhomes
- Planning Began in 2007 / Project Completion 2016

MCPS MONTGOMERY COUNTY PUBLIC SCHOOLS

Malcolm Baldrige National Quality Award
2010 Award Recipient

IAC Interactions

- Prerequisites / Annual Submissions
- Site Selection/Acquisition
- Project Planning Approval
- Educational Specifications
- Document Review / Bidding / Contract Award
- Funding Approval(s)
- Project Close-out

Project Timeline

Local Site Selection Approval	**2007**
Feasibility Study to Determine Scope and Cost	**2009**
Local Funding Approval	**2012**
State Planning Approval	**2014**
Construction	**2014 – 2016**
Partial State Funding ($4,995,000)	**2016**
Balance Requested	**2017 (Fiscal Year 2018)**

Design

- Community Engagement
- Feasibility
- Schematic Drawings / BOE Approval
- Design Development
- Construction Documents
- Bidding and Contract

Construction

- Project Delivery Method
- Procurement
- Contract Award
- Change Orders
- State Payments
- Project Close-Out

Reflection

- Benefit/Risk of Forward-Funding
- Each Project Is Different
- Local Process Alignment With State Procedures
- Timing Matters
- LEA Constraints
- Where Do We Go From Here?

Recommendations

- Develop a workgroup to review and streamline LEA and State touch points
- Flexibility
  - Continual Alignment of Rules, Regulations, and Procedures with Current Market Conditions and Trends
  - Value Added Process Improvement
- Regulatory/Legislation Impact Review
- Statewide Education Goals and Priorities Rather Than Focus Purely on Minimizing Costs

Questions/Comments

21st Century School Facilities Commission

October 13, 2016

Baltimore City Schools Program

Legislative Mission

- Substantially improve existing facilities
- Reduce Inventory of City Schools
- Improve district utilization rate
- Efficiently administer Program
  - Utilize MSA project management experience
  - IAC protects state interest on educational considerations
  - City Schools develops priority in accordance with 10 Year Plan
  - City funds and assists with community development

Baltimore City Schools Program
Background

- City schools developed a 10 Year Plan
- 10 Year Plan depicts priority of schools and is amended annually
- MSA to leverage annual $60 million commitment for 30 years for up to $1.1 billion in bonds
- MSA forecasts 23-28 schools will be developed by the end of the Program
- MSA, City, City Schools and the IAC entered into a four party MOU

Baltimore City Schools Program
Four Party MOU

Executive Committee
- Each party has one vote
- Meets quarterly
- Subject to open meetings act
- Administer MOU

Coordinating Committee
- Representatives from Baltimore City, City Schools, and MSA
- Maximize recreational opportunities and community revitalization
- Meets quarterly

Collaborative Group
- Representatives from Baltimore City, City Schools, and MSA
- Job training
- Local hiring
- MBE

STAT Committee
- Each party represented
- Chaired by MSA
- Report on key areas of Program
- Meets quarterly after design begins

Roles and Responsibilities

MSA

- Oversee Program
- Report on Program/Stat Committee
- Finance
- Establish budget per school and program
- Resolve disputes related to budget, schedule and financing
- Contract administration
  - Replacements - Original Mission
  - Currently includes Replacements and Renovations

Roles and Responsibilities
City Schools

- Develop 10 Year Plan
- Approve 10 Year Plan amendments
- Develop educational specifications
- Community engagement
- Contract administration
  - All Renovations - Original Mission
  - Currently includes four Renovation projects in Year 1

Roles and Responsibilities

IAC

- Approve 10 Year Plan projects
- Approve Enhanced Approval Package
- Approve Comprehensive Maintenance Plan
  - Staffing
  - Budget
  - Organization
- Approve Building Maintenance Plan
  - Staffing
  - Budget
  - Custodial

Roles and Responsibilities
IAC (*Continued*)

- IAC reserves right to evaluate CIP based on Maintenance Plan (per the MOU)
- Reviews and comments on Utilization Rate targets
- Right to rescind approval, prior to construction, based on changes to:
  - Enrollment projections
  - Educational program
  - Surplus requirements of adjacent schools
  - Utilization

MSA vs City School Projects

Contract Administration Difference

MSA

- Projects do not require IAC design approval

City Schools

- Projects require IAC design approval at Design Development and Construction Documents

Potential for Delay

Program vs LEA (IAC Customary Role)

- MSA Assumed State Compliance Reporting
  - MBE
  - Prevailing Wage
- MSA's Procurement Policies Prevail
  - Contracts
  - Change Orders
- MSA assumed contract execution role
  - MSA Board approves all contracts-MSA and City Schools
  - BPW approves MSA contracts for:
    - Design
    - Preconstruction
    - Construction Modifications (Construction Awards)
    - Bond Issuances

Baltimore City School Program

- Questions/Answers

FACILITY MAINTENANCE AND SCHOOL CONSTRUCTION IN MARYLAND

Report to the General Assembly

January 20, 2016

Interagency Committee on School Construction:

Dr. Jack R. Smith, Interim State Superintendent of Schools, Chair
Secretary David Craig, Maryland Department of Planning
Secretary Gail Bassette, Department of General Services
Mr. Timothy Maloney, Member of the Public
Mr. John Bohanan, Member of the Public
Dr. David Lever, Executive Director

Requests for copies of this report and questions regarding its contents may be directed to the Public School Construction Program at 410-767-0617

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FACILITY MAINTENANCE AND SCHOOL CONSTRUCTION IN MARYLAND
Interagency Committee on School Construction
January 20, 2016

INTRODUCTION: MAINTENANCE AND CAPITAL EXPENDITURES

A reciprocal relationship exists between facility maintenance and capital investments. Intuitively, facility owners understand that good maintenance of building systems and equipment will defer or reduce the need for capital investments, and likewise that a judicious, well-timed use of capital investment should reduce the burden on maintenance staff, time and resources while prolonging the life of the building. Both forms of investment are likely to result in better building performance, a reduced risk of building failure, and savings in operations and utility expenditures. Most important, these combined investments will have positive effects on the health and well-being of building occupants.

These issues become particularly acute in the arena of school facility maintenance and construction. Maryland's 1,392 public school buildings, occupying more than 138 million square feet of floor area with have an average age of 28 years as of September 2015,[1] hold on a daily basis nearly 880,000 students as well as teachers, administrators, support staff, and community visitors.[2] Public schools are frequently the most visible institution in a residential community, and the vulnerable population they house is a continuous object of concern for parents, the teaching community, and health professionals. These facilities are also expensive to build and expensive to operate: a typical new elementary school in 2015 costs about $30 million in taxpayer funds, and the energy and other operating expenses of school buildings constitute one of the largest single categories of spending in most educational budgets. Public school buildings thus play a primary role in the social, symbolic, and financial life of the community; maintaining them in good order is an essential public responsibility.

THE 2015 JOINT CHAIRMEN'S REPORT

The 2015 *Joint Chairmen's Report* on the Fiscal 2016 State Operating Budget and State Capital Budget (the *JCR*) states that the "budget committees are interested in understanding the extent to which failures in school maintenance contribute to increase public school construction costs."[3] The committees have charged the Interagency Committee on School Construction (IAC) with:

1. *Evaluating the relationship between identified maintenance deficiencies and school construction needs for each jurisdiction.*

2. *Identifying areas of improvement in each jurisdiction.*

3. *Recommending best maintenance practices to avoid the need for future costly school construction projects.*

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1 Interagency Committee on School Construction, Managing for Results submission, September 10, 2015.

2 WBAL NewsRadio 1090, January 13. Detailed information is available from the Maryland State Department of Education, Division of Curriculum, Assessment, and Accountability at: 2016.http://www.marylandpublicschools.org/MSDE/divisions/planningresultstest/doc/20152016Student/2015-2016_Enrollment.pdf

3 "Report on the Fiscal 2016 State Operating Budget (HB 70) and the State Capital Budget (HB 71) and Related Recommendations" ("Joint Chairmen's Report"), Annapolis, Maryland 2015 Session, page 18

To address these issues, the IAC turned to its own in-house experience of 1,740 maintenance surveys carried out between the fall of 2006 and the spring of 2014; the literature on industry standards; and the experience of the LEA facility planners and maintenance managers, the individuals who carry the daily obligation to maintain their school buildings in good order.

FINDINGS

I. Extent to which failures in school maintenance contribute to increase public school construction costs

Relation of Capital Requests and Maintenance Survey Results

The large size of the annual requests from local boards of education for State capital funds is an indication of the capital need among the school systems in Maryland. It can be asked whether the size of the requests is driven by a failure to maintain existing school facilities, i.e., are projects for building upgrades and replacements requested prematurely because school systems are not taking proper care of their assets?

To answer this question, we examined the overall maintenance results for 682 existing school facilities for which projects were submitted to the State between FY 2009 and FY 2014 for Capital Improvement Program (CIP) funding.[4] New school requests, which are driven by either enrollment capacity needs or programmatic requirements, are not included in this assessment. While the results for individual categories in any school facility can vary widely, the overall survey result offers a generalized view of how well a school is maintained.

Chart 1. Maintenance Survey Results for Existing Building Requests, FY 2009 - FY 2014

		OVERALL MAINTENANCE SURVEY RESULTS FOR REQUESTED FACILITIES (Note 1)									
		SUPERIOR		GOOD		ADEQUATE		NOT ADEQUATE		POOR	
STATEWIDE	NUMBER OF CIP REQUESTED FACILITIES, FY 2009-2014 Existing Buildings Only (Note 3)	NO. OF RE-QUESTS	% OF TOTAL	NO. OF RE-QUESTS	% OF TOTAL	NO. OF RE-QUESTS	% OF TOTAL	NO. OF RE-QUESTS	% OF TOTAL	NO. OF RE-QUESTS	% OF TOTAL
Systemic Renovation Requests	446	22	4.93%	227	50.90%	181	40.58%	15	3.36%	1	0.22%
Renovation Requests (Note 2)	182	24	13.19%	105	57.69%	52	28.57%	1	0.55%	0	0.00%
Replacement School Requests	54	22	40.74%	15	27.78%	16	29.63%	1	1.85%	0	0.00%
TOTAL:	682	68	9.97%	347	50.88%	249	36.51%	17	2.49%	1	0.15%

Notes:

(1) "Overall Maintenance Survey Results" refers to the total published rating for the facility as of January 2016, not to individual inspection categories within the facility. The ratings cover the period FY 2007 - FY 2014.

(2) "Renovation Requests" includes: Complete Renovation, Partial Renovation, Limited Renovation, Renovation with Addition, Open Space Pod Conversion, and Science Classroom Renovation.

[4] For an explanation of the IAC Maintenance Survey methodology, see "Maintenance of Maryland's Public School Buildings, Fiscal 2014 Report", at www.pscp.state.md.us.

(3) Each facility is recorded once per project, even if funds were requested over two or more fiscal years for a specific project; a facility is recorded as many times as separate projects were requested over one or more fiscal years.

The chart indicates that almost 61% of the existing school facilities submitted for funding between FY 2009 and FY 2014 received overall ratings of Superior or Good. 37% received a rating of Adequate, and less than 3% received a rating of Not Adequate or Poor.

These results suggest that the large size of the capital projects that are represented in the annual submissions by LEAs for Capital Improvement Program funding – averaging approximately $700 million per year in requests to the State since FY 2006 – is driven not by poor maintenance leading to premature deterioration or failure of existing facilities, but rather by the need to build capacity for larger student enrollments, to adapt existing school facilities to meet contemporary educational requirements through renovations and additions, and to replace and upgrade building systems or entire buildings due to the normal aging of building systems. Because the 35 categories used in the survey are based on maintenance requirements rather than capital needs, they do not always align with the State's capital project categories (for example, an HVAC replacement project might cut across several maintenance categories, including Rooftop Equipment, Flashing, Electrical Distribution and Electrical Service, Equipment Rooms, etc.); consequently, a more detailed study would be needed to determine the relationship between individual categories of systemic renovation project requests and the maintenance ratings for that category.

In the period FY 2006 to FY 2017, 3,719 capital requests with a total State value of $8.3 billion fell into three broad categories as follows:[5]

- Projects to build enrollment capacity, where student enrollment growth exceeds the available capacity of schools.

  Project types: New schools and additions for capacity purposes (addition projects typically have very little impact on existing building systems).
  - 22.28% of total requested value
  - 13.34% of total project requests

- Projects for existing schools to meet educational program needs, where older facilities are educationally inadequate.

  Project types: Replacements, major renovations, limited renovations, open space pod and science classroom renovations, and additions for programmatic purposes. Most of these projects (with the exception of additions for programmatic purposes) will also involve the upgrade or replacement of some existing building systems.
  - 56.50% of total requested value
  - 24.09% of total project requests

- Projects to upgrade and replace individual building systems to meet contemporary standards of energy and water conservation and of building performance.

[5] Since the funding capacity of both the State and the local governments sets a limit to how much capital work can be carried out each year, the Capital Improvement Program (CIP) only partially reflects the total capital need. Of the $700 million in requests, the State has been able to fund an average of $313 million, or 45%, each year since FY 2006.

Project types: Systemic renovation projects, including replacement or upgrade of roofs, boilers, chillers, architectural and structural repairs, doors and windows, electrical and communication systems, and vertical conveyance systems. These projects generally provide a direct and immediate benefit for the maintenance of the school building.

- 21.14% of total requested value
- 61.09% of total project requests[6]

These figures show that approximately 21% of the capital expenditure on school construction is spent on the systemic renovation projects in the third category that directly address the deferred maintenance backlog. Since Chart 1 shows that almost 56% of the requests for systemic renovation projects were in schools that received a rating of Superior or Good, and another 41% were in schools with a rating of Adequate, the data suggests that these projects are submitted because of normal aging rather than inadequate maintenance. A portion of the expenditures for the first two categories above -- projects to build enrollment capacity and projects to meet educational needs in existing schools - also reduces the deferred maintenance backlog, but only a detailed, project-by-project analysis could distinguish this amount from expenditures in these projects that are related to programmatic and architectural improvements.

In the exceptional case where a requested project is in a school with a rating of Not Adequate or Poor, the other rationales for submission are invariably also present. The IAC staff routinely questions LEAs regarding systemic renovation project requests which are technically eligible for State funding but which appeared to be submitted prematurely. Additional documentation must be submitted to justify the project. Typically in these cases, the cause of the premature failure was poor specifications or faulty installation of the original building system, not a lack of maintenance. An example includes boilers in Prince George's County that were originally purchased, in an effort to reduce first costs, with a 10-year service life rather than with the industry standard of 20 to 30 years.[7] This contrasts with the situation in which an LEA may not follow up roofing inspections with timely repairs, leading to accelerated deterioration of the asset and possibly a premature request for replacement. In this case, the IAC would undertake discussions with the LEA to confirm its own observations; if they are correct, IAC staff would then undertake a monitoring program to ensure that the LEA changes its practices and protects the asset as it is required to do.

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6 Source: PSCP fiscal databases.

7 Discussion with LEA, October 26, 2015. See IAC "Guidelines for Maintenance of Public School Facilities in Maryland," May 30, 2008, Section IV for a schedule of industry service lives for various types of equipment and systems.

II. Evaluating the relationship between identified maintenance deficiencies and school construction needs for each jurisdiction

While there is a common-sense linkage between the quality of maintenance and school construction needs, it is difficult to quantify this relationship. Investments that directly impact on maintenance must compete with the other two arenas of capital expenditure, the construction of new space to reduce over-crowding and renovations and additions to address educational programs. With limited capital budgets, local boards of education must make difficult choices among these three broad sets of priorities; neglect in any one area will have consequences that affect education and the well-being of students. As a result, the school construction needs of Maryland's local educational administrations (LEAs), as expressed in their annual Capital Improvement Program (CIP) and other capital requests to the State, do not directly reflect either the results of the PSCP maintenance inspection reports or those of the LEA's internal Comprehensive Maintenance Plan. The best capital plans do, however, achieve a balance among the three priorities.

Evidence from the Industry

The facility management industry establishes a strong link between maintenance and capital investment. The Facility Conditions Index (FCI) is a widely accepted single-figure measure "that provides a relative scale of the overall condition of a given facility or group of facilities within a facility portfolio. The index is derived by dividing the total repair cost, including educational adequacy and site-related repairs, by the total replacement cost for the set of facilities."[8] The FCI of an individual building can be maintained by good maintenance and can be improved through capital investment; by the same token, inadequate maintenance or delayed capital investment will lead to the decline of the FCI. One research paper asserts

> *...the SFCA [i.e., School Facilities Condition Assessment] for various states and counties...estimated the current average FCI of all schools to deteriorate by 16 to 24 percent over the next 10 years if no funding is applied to renew expiring facility systems.*[9]

This relationship is expressed conceptually in the following chart. "Aging" in the chart can be expressed by declining FCI: all building systems age through normal wear and tear, but good maintenance delays this process. The dashed line indicates an accelerated deterioration that will result from insufficient maintenance, substantially shortening the service life of the building. The slope of the "Likely aging" line depends on many factors, including among others facility age and the history of facility planning and maintenance (see page 9). Not least among these factors is the original quality of construction: if this quality is reduced, the facility will age faster unless it receives additional maintenance attention. The steeper the negative slope of the "Likely aging" line, the more rapidly will the effect of insufficient maintenance be shown.

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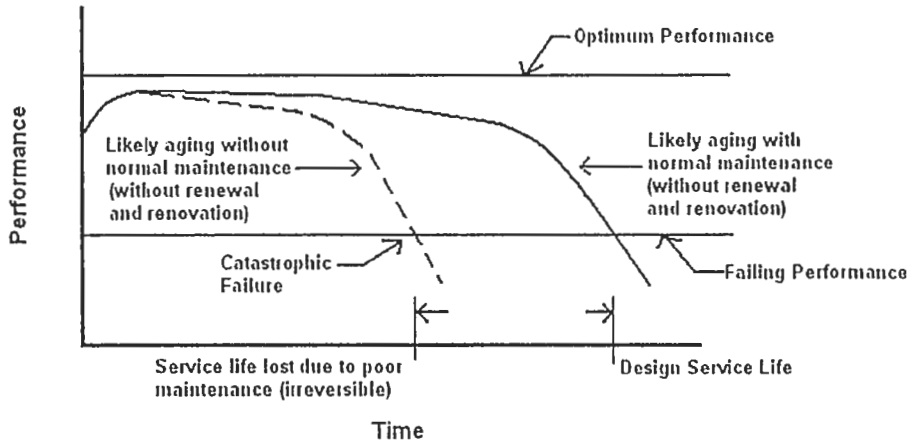
[8] Jacobs Project Management, in IAC, "Baltimore City: Public School Construction Program Block Grant Funding: A Report to the Legislative Committees," January 8, 2013, page I-4, available at www.pscp.state.md.us.

[9] Bello, Mustapha A. and Vivian Loftness, "Addressing Inadequate Investment in School Facility Maintenance" (Carnegie Mellon University School of Architecture, May 2010), p. 12

Service Life with and without Normal Maintenance



Within the spectrum of maintenance approaches – reactive, preventive, predictive, and Reliability Centered Maintenance (RCM)[10] are commonly found classifications – the least expensive method, preventive maintenance (PM), is described in the literature as providing the best return on investment. According to Wei Lin Koo of Jones Lang LaSalle,

> *Compared to no preventive maintenance, an investment in preventive maintenance not only pays for itself but also produces a huge return…At the portfolio level, the analysis indicated a net present value of $2 billion over a 25-year period for a…$0.33/sf… preventive maintenance program. That represents a return on investment of 545 percent. The bulk of the return comes from increasing the useful life of equipment. Energy savings account for approximately 7 percent of the return.*[11]

Results of similar magnitude are corroborated by other sources:

> *Studies indicate that every $1 of preventive maintenance that is deferred will result in $4 of expenditures to ultimately repair or replace those building systems.*[12]

> *80% of a facility's maintenance issues can be addressed by performing preventive maintenance on only 20% of the facility's systems.*[13]

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[10] Pride, Alan "Reliability-Centered Maintenance (RCM)" (Whole Building Design Guide, https://www.wbdg.org/resources/rcm.php): "Reliability-Centered Maintenance (RCM) is the optimum mix of reactive, time- or interval-based, condition-based, and proactive maintenance practices....These principal maintenance strategies, rather than being applied independently, are integrated to take advantage of their respective strengths in order to maximize facility and equipment reliability while minimizing life-cycle costs."

[11] Koo, Wei Lin, "Thinking Like a CFO: Prevention Pays, Analysis Shows," December 2002 (at http://www.facilitiesnet.com). See also Koo, Wei Lin and Tracy Van Hoy, "Determining the Economic Value of Preventive Maintenance," date unknown (Jones Lang LaSalle whitepaper). The $0.33/sf represents an annual allocation, and is often shown as $/sf/year.

[12] Council of the Great City Schools, "Reversing the Cycle of Deterioration in the Nation's Public School Buildings," October 2014, p. 8

[13] SchoolDude, "An Ounce of Prevention is Worth a Pound of Cure: Examining the Costs, Benefits and Best Practices of a Preventive Maintenance Plan in Your Educational Institution" (at https://www.schooldude.com, date unknown).

SchoolDude, a leading entity in the field of school facility research and management, indicates that PM can lead to a 50% to 65% reduction in the rate of emergency work and a 28.6% to 39.3% reduction in the cost of such work; a 16% reduction in corrective maintenance work as a percentage of total work over a 5-year period; a 30% extension of the life a roof; and with other M&O improvements, an estimated 50-60% energy savings in an existing building.[14]

LEA Maintenance Survey Results and CIP Requests

Chart 1 showed that that there is no evidence that on a statewide basis, the large CIP requests are driven by inadequate maintenance of facilities. To determine whether individual LEA requests might be driven by a failure to maintain school facilities, the IAC examined CIP requested funding amounts for the period FY 2009 to FY 2014. Chart 2 relates the total CIP requests of each LEA to the overall Maintenance Inspection ratings received by its schools.

Chart 2. Maintenance Survey Results and CIP Requests, FY 2009 - FY 2014

MAINTENANCE AND CAPITAL IMPROVEMENT, FY 2009 - FY 2014

	TOTAL VALUE OF LEA CAPITAL REQUESTS FY 2009 - FY 2014 (State and Local) (000,000)		OVERALL MAINTENANCE SCORES & RATINGS, FY 2007 - FY 2014						SURVEYS CONDUCTED FY 2007 - FY 2014												
			AVERAGE OVERALL MAINTENANCE SCORE		LOWEST OVERALL MAINTENANCE SCORE		HIGHEST OVERALL MAINTENANCE SCORE		SUPERIOR (S) + GOOD (G)					ADEQUATE (A)		NOT ADEQUATE (NA) + POOR (P)					TOTAL SURVEYS
LEA	Total	Average Annual	Score	Rating	Score	Rating	Score	Rating	S: No.	% of Total	G: No.	% of Total	S+G: % of Total	A: No.	% of Total	NA: No.	% of Total	P: No.	% of Total	NA+P: % of Total	S+G+A+ NA+P
Allegany	$ 5.9	$ 0.99	90.2	G	78.9	A	97.1	S	6	22%	18	67%	89%	3	11%	0	0%	0	0%	0%	27
Anne Arundel	$ 284.6	$ 47.43	88.6	G	74.5	NA	99.3	S	24	16%	81	54%	70%	41	28%	3	2%	0	0%	2%	149
Baltimore County	$ 606.5	$ 101.08	89.2	G	77.2	A	100.0	S	18	9%	146	72%	80%	40	20%	0	0%	0	0%	0%	204
Calvert	$ 60.5	$ 10.09	95.0	G	82.8	A	100.0	S	18	58%	12	39%	97%	1	3%	0	0%	0	0%	0%	31
Carroll	$ 32.1	$ 5.35	90.3	G	83.4	A	97.0	S	2	15%	7	54%	69%	4	31%	0	0%	0	0%	0%	13
Caroline	$ 99.5	$ 16.59	91.8	G	81.6	A	98.9	S	13	25%	35	69%	94%	3	6%	0	0%	0	0%	0%	51
Cecil	$ 33.7	$ 5.62	95.0	G	83.2	A	100.0	S	23	64%	11	31%	94%	2	6%	0	0%	0	0%	0%	36
Charles	$ 101.4	$ 16.90	90.7	G	76.6	A	99.5	S	9	20%	28	64%	84%	7	16%	0	0%	0	0%	0%	44
Dorchester	$ 43.1	$ 7.19	90.0	G	80.2	A	97.3	S	7	41%	5	29%	71%	5	29%	0	0%	0	0%	0%	17
Frederick	$ 336.8	$ 56.13	91.2	G	82.4	A	100.0	S	17	22%	55	70%	91%	7	9%	0	0%	0	0%	0%	79
Garrett	$ 4.5	$ 0.75	92.8	G	87.9	G	99.2	S	5	26%	14	74%	100%	0	0%	0	0%	0	0%	0%	19
Harford	$ 222.5	$ 37.08	89.2	G	76.7	A	98.1	S	9	15%	34	55%	69%	19	31%	0	0%	0	0%	0%	62
Howard	$ 242.2	$ 40.36	92.0	G	82.2	A	98.8	S	21	25%	60	71%	95%	4	5%	0	0%	0	0%	0%	85
Kent	$ 0.6	$ 0.11	90.3	G	85.8	G	97.0	S	2	22%	7	78%	100%	0	0%	0	0%	0	0%	0%	9
Montgomery	$ 892.1	$ 148.69	88.2	G	72.4	NA	98.9	S	26	10%	149	58%	68%	79	31%	3	1%	0	0%	1%	257
Prince George's	$ 516.5	$ 86.09	84.9	A	71.1	NA	98.9	S	7	3%	104	40%	42%	139	53%	13	5%	0	0%	5%	263
Queen Anne's	$ 32.6	$ 5.43	90.0	G	78.2	A	97.8	S	4	22%	9	50%	72%	5	28%	0	0%	0	0%	0%	18
St. Mary's	$ 33.2	$ 5.54	92.0	G	80.6	A	99.7	S	10	31%	17	53%	84%	5	16%	0	0%	0	0%	0%	32
Somerset	$ 19.8	$ 3.30	86.4	G	77.0	A	97.8	S	2	15%	5	38%	54%	6	46%	0	0%	0	0%	0%	13
Talbot	$ 1.5	$ 0.25	93.9	G	85.8	G	99.6	S	6	55%	5	45%	100%	0	0%	0	0%	0	0%	0%	11
Washington	$ 72.1	$ 12.02	91.3	G	76.0	A	100.0	S	14	25%	34	62%	87%	7	13%	0	0%	0	0%	0%	55
Wicomico	$ 91.4	$ 15.24	92.1	G	79.8	A	100.0	S	13	45%	11	38%	83%	5	17%	0	0%	0	0%	0%	29
Worcester	$ 11.3	$ 1.88	88.4	G	76.7	A	98.6	S	2	12%	11	65%	76%	4	24%	0	0%	0	0%	0%	17
Baltimore City	$ 595.2	$ 99.21	81.6	A	65.2	P	96.6	S	6	3%	46	21%	24%	132	60%	34	16%	1	0%	16%	219
Statewide	$ 4,339.9	$ 723.3	90.2	G	79.0	A	98.8	S	264	15%	904	52%	79%	518	30%	53	3%	1	0%	1%	1,740

The chart shows:

The Average Overall rating for most LEAs is in the range of Good, with two LEAs averaging in the Adequate range:

- Prince George's County Public Schools: The study period covers a number of years in which facility leadership in the school system was deficient. Since 2013, a change of leadership has brought about significant aspects of improvement in every branch of facility administration, including organizational structure, staffing, training, and

[14] SchoolDude, ibid.

accountability. It is anticipated that these changes will begin to manifest themselves in the FY 2015 and subsequent maintenance scores and ratings.

- Baltimore City Public Schools represents a unique set of circumstances. These have been addressed in a separate IAC report, "Baltimore City Public Schools: Administration of Capital Projects," dated December 1, 2015, page 11ff.[15] The report includes a number of recommendations with respect to both maintenance and capital project administration.

The Lowest Overall rating for most LEAs is in the Adequate range, with three large LEAs that had schools in the Not Adequate range and one with a school in the Poor range:

- Anne Arundel County Public Schools: out of 149 surveys, three (2%) were rated at Not Adequate. On re-inspection, two of the schools were rated as Good and one was rated as Adequate[16].

- Montgomery County Public Schools: out of 257 surveys, three (1.2%) were rated at Not Adequate. On re-inspection, one of the schools was rated as Adequate and one was rated as Superior. The re-inspection rating for the third school was performed in FY 2015 and is under review.

- Prince George's County Public Schools: out of 263 surveys 13 (4.9%) were rated at Not Adequate. Two of the schools were re-inspected twice (the second time to monitor the correction of specific deficiencies rather than the entire facility). On re-inspection, three of the schools were rated as Good and 11 were rated as Adequate. One of the schools was closed and therefore was not re-inspected.

- Baltimore City Public Schools: out of 219 surveys, 34 (15.5%) were rated at Not Adequate and one (0.5%) was rated at Poor. The Public School Construction Program is analyzing information to determine whether on re-inspection a particular facility improved in its rating, remained the same, or may have improved but then declined in a subsequent (round 2) inspection.

Every school system had at least one school that received a rating of Superior. For Calvert, Cecil and Talbot County Public Schools, more than 50% of the schools surveyed in the study period earned ratings of Superior. Seven schools in six LEAs achieved a perfect score of 100%:

- Battle Monument Special (Baltimore County)
- Plum Point Elementary (Calvert County)
- Bay View Elementary (Cecil County)
- Governor Thomas Johnson Middle (Frederick County)
- Ruth Ann Monroe Primary (Washington County)
- J.M. Bennett High (Wicomico County)
- Willards Elementary (Wicomico County)

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15 http://www.pscp.state.md.us/Reports

16 A school building that receives an overall rating of Not Adequate or Poor is given 60 days to correct the deficiencies and is then re-inspected. Some of the schools found to be Not Adequate during the study period were or will be re-inspected in FY 2015 or FY 2016.

Given the complexities of managing even a small school, these results are noteworthy, and attest to the excellent maintenance practices of these jurisdictions.

Capital Investments and Maintenance: Industry Budgeting Methodologies and Maryland Requirements

The most accurate method to identify the future maintenance budget and capital investment needs of any building involves a detailed facility condition assessment (FCA) combined with a life cycle cost analysis (LCCA): inventory all building elements, evaluate the current condition of each, use industry literature and other sources to determine both annual maintenance requirements and long-term capital replacement timeframes, and assign an inflation-adjusted figure to each line item for a 20 to 30 year time period. The typical FCA presents a snapshot in time of the current condition of each facility and the cost to upgrade it to like-new condition; the LCCA will determine when capital renewal expenditures must be made. In practice, the expense involved in this detailed method makes it impossible to carry out; we are not aware of any school system in the United States that has carried out an FCA combined with LCCA of its entire building plant at this level of detail.

Instead, the facility management industry has developed broadly predictive formulas to assist public owners to establish appropriate and realistic maintenance and capital renewal budgets. The factors that can be taken account of in such predictive models are:

- Age of Facility
- System Technologies Complexities
- Construction Quality
- Use / Functional Demand
- Type of Facility
- Size of Facility
- Location of Facility
- Current Condition / Deferred Maintenance
- Current / Plant Replacement Value
- Current Plant Value / Initial Acquisition cost
- System Replacement Cost
- System Lifecycle Cost
- Facility Maintenance Planning
- Budget Constraint[17]

Of these factors, facility age, facility planning, and construction quality are acknowledged as most influential in establishing future budgets.[18] A general rule that appears to be widely accepted is based on the Plant Replacement Value (PRV) (also called Current Replacement Value, CRV) of the facility, requiring that for a building with an anticipated 50-year service life, the owner should expend a certain percentage of the PRV on annual maintenance, and should set aside another percentage of PRV in a "refresh" fund for anticipated capital renewals that will be needed within the anticipated service life of the facility (i.e. roof replacement, mechanical system replacement or upgrade, etc). In a recent report, the Council of the Great City Schools referenced a 1990 study by the National Research Council and others that recommended:

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17 Bello and Loftness, op. cit., p. 12

18 Ibid, p. 13, referencing Monterecy, O. P., "A formula budgeting model and framework for controlling physical plant deferred maintenance: an empirical analysis of public schools in Rhode Island," Doctoral dissertation, University of Connecticut 1985.

that owners spend between 2 percent and 4 percent of the current replacement value of a building every year on maintenance, with maintenance including routine and preventive maintenance and repairs, as well as capital replacements and renewals of major systems as they reach their expected life. A 2 percent spend rate assumes the facility has a 50-year life expectancy, and a 4 percent spend rate assumes the facility has a 25-year life expectancy.[19]

The methodology described here falls under the general title of Plant Value Methodology.[20] The logic of this method is based on the depreciation rate of the building: since a 50-year facility loses 2% of its original value every year over a 50 year span, the facility will only retain optimal building performance if 2% is invested every year into maintenance and 2% into capital renewal. In practice, since building systems need to be replaced episodically and on varying schedules rather than on a yearly basis, the 2% budget for capital renewal should be viewed as an investment that will be called upon when needed within the life of the building. By this logic, a 25-year building with a 4%/year depreciation would require an annual investment of 4% for maintenance and 4% for capital renewal. However, these figures assume that there is no backlog of deferred maintenance at the building; if there is, then additional funding is needed to eliminate the backlog over a defined period of time.[21]

No formulaic approach to determining maintenance and capital investment is perfect. The factors that successfully sustain a school facility, particularly under conditions of constrained operating resources, are too complex to be reduced to a purely quantitative basis; the IAC finds that they include, for example, elements such as the morale and attitudes of the in-school and central office employees, the procedures that are established to identify deficiencies and correct them in a timely manner, and the quality of leadership offered by the school principal, factors that can be readily observed but that cannot be quantified.

Nevertheless, using the above formula and assuming that Maryland's schools were originally built for a 50-year life, then the method based on PRV would require that the public invest some $929 million per year in school facility maintenance and operations, and another $929 million per year in capital renewal of the facilities, as follows:

Total area of Maryland schools:	138,509,600 square feet
Replacement cost (building plus site, as developed for the FY 2017 CIP):	$335.58 / s.f.
Total cost of replacement (area X cost/sf):	$46.481 billion
2% annual budget for maintenance and repairs:	$929.6 million
2% annual budget for capital renewal:	$929.6 million

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19 Council of the Great City Schools, op. cit., page 16. The referenced National Research Council report is "Committing to the Cost of Ownership: Maintenance and Repair of Public Buildings" (National Academy Press, Washington, D.C., 1990).

20 Other methodologies described by Bello and Loftness include Life Cycle Cost, Condition Assessment, Facility Infrastructure Sustainment Cost, Navy Long-Range Maintenance Planning (LRMP), Applied Management Engineering (AME), Incremental Budget, and Summation. In addition, Biedenweg and Hutson developed a methodology for Stanford University called BRCI (i.e., "Before the Roof Caves in").

21 PRV does not account for the crucial factor of original construction quality. Bello and Loftness have accounted for this by developing a formula in which PRV accounts for 35% of the calculation and Current Plant Value (CPS) accounts for 65%. CPV is "the initial acquisition cost adjusted to the current year for inflation, improvements and changes in size or capacity. The adjustment for inflation and resulting increase in value accounts for a facility's age." The authors use the same 2% for maintenance and 2% for capital renewal, but apply it to a baseline of cost that is more inclusive than the simpler PRV method. They examined a number of competing methodologies, and found that their proposed formula met the broadest requirements for ease of comprehension and ready availability of data. Bello and Loftness, op. cit., p. 21ff.

Total annual M&O and capital renewal cost: $1.859 billion

Reconciled data on how much Maryland school systems actually spend on school maintenance and capital renewal is difficult to obtain, in large part because school systems account for factors in different ways.[22] A thorough analysis would require a detailed reconciliation that lies beyond the current staffing capacities of the IAC. It is safe to say, however, that no school system in Maryland – and, most likely, very few in the entire United States – is capable of budgeting the amount of funds that the NRC formula requires. In fact, with the increase of square footage and concurrent reduction of maintenance and custodial staffing, it is more likely that the trend is in the opposite direction.

This statement points to the important linkage between the quality of construction and maintenance: if maintenance budgets are currently constrained and are predicted to remain so, then it is essential that school facilities be built to high standards using durable building systems and equipment. The Council of the Great City Schools report states:

> *Purchasing the least expensive piece of equipment may initially be alluring; however, over the life of the building, that decision may cost considerably more than a higher quality piece with a greater initial cost. Life-cycle evaluations should factor in both the initial cost and the cost to operate and maintain the equipment over its expected life. For example, lesser quality equipment may consume more power, require more periodic maintenance, offer a shorter warranty, and ultimately may require replacement sooner. Together, these total life-cycle cost considerations should be weighed for all major purchases. Additionally, districts should consider the funding for both the initial expenditure and the continuing expenditures. Often, the latter funding comes from a more finite operations budget; therefore using more readily available capital funds to buy a higher quality piece of equipment may preserve scarce operating funds later.* [23]

At the same time, school facility planners face the need for flexibility to adapt their school buildings to changes in educational requirements, in the characteristics and size of the student body, and in community preferences. This dilemma, which can be characterized as the Durable / Flexible Equation, is under study by the IAC working with a number of LEA facility planners.

Proposed Maryland Methodology Based on Maintenance Survey Results

The mission of the Public School Construction Program can be summarized as equity: no school in the state should be of substantially less quality than the average, and the average should be very high. A robust program of capital investment is one aspect of achieving this goal; another is high quality maintenance applied to every school in the state.

The overall goal of the Maintenance Inspection Program reflects the mission of the Program: every school in the state should be in Good to Superior condition, and should either remain steady at this rating or should be improving. Logically, this means that the number of schools with ratings of Adequate will also stay steady or will decrease over time, and the number of schools with ratings of Not Adequate or Poor will decidedly decrease. Presumably, if every maintenance item within each school is in Good to Superior condition and is either holding steady or improving, the overall score of the school will reflect this and will meet the overarching program goal.

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[22] As an example, one school system might include the materials needed to protect roads and driveways under winter weather conditions under the Maintenance budget, while another school system might carry these same items under a different budget category, e.g. Transportation.

[23] Council of the Great City Schools, op. cit., p. 34.

Two dimensions, Quality and Trendline, should in combination indicate whether the State and the LEAs are on the right track to achieve equity among all of its school buildings. Each of the 35 maintenance categories will be examined:

- Quality: The overall quality of the category, averaged over a six-year period. Quality is measured by the percentage of observations that fall into the Superior-plus-Good, the Adequate, and the Not Adequate-plus-Poor ratings across the study period.[24] Quality can be described on a descending scale from Noteworthy to Very High Concern:
    - *Noteworthy*: As nearly good as it is possible to be.
    - *Good Job*: Commendable effort and results, but with improvements indicated.
    - *Average*: Achieves building performance without compromising the safety or health of building occupants or the educational program, but requires significant improvement.
    - *Of Concern*: May compromise the safety or health of building occupants, or the educational program, if not attended to.
    - *Of High Concern*: Will likely lead to dangerous health or safety situations, or to interruption of the educational program, and should be addressed immediately.
    - *Of Very High Concern*: Requires urgent, immediate action to prevent harm to building occupants and/or interruption of the educational program.

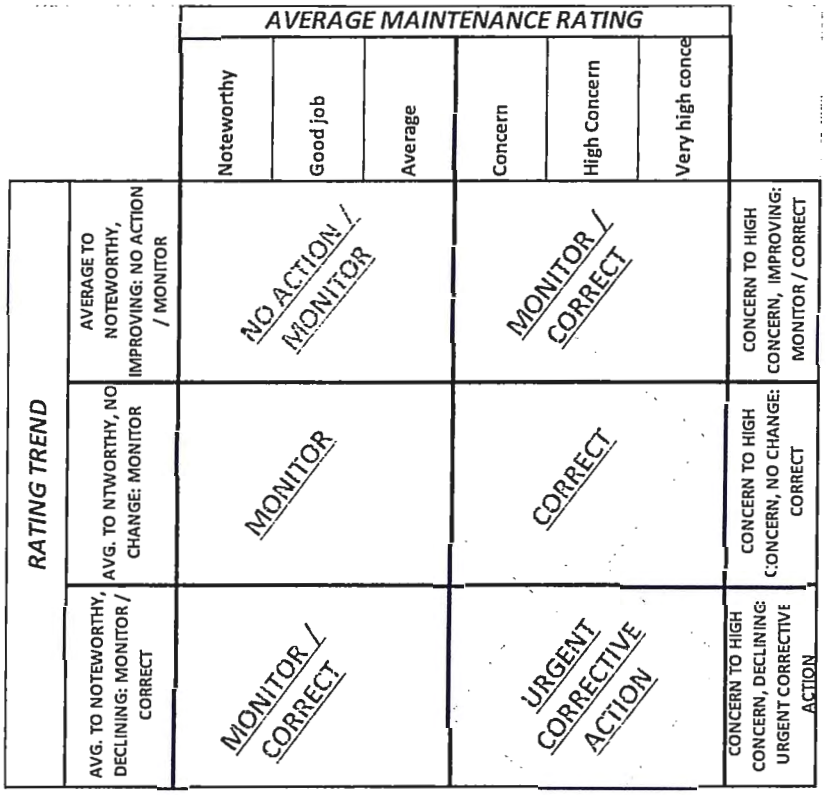
- Trend: The trendline of the category, as measured by changes in the six-year average ratings. Trendlines can be described as Improving, as No Change, or Declining.

Six permutations of these two factors are possible. Each maintenance category can be assigned to one of the six areas; each leads to different general actions:

Quality of Category / Trendline	**Action to be Taken**
• Quality is Average to Noteworthy, and is Improving:	No Action/Monitor
• Quality is Average to Noteworthy, and with No Change:	Monitor
• Quality is Average to Noteworthy, and is Declining:	Monitor / Correct
• Quality is of Concern to of Very High Concern, but is Improving:	Monitor / Correct
• Quality is of Concern to of Very High Concern, and with No Change:	Needed Corrective Action
• Quality is of Concern to of Very High Concern, and is Declining:	Urgent Corrective Action

This range of possible actions is expressed in the following conceptual matrix:

[24] Quality in this methodology is measured by the same method used in the IAC Managing for Results (MFR) assessment of maintenance. The MFR states: "Progress [in the maintenance of schools] is measured by determining whether the average six-year percentage of combined Superior and Good overall ratings holds steady or increase, the percentage of Adequate overall ratings at a minimum holds steady, and the percentage of Not Adequate and Poor overall ratings decreases over time."



This same methodology can also be applied to the maintenance categories in each LEA, and with the same objective, to guide appropriate actions to resolve the maintenance issues of highest concern. However, this analysis will require detailed review of an enormous quantity of information: with 35 maintenance categories in 24 jurisdictions leading to any one of six possible outcomes, there are more than 5,000 data points that must be examined. Any conclusions drawn from such a study would serve only as a first screening; true recommendations for action could only be developed in intense consultation with the staff of the LEA itself. Although a worthy ambition, this is a scope of work that lies well beyond the staff resources of the IAC at this time.

A Spectrum of Actions

Examination of the specific maintenance categories covered by the Maryland inspection process leads to the conclusion that just as not all capital investments are driven by maintenance needs, not all categories of maintenance deficiency can be solved through a capital project. Actions must be targeted to the specific requirements of the task to be solved: in some cases capital investment is appropriate, in others investment must be made into human and other operational resources, and in still other cases a combination of these approaches is called for. Mechanical deficiencies are likely to be solved through large and costly capital investments; issues of cleanliness and sanitation depend almost exclusively on human labor; and in between, the persistent deficiencies found in life safety systems across almost every LEA depend on a combination of capital investment into fire alarm and other systems and the need for well-trained and diligent inspectors of fire extinguishers.

Detailed decisions about the needs of each facility must be made on a building-specific basis. The typical range of actions includes:

- Capital intensive systems: Increase the funding for capital projects in this category (and concurrently ensure that planning, design, construction administration, and post-construction activities are carried out a high quality, with sufficient trained personnel, and on a reasonable schedule)

- Labor intensive systems: Increase the numbers of personnel and ensure that they have sufficient training and resources within an organizational structure that supports their tasks.

- Capital and labor intensive systems: Increase both capital funding and maintenance/custodial personnel and resources.

Next Steps

Detailed analysis of the results of the Maintenance Survey data for FY 2007 through FY 2014 is required in order to develop an approach for action. FY 2007 was the first year that the Maintenance Inspection Program was housed in the Public School Construction Program; FY 2014 is the last year for which the PSCP has complete data. This period will allow three six-year groups to be examined, so that trend lines can be determined for separate maintenance categories at the statewide level, for the overall condition of maintenance in individual LEAs, and at a far higher level of detail, for specific maintenance categories within the individual LEAs.

Such a data analysis, combined with the field observations of the Maintenance Inspectors, will permit the efforts of the IAC to be focused into those maintenance categories that are consistently problematic, i.e., those that show both a low level of quality and have a trendline that indicates either no change or decline. Certain vulnerable areas emerge simply from reading the individual school maintenance reports; among these are fire extinguishers that are not regularly certified, utility shut-off valves that are not properly labelled, electrical and mechanical equipment that is blocked by storage, ceiling tiles that are not replaced in a timely way once leaks are discovered and corrected, and roof joints and flashings that are failing. Depending on the type of deficiency, the appropriate response may be an increase in capital funding in specific areas, e.g. roofing; an increase of training in others, e.g. the certification of fire extinguishers or proper storage practices; or even an exploration of alternative building technologies that may be more suited to the resource limitations of Maryland's school systems.

While great efforts are being made to maintain Maryland's schools in an acceptable state, the detailed information provided by the Maintenance Inspection Program reveals that there are persistent problems on a statewide level in specific areas of facility management, and that individual LEAs, even those with good facility management programs, struggle with persistent problems, including the lack of personnel and other resources. The methodology for action outlined here will assist the IAC to most effectively take action to ensure that all Maryland schools are maintained at acceptable levels of quality.

III. Identifying areas of improvement in each jurisdiction

In the July survey, LEAs were asked to "identify the areas in which you believe your organization could be improved" and "any steps you have taken to make improvements in these areas." Seven LEAs responded; their comments are provided below under the topics queried.

In the nine years that the Maintenance Inspection Program has resided with the Public School Construction Program, the PSCP Inspectors have become very familiar with the maintenance practices of the 24 LEAs. Observations from the Inspectors are included in the topics below.

a. Leadership

BALTIMORE COUNTY
- Professional development at all levels.

FREDERICK
- Improving leadership at all levels.

PRINCE GEORGE'S
- Stable leadership.

PSCP MAINTENANCE INSPECTORS
- Professional training, credentialing, and regular testing of supervisory staff (FRE)
- Engagement of an architect with construction experience to lead a small LEA (SOM)
- Engagement of specialist to oversee daily operations of schools (WOR)

b. Organizational Structure

ANNE ARUNDEL
- Community use:
  - AA Co. Recreation and Parks after school programs: additional use causes wear and tear on the facilities.
  - Summer programs reduce time to make repairs, and clean and maintain the buildings.
- Non-central location of the Facilities Division.

CHARLES
- Monthly staff meetings with supporting services departments.

FREDERICK
- Created two-tier leadership maintenance team, organized by geographic areas, with each area including the same composition of trades and disciplines (allows for succession planning and opportunities for leadership at all levels).

PRINCE GEORGE'S
- Building Services has reorganized and divided plant operations and maintenance.
- Collaboration between the Maintenance Department and the Capital Program Department.

WASHINGTON
- Consolidation of smaller elementary schools into single, larger schools to lower operating costs and increase efficiency; less expensive than renovating or replacing existing schools.

c. Personnel: Staffing and Training

ANNE ARUNDEL

- Hiring and keeping qualified employees is becoming more difficult because compensation is not keeping pace with the improving economy.
- The current work force is aging and the next generation of workers are not considering working in one organization for 20-30 years.
- Result: depletion of the knowledge base.

CHARLES

- Foreman involvement in preliminary design of capital projects
- Foreman involvement in construction oversight to verify quality control
- Integrated energy management office within Foreman of Mechanical/Electrical/ Plumbing for effective communication on operation of building systems
- Utilizing Preventative Maintenance Foreman on capital projects to ensure installation meets design requirements

FREDERICK

- HVAC controls experience is rare and we are attempting to develop internal talent.
- Intend to perform a gap analysis.
- Instituted peer training and offer professional credential (IFMA Facility Management Professional) to maintenance and operations staff.
- Implementing root cause analysis training.

PRINCE GEORGE'S

- Identifying funding to add a second shift for maintenance to support preventive maintenance program.
- Working with Prince George's Community College to establish training for HVAC techs and other specialty trades.

WASHINGTON

- Educational Support Personnel are hired at "Step 1" of the salary scale regardless of prior experience per Association expectations.

PSCP MAINTENANCE INSPECTORS

- Custodial staff:
  - Make preventive maintenance the responsibility of the custodians at each school (MO)
  - Training and better oversight over custodians (PG)
- Higher qualifications, more knowledgeable and responsible building service workers (CARR, CHAS,)

d. Resources (budget, staffing, data systems, equipment, supplies, other)

ANNE ARUNDEL

- Overall funding levels and predictability of the funding stream.
- Current Maintenance operating fund is parallel to 1988-1989 funding for everyday maintenance requirements.
- Controls systems are not being replaced as rapidly as needed and parts are becoming difficult to find, reducing energy savings.
- Has minimal preventative maintenance staffing, affecting life of equipment and requiring more maintenance service calls.

- Funding is needed for:
  - Facilities management software programs
  - Metering to view real time energy use.

BALTIMORE COUNTY
- Additional funding

CHARLES
- Standardization of parts and facility components on construction projects.
- Increased funding would allow for a more thorough scope of work.

FREDERICK
- Additional resources for technology (i.e. School dude, ArcView, etc) and building automation.
- Working to improve project scopes for better budget estimates and efficient project implementation.

HOWARD
- Continued budget cuts: increased number of deferred maintenance projects and less staff.

PRINCE GEORGE'S
- Implemented 'School Dude Maintenance Direct' to collect work orders, track materials, project completion, cost manpower, etc.

WASHINGTON
- Limited number of tradespersons per total building area maintained.
- Systemic renovations limited by available funding.

PSCP MAINTENANCE INSPECTORS
- Balanced and targeted capital improvements to reduce the maintenance burden:
  - Roofing (ALL, CAL)
  - HVAC (CAL
  - General renovations (CARO)
  - Comprehensive Capital Improvement Program (AA, QA, WAS)
- Adequate materials provided to maintenance personnel (CAL)
- Use of a recently closed building to allow adequate storage of materials and equipment (DOR)

e. Other

ANNE ARUNDEL
- Increasing regulatory and environmental compliance costs such as MDE, MBE, prevailing wage, MEMA, and high performance buildings.

CHARLES
- Quality Control measures ensure work orders are being completed effectively and efficiently:
  - Foremen inspections of staff work
  - Customer survey responses once work order is completed

WASHINGTON
- Eliminate the use of portable classrooms, more costly to operate and maintain, and present security challenges.

PSCP MAINTENANCE INSPECTORS

- Energy management systems to reduce operating expenses (ALL, FRE, HOW, WAS)
- Third shift to allow backlog of equipment to be serviced (AA)
- Equipment inventory (FRE, WAS)
- Computerized Maintenance Management System with work order capabilities (CMMS) (BCTY, FRE, WAS)
- BIM (Building Information Modeling) related maintenance management (WIC)

IV. Recommending best maintenance practices to avoid the need for future costly school construction projects

The Literature

A Maryland-specific best practices manual would supplement the vast literature that is available on the subject, ranging from the maintenance manuals issued by manufacturers, vendors and installers to the high-level procedures and practices recommended in the literature of the federal government, the military forces, and other large organizations. A sampling includes:[25]

- U. S. Department of Energy (DOE) FEMP "Operations and Maintenance Best Practices Guide" by Greg Sullivan PE, CEM, Pacific Northwest National Laboratory (presented at Energy 2003, August 18, 2003)
- *O&M Best Practice Series* by Portland Energy Conservation, Inc.
- National Institute of Building Sciences *Whole Building Design Guide* (WBDG) "Optimizing Operations and Maintenance (O&M)"

LEA Best Practices

In July 2015, school facility planners were asked to provide recommendations for best maintenance practices. The responses of the LEAs are summarized below; their responses are testimony to the effort made by local school officials to achieve good maintenance, particularly in a time of extreme fiscal constraints. In addition, the PSCP Maintenance Inspectors were asked to summarize some of the best practices they have observed from their nine years of statewide maintenance inspections, as well as from their prior experience in building construction and management. These best practices are organized under the following categories:

Institutional Organization

- Streamlining management by having a Director of Facilities which includes Maintenance, Operations, and Planning, Design and Construction (AA)
- Excellent communication among Construction, Planning, and Maintenance Departments (CAL)
- Uses a business model that regularly achieves good results and shows continuous improvement (FRE)
- Collaborative work encouraged with horizontal and vertical relationships across all departments (FRE)
- Decentralized organizational structure organized by areas promotes familiarity with facilities and faster service (FRE)

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[25] All are referenced in the Whole Building Design Guide (WBDG) "Optimizing Operations and Maintenance (O&M)" by the National Institute of Building Sciences. This document contains a wealth of references to other maintenance literature.

- Departments of Maintenance & Operations and Facilities Planning & Development are co-located (WAS)
- Board of Education has a standing Facilities Sub-Committee which meets monthly with Maintenance and Facilities leaders (WAS)

Budget

- Balanced Capital Improvement Program (AA)
- Solar arrays powering five schools free funds for maintenance and operations (CARO) Board often makes quarterly adjustments to operating funding levels and dedicates resources from the fund balance to support systemic renovations and other small projects (WAS)

Operations

- Established third shift maintenance program, allowing equipment to be shut down for servicing without affecting the instructional program (AA, DOR, QA)
- Schedule work during non-school hours (HOW)
- Predictive Maintenance (thermal imaging, laser alignment, etc.) as well as preventive maintenance (FRE)
- Formal turn-over of construction project to maintenance with digital records and training on systems. (FRE)
- Project debriefings with building users within 6-12 months of completion of project (FCPS)
- Commitment to community engagement (FRE)
- Continuous Improvement Plan (HOW)
- Six Sigma (HOW)[26]
- Maintenance and facilities staffs work cooperatively with instructional leaders (WAS)

Staffing and Training

- Cross training staff to help continue the knowledge base (AA)
- Empowering employees by engaging them in decisions (BACO)
- Allowing decisions to be made at the lowest possible level (BACO)
- Continuous employee training program, with support for staff and an awards program for improvement and achievement (CEC)
- IFMA certification, Project management training, professional memberships (FRE)
- Peer Training (trade training led by rising leadership within the tradesmen) (FRE)
- Entry plans when promoted to leadership positions (FRE)
- Participates in instructional staff leadership training (FRE)
- Including instructional staff on interview teams when hiring new positions
- On-boarding, orientation and safety training (FRE)
  - Behavior Modification (HCPSS Green School Program)
  - Green Cleaning Techniques by custodial staff
  - Year Round Team Cleaning
  - Gallup - Employee Engagement, Strength Finding and Q12
  - Strength Based Culture - find out what on does well; identify talents, building into strengths and career success.
- On-going post training surveys (FRE)
- On-Line Professional Development (HOW)
- Code Compliance Training (HOW)
- Howard Community College (HOW)
  - Leadership

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[26] Six Sigma is described on the website as "a disciplined, data-driven approach and methodology for eliminating defects...in any process." The objective of the Six Sigma methodology is stated as "the implementation of a measurement-based strategy that focuses on process improvement and variation reduction." (http://www.isixsigma.com)

- Communication
- Problem Solving
- Conflict Resolution

- Has instituted in-house leadership training (WAS)
- Hires individuals with professional training (engineers, architects) as project managers (WAS)
- Employs State of Maryland Master electricians, plumbers, and HVAC mechanics (WAS)

Procurement

- Acquire resources through the contractual bidding process (BACO)

Technical

- Energy Management Systems free funds for other purposes (ALL, DOR)
- Updated standards for all projects (AA)
- Electronic document management programs used during construction by entire team (FRE)
- Pilot programs for new technology finishes, etc. (FRE)
- Issued guidelines on typical deficiencies (PG)
- Meet personally with factory representatives and technicians (TAL)
- Commission as much equipment as possible (TAL)

Interagency Committee on School Construction

In 2008, at the request of the General Assembly the IAC developed "Guidelines for Maintenance of Public School Facilities in Maryland" (May 30, 2008, at www.pscp.state.md.us). In Section V – Recommendations, the IAC addressed the relationship between school construction and maintenance practices. The following is taken from the Guidelines document.

> Since maintenance begins immediately at the moment that a construction project has been given over to the owner, there are several good practices that need to be performed to ensure the integrity of the building from the very beginning:
>
> - Operating staff of the LEA should be on–site for the last 90 - 120 days of construction to familiarize themselves with the placement and identification of all equipment which otherwise would be hidden behind walls and above ceilings.
>
> - Building commissioning should be performed while the maintenance staff is present so that they can gain a precise understanding of how and why the equipment works as it does, as well as an understanding of the proper sequence of operation.
>
> - The maintenance staff should be included in the tabulation and completion of the punch–list, since they will ultimately be responsible for oversight of the quality of the facility.
>
> - Record documents such as Record (As-built) Drawings, Shop Drawings and Specifications, Operations and Maintenance (O&M) manuals, and instructional materials should be retained for future use by the Administration in a central location, and one or more sets of the same documents should be kept in the School Office and in the School Engineers office.
>
> - Due to the large turnover of custodial personnel, a video taping of contractor demonstrations of the mechanical and electrical equipment operations should be

maintained by the facilities office for purposes of training new personnel in the proper operation and use of the equipment at that building.

- In addition to the staff training outlined in Section III [of the Guideline document], the training of new and returning principals in the complete range of their facility responsibilities, from routine maintenance to initiating a major capital project, should be a regular component of the orientation process administered by the school administration.

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Maintenance of Maryland's Public School Buildings

STATE OF MARYLAND
PUBLIC SCHOOL CONSTRUCTION PROGRAM

FY 2016 Annual Report

September 30, 2016

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The following individuals within the Public School Construction Program have made dedicated contributions of time and effort to the Maintenance Inspection Program and the development of this annual report:

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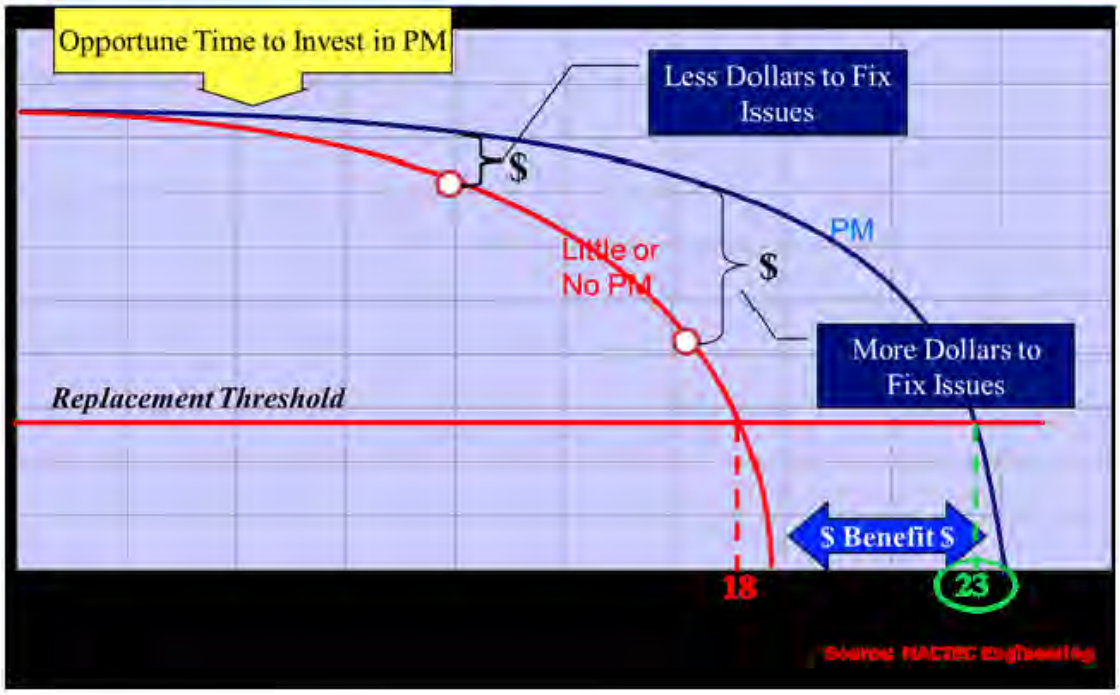
I. PUBLIC SCHOOL MAINTENANCE IN MARYLAND

A. BACKGROUND

Facility Maintenance and Condition: A Reciprocal Relationship

The Maryland General Assembly, the Board of Public Works (BPW), and the Interagency Committee on School Construction (IAC), the entity that administers the Public School Construction Program (PSCP), have a strong interest in the proper maintenance of Maryland's public school facilities. For all types of facilities, the useful life of the structure is greatly extended through a preventive maintenance (PM) program that protects the asset and corrective maintenance activities that address emergent deficiencies. Good maintenance defers the need for repairs and major renovation, and reduces the cost of renovation when it is eventually needed. Regular maintenance ensures that the operation of the building, including its energy efficiency, will remain optimal even under adverse weather conditions. For schools in particular, good maintenance helps to protect the health of young students and establishes an environment in which the focus of administrators, teachers, and the students themselves can remain on learning, rather than on the building.

The reciprocity between maintenance and facility condition is expressed conceptually in the following chart, which shows how the anticipated service life of a building asset will be reduced if maintenance is inadequate.[1] The curving blue and red lines represent the condition of the asset. As with any physical asset, the condition will decline over time even when maintenance is adequate (blue line); with inadequate maintenance, the decline will be accelerated (red line). The service life of this hypothetical asset will be reduced from 23 years to 18 years if PM is not applied.



1 Council of the Great City Schools, "Reversing the Cycle of Deterioration in the Nation's Public School Buildings," October 2014, p. 13.

The reciprocal relationship between maintenance and capital investment is widely recognized in the literature, by industry leaders, and by Maryland's local educational agencies (LEAs). Just as good maintenance reduces and defers the need for capital improvements, timely and appropriate capital investment can significantly reduce the owner's daily maintenance burden, allowing resources to be used for programmatic improvements, energy-saving enhancements, or other purposes. To the extent that funding is provided to renovate or replace older schools, a school system's backlog of deferred maintenance items is also reduced. A comprehensive or partial renovation is generally a more efficient way to address building deficiencies than the upgrade or replacement of individual building systems, and it results in a building that is better suited to support the educational program. Nevertheless, in times of fiscal constraint a well-planned, sequenced series of system upgrades may still be an effective option. The local board's Educational Facilities Master Plan (EFMP), Comprehensive Maintenance Plan (CMP), and annual Capital Improvement Program (CIP) should be coordinated to ensure that maintenance-related capital projects are properly sequenced in relation to other facility needs that support the board's educational objectives, specifically projects for enrollment capacity and projects that address educational program requirements.

The Public School Construction Program Maintenance Inspection Program

Established in 1971, the PSCP has had a long involvement with the maintenance of schools. In the summer of 1973, the BPW directed the IAC to conduct a comprehensive maintenance review of all operating public schools. The results revealed that about 21 percent of the State's 1,259 then-operative schools were in poor or fair condition. To improve upon those findings, comprehensive maintenance guidelines were developed by the IAC and approved by the BPW in 1974. When the *Public School Construction Program Administrative Procedures Guide* (APG) was approved by the IAC in 1981, it included a section on maintenance. A new APG was issued by the IAC in September 1994, containing a revised Section 800 - Maintenance. It describes the procedures for development of a local CMP, required to be submitted by each of the LEAs to the IAC and the local governments prior to October 15 of each year. A well-conceived CMP provides an overview of the policies of the local board and a compendium of good maintenance practices; uses metrics to determine if maintenance is being performed as required; addresses the planning, funding, reporting, and compliance monitoring of school maintenance; and lists the highest priority capital and repair projects, with the anticipated funding source for each project. The requirement to submit an annual CMP is found in the regulations of the PSCP (COMAR 23.03.02.18).

Parallel to the development of the maintenance procedures, in 1980 the BPW directed the IAC to conduct a full maintenance survey of selected public schools in Maryland. The survey was performed by technical staff assigned to the PSCP by the Department of General Services (DGS). Its initial purpose was to assess the quality of local maintenance programs in approximately 100 school facilities that had benefited from State school construction funding. Subsequently, this survey was authorized to become an annual activity and was expanded to include schools that had not received assistance under the Program. Table A on Page 5 of this document shows the ratings for all inspections made during the thirty-six fiscal years in which the surveys have been conducted, as well as the percentage of schools associated with each rating. Of the 4,806 school surveys conducted between FY 1981 and FY 2016, 2,713 (56%) received the highest rating categories of *Superior* and *Good*, while 249 (5%) received ratings of *Not Adequate* and 36 (<1%) received ratings of *Poor*. The remaining 1,808 (38%) schools received *Adequate* ratings. Since FY 2008, 43 of the total number of surveys were re-inspections of facilities that had received ratings of *Not Adequate* or *Poor* in a previous year.

Maryland's General Assembly and the Administration provided $3.62 billion in capital funding between fiscal years 2006 and 2016 for public school construction. While Maryland does not have reconciled data on the total deferred maintenance of all schools in the state, it can safely be said that without the State funding and the matching contributions of the local governments, the total backlog of deferred maintenance would be far greater than it is today.[2] LEAs repeatedly mention how State-funded CIP systemic renovation and smaller Aging Schools Program (ASP) and Qualified Zone Academy Bond (QZAB) projects not only improve their buildings, but allow their staff to operate in a more efficient manner.

B. THE CURRENT PUBLIC SCHOOL MAINTENANCE INSPECTION PROGRAM

In July 2005, the Capital Debt Affordability Committee (CDAC), consisting of the State Treasurer, the Comptroller, the Secretary of the Department of Budget and Management, the Secretary of Transportation, and a public member requested the IAC to develop recommendations to ensure that Maryland's large investment in school facilities will be well protected through good maintenance practices. Since August 2005 the IAC has implemented a series of practices which are described below:

- The maintenance survey function was transferred from DGS to the PSCP beginning in FY 2007, a recommendation that was approved by the General Assembly in the 2006 session. Subsequently, the PSCP hired two full-time school maintenance inspectors with experience in the fields of building maintenance, operations and construction. The inspectors conduct approximately 220 to 230 new school surveys in 24 school systems per year, as well as re-inspections of schools surveyed in a prior fiscal year that received ratings of *Not Adequate* or *Poor*.[3] They prepare the survey reports to be sent to the LEAs, review the responses, and perform follow-up inspections on those schools which received *Poor* or *Not Adequate* ratings.

- An internal goal was established by the PSCP to inspect each school in Maryland once every six years. Because of a reduced number of inspections conducted in FY 2009 and FY 2010, the completion of the first round was therefore delayed by approximately one half of a fiscal year; the inspections conducted in FY 2013 included both 1st and 2nd round schools. The second six-year round of inspections is anticipated to be completed in 2019.[4]

- The maintenance inspection information is a component of an internal PSCP database. The Facilities Inventory database contains all pertinent data associated with each school facility in the State, making it a valuable resource for the analysis of statewide maintenance practices as well as a permanent record of each building. A linked maintenance inspection database also provides the ability to compile inspection data into useful reports. In conjunction with consistent inspection and reporting methods, it

2 A statewide facility assessment study performed by a third party would be needed to capture accurate data on the total deferred maintenance backlog (as well as other information, e.g. educational adequacy). Using a recent figure of $.08/sf from Colorado, such a study would cost approximately $11 million to assess all 138 million square feet in Maryland schools, and approximately $5.7 million to assess the 71.7 million square feet that has not been renovated since 1990 (i.e., square footage that has not been renovated within the last 25 years). The Colorado figure may not reflect costs in the mid-Atlantic states, or the full scope that is needed for Maryland schools.

3 Inspections are not conducted for facilities on the campus of the Maryland School for the Blind (MSB), which is eligible for State school construction funding.

4 In FY 2009 the number of inspections was reduced to 145 (138 new, 7 re-inspections) and in FY 2010 to 187 (182 new, 5 re-inspections) to accommodate the budgetary constraints. The target of 230 inspections was restored for FY 2011.

allows the PSCP to observe changes in the overall maintenance performance of the LEAs, and to identify specific categories where maintenance practices need improvement.

- As in past years, this FY 2016 Annual Report includes a brief evaluation of the maintenance practices of each LEA. This approach highlights specific maintenance issues and furthers the dissemination of maintenance best practices throughout the state.

- In response to a requirement of the General Assembly, the IAC issued "Guidelines for Maintenance of Public School Facilities in Maryland" in May 2008. The Guidelines are available on the PSCP website at www.pscp.state.md.us.

In addition to these actions, the IAC continues to strengthen the alignment between the maintenance inspection program and the annual Public School Construction CIP:

- Since the FY 2010 CIP, LEAs have been required to include the three most recent roof inspection reports as a threshold condition for approval of roof replacement projects. IAC staff members have raised questions about several requests that appear to demonstrate premature failure of roofs and mechanical equipment due to poor maintenance.

- LEAs have been encouraged to enlarge the scope of certain systemic renovation projects in order to address deficiencies such as insufficient electrical power, which is typically manifested in a maintenance inspection as excessive use of extension cords and power strips that overload circuits and generate tripping hazards.

- The staff of the IAC discusses maintenance budgets and staffing with LEAs in the annual October meetings on the CIP.

- Members of the IAC routinely raise the subject of maintenance during the annual meeting in December at which local superintendents and their staff appeal staff recommendations for CIP funding.

Because of the prestige and practical importance placed on State funding and the high level of visibility of the entire CIP process, it is anticipated that the consistent linkage of maintenance and CIP funding by the IAC will assist local boards, as well as the governments that support their operating budgets, to sustain the staff and other resources needed for effective maintenance programs throughout the state.

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TABLE A: MAINTENANCE SURVEY RESULTS FISCAL YEARS 1981-2016

NUMBER OF SCHOOL SURVEYS PERFORMED WITH RATINGS AND PERCENTAGES

Fiscal Year	Superior/Good	Adequate	Not Adequate	Poor	Total	Resurveys included in total
1981	13	80	7	0	100	
1982	25	67	8	2	102	
1983	56	33	14	3	106	
1984	59	30	16	7	112	
1985	28	55	20	4	107	
1986	36	40	19	6	101	
1987	41	44	17	3	105	
1988	54	39	10	0	103	
1989	44	38	15	3	100	
1990	60	35	7	1	103	
1991	53	52	4	1	110	
1992	39	56	7	3	105	
1993	45	52	4	0	101	
1994	41	57	6	0	104	
1995	51	54	1	0	106	
1996	46	49	3	1	99	
1997	51	47	4	0	102	
1998	53	45	3	0	101	
1999	46	55	2	0	103	
2000	47	38	0	0	85	
2001	49	54	0	0	103	
2002	73	19	7	1	100	
2003	94	30	0	0	124	
2004	29	5	3	0	37	
2005	65	29	5	0	99	
2006	59	40	1	0	100	
2007	161	62	10	0	233 (1)	
2008	151	89	10	0	250	10
2009	69	71	5	0	145 (2)	7
2010	130	54	3	0	187 (2)	5
2011	162	66	4	1	233	3
2012	184	47	3	0	234	5
2013	162	60	10	0	232	
2014	148	70	8	0	226	5
2015	136	75	10	0	221	1
2016	**153**	**71**	**3**	**0**	227	7
Total Ratings	2713	1808	249	36	4806	
Total Percentages	**56.45%**	**37.62%**	**5.18%**	**0.75%**	**100%**	

(1) Increase associated with engagement of two full-time inspectors in the Public School Construction Program.

(2) Temporary reduction in number of inspections due to budgetary constraints.

II. THE SURVEY: FISCAL YEAR 2016

A. PROCEDURES AND METHODS

- The FY 2016 surveys were conducted by the IAC's two full-time maintenance inspectors. The surveys were performed between September 2015 and June 2016.

- 227 public schools were selected to be surveyed from the 24 school systems throughout the state. Included in this total are seven re-inspections of schools that received a rating of *Not Adequate* in the FY 2014 survey.

- In order to update the existing backlog, the choice of the schools to be inspected in FY 2016 was largely based on the oldest inspection dates in our records. The 227 schools selected in FY 2016 represented approximately 25.4 million square feet of public school space. Some of the buildings dated back to the early 20th century, while others were recently constructed. Many have received complete renovations, additions or systemic upgrades.

- After selecting the schools to be surveyed, the PSCP notified each LEA and scheduled a time and date to meet at the facility. The LEA was usually notified two weeks prior to the survey date. Generally, a facility maintenance representative or a member of the school staff accompanied the inspectors to answer questions and assist with access to secured areas.

- During each survey, the inspectors examined 35 different components and building systems, such as roofing, HVAC, electrical equipment and parking lots (see Sample Survey Form, pages 15-17). Each category was scored based on a combination of various observations and considerations: condition, performance, efficiency, PM record and life expectancy of the various components and systems. The inspectors' comments were recorded on the survey form.

  - Each of the 35 categories was evaluated and given a rating that ranged from *Poor* to *Superior*. Each rating was converted to a numerical score and multiplied by a predetermined factor or "weight". These weights were established by the IAC to indicate the impact that a failed or deficient component could have on life safety or health issues in the facility. Items not present in the facility or that could not be evaluated on the day of inspection were indicated as *Not Applicable.*

Scoring Levels:

- **Point Range** — **Nomenclature**
  - 96 – 100 - *Superior*
  - 86 – 95 - *Good*
  - 76 – 85 - *Adequate*
  - 66 – 75 - *Not Adequate*
  - 0 – 65 - *Poor*
- **Weighting Values and Description**
  - 3 - A serious and potentially urgent impact on safety and/or health
  - 2 - A serious but not immediate impact on safety and/or health
  - 1 - Less direct impact on safety and health

- Care is taken during the survey to ensure that the age or demographics of the school do not affect the survey scores. If a school is well maintained and clean, and has older equipment and components that are serviceable and not causing harm to other equipment and building components, it should receive a high score.

- Beginning in FY 2008, safety equipment and emergency preparedness plans were closely evaluated at each facility, as well as the accessibility of the Asbestos Management Plan that is required under federal legislation to be available in school facilities. In addition, since regulations require that semi-annual roofing inspections are to be completed and reports kept on file for the life of the building, LEAs were requested to provide their last three (3) roof inspection reports. At that time, it was found that many roof inspections were not recorded or had not been performed, creating a concern with regards to the warranty issued by the manufacturer. Warranties must be maintained in order to prevent unnecessary and costly premature replacement of the roof systems.

    - A copy of each survey and a cover letter was sent to the school system's superintendent and facilities maintenance director. Any building system that was rated *Poor* or *Not Adequate* required a follow-up response from the LEA stating either that the problem had been repaired or describing the method of corrective action that was planned in the near future. Similarly, if a category rated *Superior*, *Good*, or *Adequate* showed a specific deficiency, a follow-up response was also required. Responses are typically required from the LEA within 30 days of receipt of the letter and surveys. Any school that scores an overall rating of *Not Adequate* or *Poor* is required to be repaired to an acceptable condition, or have its deficiencies reasonably addressed to the State's satisfaction, within a 60-day period, after which time a re-inspection is performed.

B. FY 2016 SURVEY RESULTS

FY 2016 Ratings

The specific ratings of schools surveyed in each school district are shown in Table B "FY 2016 Maintenance Survey Results", pages 9-14.

Of the 227 schools surveyed in FY 2016:

- 18 schools were rated as *Superior*
- 135 schools were rated as *Good*
- 71 schools were rated as *Adequate*
- 3 schools were rated as *Not Adequate*
- 0 schools were rated as *Poor*

TABLE B: FY 2016 MAINTENANCE SURVEY RESULTS

LEA / School Name	PSC #	School Type	Area (Square Feet)	Rating
Allegany (3)				
Flintstone Elementary	01.020	Elementary	68,108	Good
John Humbird Elementary	01.004	Elementary	42,451	Good
South Penn Elementary	01.021	Elementary	67,802	Good
			178,361	
Anne Arundel (19)				
Annapolis Middle	02.061	Middle	216,000	Adequate
Chesapeake Bay Middle	02.009	Middle	343,446	Adequate
Crofton Middle	02.038	Middle	131,789	Good
Glen Burnie High	02.020	High	401,580	Adequate
High Point Elementary	02.015	Elementary	75,764	Adequate
Jessup Elementary	02.016	Elementary	83,868	Adequate
Lake Shore Elementary	02.103	Elementary	63,422	Superior
Linthicum Elementary	02.008	Elementary	71,682	Adequate
Lothian Elementary	02.024	Elementary	84,588	Superior
MacArthur Middle	02.087	Middle	211,620	Adequate
Manor View Elementary	02.074	Elementary	67,971	Good
Mills-Parole Elementary	02.058	Elementary	89,767	Superior
Odenton Elementary	02.048	Elementary	71,302	Good
Old Mill Middle North	02.001	Middle	159,635	Adequate
Old Mill Middle South	02.133	Middle	159,635	Adequate
Severn River Middle	02.096	Middle	170,000	Adequate
Southern Middle	02.042	Middle	200,102	Adequate
Southgate Elementary	02.114	Elementary	87,165	Good
Tracey's Elementary	02.101	Elementary	56,640	Good
			2,745,976	
Baltimore County (24)				
Halethorpe Elementary	03.005	Elementary	50,355	Adequate
Halstead Academy	03.186	Elementary	61,130	Good
Hereford High	03.094	High	244,828	Good
Lansdowne Elementary	03.105	Elementary	50,985	Adequate
Lansdowne Middle	03.084	Middle	120,700	Adequate
Milbrook Elementary	03.091	Elementary	45,168	Adequate
Norwood Elementary	03.155	Elementary	56,285	Good
Oliver Beach Elementary	03.079	Elementary	50,400	Good
Padonia International Elementary	03.069	Elementary	46,960	Good
Parkville Middle	03.082	Middle	158,610	Adequate
Pine Grove Middle	03.001	Middle	150,190	Good
Randallstown High	03.032	High	218,135	Adequate
Rodgers Forge Elementary	03.042	Elementary	68,575	Good
Sandalwood Elementary	03.034	Elementary	76,950	Good
Sandy Plains Elementary	03.157	Elementary	88,375	Adequate
Seven Oaks Elementary	03.096	Elementary	56,987	Good
Southwest Academy	03.176	Middle	136,000	Good
Sparrows Point Middle/High	03.051	Middle/High	103,313	Adequate
Stemmers Run Middle	03.038	Middle	159,017	Adequate
Stoneleigh Elementary	03.022	Elementary	86,387	Good
Sussex Elementary	03.163	Elementary	55,075	Good
Timber Grove Elementary	03.077	Elementary	75,718	Good
Victory Villa Elementary	03.057	Elementary	47,525	Adequate
Villa Cresta Elementary	03.012	Elementary	72,432	Good
			2,280,100	

TABLE B: FY 2016 MAINTENANCE SURVEY RESULTS

LEA / School Name	PSC #	School Type	Area (Square Feet)	Rating
Calvert (5)				
Appeal Elementary	04.013	Elementary	59,275	Good
Calvert High	04.003	High	236,300	Superior
Hunting Creek Alternative	04.027	Special Ed.	6,977	Good
Northern High	04.005	High	178,531	Good
Plum Point Middle	04.017	Middle	101,300	Good
			582,383	
Caroline (1)				
Ridgely Elementary	05.006	Elementary	52,005	Good
			52,005	
Carroll (7)				
Carroll County Career & Technology Center	06.032	Career Tech	112,190	Good
Liberty High	06.019	High	156,000	Good
Mt. Airy Middle	06.026	Middle	111,043	Superior
Northwest Middle	06.002	Middle	113,600	Good
S. Carroll High	06.012	High	258,326	Good
Sandymount Elementary	06.005	Elementary	61,521	Good
Westminster East Middle	06.004	Middle	120,400	Good
			933,080	
Cecil (4)				
Bohemia Manor Middle/High	07.027	Middle/High	136,024	Good
Leeds Elementary	07.041	Elementary	40,414	Good
North East Elementary	07.035	Elementary	61,396	Superior
Perryville Middle	07.018	Middle	102,746	Superior
			340,580	
Charles (6)				
Dr. Gustavus Brown Elementary	08.004	Elementary	64,819	Good
Dr. James Craik Elementary	08.001	Elementary	59,000	Good
Gale-Bailey Elementary	08.029	Elementary	51,422	Good
Maurice J. McDonough High	08.009	High	174,315	Good
Piccowaxen Middle	08.015	Middle	83,032	Good
Westlake High	08.031	High	186,500	Good
			619,088	
Dorchester (2)				
Hurlock Elementary	09.014	Elementary	50,634	Good
North Dorchester High	09.013	High	95,000	Adequate
			145,634	
Frederick (11)				
Brunswick Elementary	10.025	Elementary	60,205	Good
Brunswick Middle	10.055	Middle	119,539	Good
Career & Technology Center	10.026	Career Tech	86,681	Good
Emmitsburg Elementary	10.006	Elementary	45,080	Good
Middletown Elementary	10.001	Elementary	54,854	Good
Middletown Middle	10.010	Middle	114,974	Good
New Market Middle	10.031	Middle	114,936	Good
Urbana Elementary	10.022	Elementary	64,133	Good
Walkersville Elementary	10.002	Elementary	89,514	Good
Walkersville Middle	10.045	Middle	119,353	Good
Wolfsville Elementary	10.056	Elementary	41,657	Good
			910,926	
Garrett (2)				
Southern Middle	11.008	Middle	92,000	Good
Swan Meadow Elementary	11.016	Elementary/ Middle	7,572	Good
			99,572	

TABLE B: FY 2016 MAINTENANCE SURVEY RESULTS

LEA / School Name	PSC #	School Type	Area (Square Feet)	Rating
Harford (9)				
Bel Air High	12.004	High	262,454	Good
Dublin Elementary	12.027	Elementary	44,385	Good
Edgewood Middle	12.014	Middle	166,530	Good
Havre de Grace High	12.005	High	144,815	Good
Jarrettsville Elementary	12.017	Elementary	61,275	Good
Magnolia Middle	12.021	Middle	149,100	Good
Prospect Mill Elementary	12.012	Elementary	75,538	Good
Riverside Elementary	12.045	Elementary	55,711	Adequate
William S. James Elementary	12.013	Elementary	58,500	Good
			1,018,308	
Howard (12)				
Atholton High	13.013	High	250,465	Superior
Deep Run Elementary	13.042	Elementary	80,000	Good
Hammond Middle	13.076	Middle	87,030	Good
Harpers Choice Middle	13.003	Middle	79,220	Good
Laurel Woods Elementary	13.065	Elementary	73,448	Good
Lisbon Elementary	13.004	Elementary	55,999	Good
Longfellow Elementary	13.056	Elementary	68,590	Superior
Mayfield Woods Middle	13.045	Middle	100,894	Good
Mount View Middle	13.049	Middle	106,736	Good
Oakland Mills High	13.002	High	204,578	Good
Oakland Mills Middle	13.008	Middle	81,036	Good
Patuxent Valley Middle	13.041	Middle	98,014	Good
			1,286,010	
Kent (1)				
Galena Elementary	14.002	Elementary	58,285	Adequate
			58,285	
Montgomery (32)				
Baker (John T.) Middle	15.182	Middle	120,532	Good
Bells Mill Elementary	15.185	Elementary	77,244	Good
Bethesda Chevy Chase High	15.030	High	308,215	Good
College Gardens Elementary	15.240	Elementary	96,986	Superior
Damascus High	15.090	High	235,986	Adequate
Darnestown Elementary	15.051	Elementary	64,840	Good
Dufief Elementary	15.105	Elementary	59,013	Good
Ewing (Blair G.) Center	15.224	Alternate	85,400	Good
Fairland Elementary	15.098	Elementary	92,227	Good
Gaithersburg Middle	15.068	Middle	157,694	Adequate
Germantown Elementary	15.013	Elementary	57,668	Good
Glenallan Elementary	15.054	Elementary	98,700	Superior
King (Dr. Martin Luther, Jr.) Middle	15.198	Middle	135,867	Good
Meadow Hall Elementary	15.250	Elementary	61,964	Good
Neelsville Middle	15.136	Middle	131,432	Adequate
Olney Elementary	15.093	Elementary	68,755	Good
Paint Branch High	15.211	High	347,169	Good
Parkland Middle	15.212	Middle	151,169	Good
Pine Crest Elementary	15.036	Elementary	53,778	Good
Poolesville Elementary	15.137	Elementary	64,803	Adequate
Quince Orchard High	15.158	High	284,912	Good
Redland Middle	15.238	Middle	112,297	Good
Ritchie Park Elementary	15.139	Elementary	58,500	Good
Rock Creek Forest Elementary	15.138	Elementary	98,140	Superior
Rockville High	15.087	High	316,973	Good
Stonegate Elementary	15.252	Elementary	52,468	Adequate
Viers Mill Elementary	15.092	Elementary	120,572	Good

TABLE B: FY 2016 MAINTENANCE SURVEY RESULTS

LEA / School Name	PSC #	School Type	Area (Square Feet)	Rating
Montgomery (continued)				
Walter Johnson High	15.067	High	365,138	Good
Washington Grove Elementary	15.146	Elementary	86,266	Good
Weller Road Elementary	15.061	Elementary	121,346	Superior
Woodlin Elementary	15.011	Elementary	60,725	Good
Wyngate Elementary	15.075	Elementary	89,104	Good
			4,235,883	
Prince George's (32)				
Apple Grove Elementary	16.057	Elementary	51,842	Adequate
Arrowhead Elementary	16.074	Elementary	59,923	Good
Avalon Elementary	16.019	Elementary	60,520	Superior
Brandywine Elementary	16.088	Elementary	58,155	Adequate
C. Elizabeth Rieg Regional School	16.041	Special Ed.	45,132	Adequate
Chillum Elementary	16.090	Elementary	44,946	Good
Clinton Grove Elementary	16.053	Elementary	44,379	Good
Dwight D. Eisenhower Middle	16.008	Middle	139,951	Good
Forest Heights Elementary	16.120	Elementary	35,971	Adequate
Frances R. Fuchs Early Childhood Center	16.101	Special Ed.	46,633	Good
Francis T. Evans Elementary	16.238	Elementary	57,742	Good
Friendly High	16.046	High	236,861	Good
Howard B. Owens Science Center	16.034	Science	27,400	Good
James E. Duckworth Regional School	16.042	Special Ed.	41,480	Good
John Hanson Montessori	16.128	PreK-8	110,413	Adequate
Kettering Middle	16.043	Middle	120,800	Good
Largo High	16.011	High	243,581	Adequate
Laurel Elementary	16.009	Elementary	59,444	Good
Laurel High	16.014	High	379,024	Adequate
Maya Angelou French Immersion	16.136	Elementary/ Middle	100,018	Adequate
Northwestern High	16.072	High	355,000	Adequate
Oxon Hill High	16.082	High	287,008	Superior
Patuxent Elementary	16.209	Elementary	58,579	Adequate
Rogers Heights Elementary	16.051	Elementary	56,588	Adequate
Rose Valley Elementary	16.157	Elementary	56,252	Adequate
Stephen Decatur Middle	16.143	Middle	120,070	Good
Surrattsville High	16.103	High	167,322	Good
Tayac Elementary	16.023	Elementary	47,858	Adequate
Templeton Elementary	16.155	Elementary	63,432	Adequate
Thomas Claggett Teacher Leadership Center	16.125	Elementary	61,175	Adequate
Thomas G. Pullen Creative & Performing Arts Academy	16.122	Elementary/ Middle	110,422	Adequate
University Park Elementary	16.081	Elementary	56,264	Good
			3,404,185	
Queen Anne's (2)				
Bayside Elementary	17.021	Elementary	65,990	Good
Church Hill Elementary	17.013	Elementary	50,568	Good
			116,558	
St. Mary's (4)				
Green Holly Elementary	18.022	Elementary	104,375	Adequate
Lettie Marshall Dent Elementary	18.017	Elementary	57,820	Good
Oakville Elementary	18.011	Elementary	48,072	Good
Spring Ridge Middle	18.002	Middle	104,678	Good
			314,945	
Somerset (1)				
Crisfield Academy & High School	19.004	Middle/High	94,348	Adequate
			94,348	

TABLE B: FY 2016 MAINTENANCE SURVEY RESULTS

LEA / School Name	PSC #	School Type	Area (Square Feet)	Rating
Talbot (1)				
Easton High	20.002	High	186,829	Good
			186,829	
Washington (8)				
Bester Elementary	21.021	Elementary	72,951	Superior
Boonsboro High	21.001	High	140,486	Good
Old Forge Elementary	21.035	Elementary	40,777	Good
Potomac Heights Elementary	21.044	Elementary	37,347	Good
Smithsburg Elementary	21.036	Elementary	48,587	Superior
Smithsburg High	21.026	High	116,831	Good
Williamsport Elementary	21.029	Elementary	64,112	Good
Williamsport High	21.031	High	150,139	Good
			671,230	
Wicomico (4)				
Fruitland Primary	22.016	Elementary	56,308	Good
Pinehurst Elementary	22.002	Elementary	76,224	Good
Prince St. Elementary	22.014	Elementary	73,830	Superior
Wicomico Middle	22.015	Middle	135,750	Good
			342,112	
Worcester (2)				
Pocomoke High	23.003	High	124,202	Good
Stephen Decatur Middle	23.014	Middle	79,500	Adequate
			203,702	
Baltimore City (35)				
Abbottston Building # 050	30.224	PreK-8	65,762	Good
Arundel PK-8 # 164	30.239	PreK-8	62,909	Adequate
Baltimore City College # 480	30.110	High	273,800	Adequate
Baltimore Polytechnic Institute # 403	30.185	High	391,895	Adequate
Booker T. Washington Building # 130	30.168	Middle/High	211,992	Adequate
Brehms Lane ES # 231	30.191	Elementary	61,441	Adequate
Calvin Rodwell Elementary # 256	30.134	Elementary	37,537	Good
Cecil Elementary # 007	30.250	Elementary	71,045	Good
Collington Square PK-8 # 097	30.053	PreK-8	73,393	Good
Curtis Bay PK-8 # 207	30.248	PreK-8	78,042	Adequate
Dickey Hill PK-8 # 201	30.255	PreK-8	80,734	Good
Digital Harbor High # 416	30.146	High	284,640	Adequate
Edgecombe Circle PK-8 # 062	30.199	PreK-8	78,346	Adequate
Fallstaff PK-8 # 241	30.148	PreK-8	71,831	Adequate
Gardenville Elementary # 211	30.161	Elementary	40,500	Adequate
George G. Kelson Building # 157	30.056	PreK-8	71,145	Adequate
Hampden PK-8 #055	30.030	PreK-8	64,760	Adequate
Lakewood Early Learning Center # 086	30.269	Elementary	24,794	Adequate
Leith Walk PK-8 # 245	30.194	PreK-8	187,700	Good
Liberty PK-5 # 064	30.135	Elementary	74,843	Good
Lombard Building # 057	30.223	Middle/High	202,000	Adequate
Mary E. Rodman Elementary # 204	30.201	Elementary	74,512	Adequate
Matthew A. Henson Elementary # 029	30.242	Elementary	81,609	Good
Mergenthaler Vocational-Technical High CTE #410	30.226	High	358,722	Adequate
Morrell Park PK-8 # 220	30.149	PreK-8	53,314	Adequate
Northeast Middle # 049	30.137	Middle	114,900	Adequate
Northwestern High #401	30.187	High	307,200	Not Adequate
Patterson High # 405	30.164	High	303,582	Adequate
Paul Laurence Dunbar Middle Building #133	30.147	High	122,417	Adequate
Robert Poole Building #056	30.165	Middle/High	127,981	Not Adequate
Sarah M. Roach PK-5 #073	30.038	Elementary	44,874	Adequate

TABLE B: FY 2016 MAINTENANCE SURVEY RESULTS

LEA / School Name	PSC #	School Type	Area (Square Feet)	Rating
Baltimore City (continued)				
The Mt. Washington School #221	30.268	Elementary/ Middle	50,412	Adequate
Waverly PK-8 # 051	30.028	PreK-8	136,654	Good
West Baltimore Building #080	30.237	Middle/High	244,681	Adequate
Westport PK-8 # 225	30.082	PreK-8	103,206	Not Adequate
			4,633,173	

Total Number of Schools Inspected: 227 **Total Square Footage Inspected: 25,453,273 square feet**

Public School Construction Program
School Inspection Report

LEA Name:
School Name:

Inspection Date:
Inspector:
LEA Representative:

PSC Number:
Year Constructed:
Total Adjusted Square Footage:

Site/Item (Weight)	Superior	Good	Adequate	Not Adequate	Poor	Not Applicable
1. Driveways & Parking Lots (1)						
2. Site & Site Structures (1)						
3. Site Utilities (2)						
4. Exterior Building Appearance (1)						
5. Playgrounds, Athletic Flds & Equip (1)						
6. Exterior Structural Condition (3)						
7. Gutters and Downspouts (2)						
8. Windows (2)						
9. Walkways (1)						
10. Entryways & Exterior Doors (3)						
11. Roof Conditions (3)						
12. Flashing & Gravel Stops (2)						
13. Roof Drains (2)						
14. Rooftop Equipment (2)						
15. Skylights & Monitors (2)						
16. Interior Appearance & Sanitation (2)						
17. Floors (2)						
18. Interior Walls (1)						
19. Interior Doors (2)						
20. Ceilings (1)						
21. Electrical Distribution (3)						
22. Electrical Service Equipment (3)						
23. Interior Lighting (2)						
24. Fire & Safety (3)						
25. Equipment Rooms (2)						
26. Boilers & Water Heaters (3)						
27. Air Conditioning (1)						
28. Ventilation Equipment (3)						
29. FCUs / Radiators / Wall Units (2)						
30. Steam Distribution (2)						
31. HVAC Controls (2)						
32. Hot/Chilled Water Distribution (1)						
33. Plumbing Fixtures/Equip, Restrooms						
34. Sub Structure (3)						
35. Vertical Conveyance Systems (1)						
Total Items Per Category						

Overall Rating: ( )

Superior=100-96 Good=95-86 Adequate=85-76 Not Adequate=75-66 Poor=65 and below

Asbestos Management Plan:
Emergency Preparedness Plan:
Facility Safety & Administrative Issues:

Survey ID:

PUBLIC SCHOOL INSPECTION REPORT - COMMENTS

School Name & PSC Number: _____

Report Date (s): _____

	SITE / ITEM	RATING	COMMENTS	Response Requested
1	DRIVEWAYS & PARKING LOTS			
	LEA Response:			
2	SITE & SITE STRUCTURES			
	LEA Response:			
3	SITE UTILITIES			
	LEA Response:			
4	EXTERIOR BUILDING APPEARANCE			
	LEA Response:			
5	PLAYGROUNDS, ATHLETIC FIELDS & EQUIPMENT			
	LEA Response:			
6	EXTERIOR STRUCTURAL CONDITION			
	LEA Response:			
7	GUTTERS & DOWNSPOUTS			
	LEA Response:			
8	WINDOWS			
	LEA Response:			
9	WALKWAYS			
	LEA Response:			
10	ENTRYWAYS & EXTERIOR DOORS			
	LEA Response:			
11	ROOF CONDITIONS			
	LEA Response:			
12	FLASHING & GRAVEL STOPS			
	LEA Response:			
13	ROOF DRAINS			
	LEA Response:			
14	ROOFTOP EQUIPMENT			
	LEA Response:			
15	SKYLIGHTS & MONITORS			
	LEA Response:			
16	INTERIOR APPEARANCE & SANITATION			
	LEA Response:			
17	FLOORS			
	LEA Response:			
18	WALLS			
	LEA Response:			
19	INTERIOR DOORS			
	LEA Response:			
20	CEILINGS			
	LEA Response:			
21	ELECTRICAL DISTRIBUTION			
	LEA Response:			
22	ELECTRICAL SERVICE EQUIPMENT			
	LEA Response:			
23	INTERIOR LIGHTING			
	LEA Response:			
24	FIRE & SAFETY			
	LEA Response:			
25	EQUIPMENT ROOMS			
	LEA Response:			
26	BOILERS & WATER HEATERS			
	LEA Response:			

PUBLIC SCHOOL INSPECTION REPORT - COMMENTS

School Name & PSC Number: _____

Report Date (s): _____

	SITE / ITEM	RATING	COMMENTS	Response Requested
27	AIR CONDITIONING			
	LEA Response:			
28	VENTILATION EQUIPMENT			
	LEA Response:			
29	FCUS/RADIATORS/WALL UNITS			
	LEA Response:			
30	STEAM DISTRIBUTION			
	LEA Response:			
31	HVAC CONTROLS			
	LEA Response:			
32	Hot/CHILLED WATER DISTRIBUTION			
	LEA Response:			
33	PLUMBING FIXTURES & EQUIPMENT, RESTROOMS			
	LEA Response:			
34	SUB STRUCTURE			
	LEA Response:			
35	VERTICAL CONVEYANCE SYSTEMS			
	LEA Response:			

ASBESTOS MANAGEMENT PLAN			
LEA Response:			

EMERGENCY PREPAREDNESS PLAN			
LEA Response:			

FACILITY SAFETY & ADMINISTRATIVE ISSUES		

ADDITIONAL NOTES & COMMENTS

FY 2016 MAINTENANCE SURVEY RESULTS: A DISTRICT-BY-DISTRICT OVERVIEW

The following reports provide an overview of maintenance surveys conducted at selected schools in each Maryland public school system. Each report provides general information about the school system, a listing of the schools that were surveyed, and a brief narrative highlighting important aspects of the school system's maintenance program.

Note:
The definition of "**Adjusted Age**" of a school facility, found in the second column of the charts on the following pages, is the averaged age of the total square footage. For the purposes of calculating the Adjusted Age, renovated square footage is generally treated as new.

"**Original existing square footage**" as used in the narratives on the following pages refers to the construction dates of the existing square footage in a facility, regardless if renovated at a later date. For example, if a school first built in 1954 received additions in 1960, 1975 and 2003, and the 1954 portion was also demolished in 2003, the original existing square footage would then date from 1960 to 2003. If one other school in the same county is inspected in the same year, and it was built in 1962 and received a complete renovation and addition in 2010, then the original existing square footage for that school would date from 1962 to 2010; combined, the original exiting square footage at these schools dates from 1960 to 2010.

Individual school reports are available on request.
Please contact Ms. Trina Narivanchik at 410-767-0726.

Allegany County

Three schools were inspected in September 2015. The original existing square footage at these schools dates from 1911 to 2012 and all three have nearly the same adjusted building age of 38 to 37 years.

John Humbird Elementary, constructed in 1911, is the oldest and the smallest of the three schools inspected this year. It received a full renovation and addition that doubled its size in 1974 and a small addition in 1997 for the Kindergarten/Pre-Kindergarten program. In the last ten years, this school received new boilers, playground equipment, carpeting, lighting, and security system with State funding. A large number of facility issues found at this school are related to administrative oversight and are expected to be addressed with the new incoming administration at the school. The ceilings are damaged and significantly stained at many locations, and more timely reporting and replacement should be implemented.

The second oldest school inspected this year was Flintstone Elementary, which was originally constructed in 1921 with additions in 1928, 1952 and 1954. The complete renovation in 1978 included another addition which almost doubled the original size of the building. The membrane roof on this school was last replaced in 1996 with State funding. This roof has numerous deficiencies that affect the interior condition, and planning should begin for future replacement

South Penn Elementary School was originally constructed in 1978 and the only addition is one for Pre-K that was constructed in 2012 with State funding. South Penn Elementary suffered from a chiller failure in Summer 2015, at which time a temporary chiller was leased until a new chiller could be installed after the seasonal changeover to heating. This school has never received a full renovation and no systemic renovation projects in recent years except for lighting and security system upgrades. Although clean, it is cluttered, which results in many administrative issues that impact safety. Only minor maintenance repairs are needed at the building.

Maintenance has generally been good at all three schools when deficiencies have been properly reported for repair. The aged conditions observed during these inspections appear to be related to shrinking operational budgets and the high need for modernization in the older school buildings in Allegany County.

South Penn Elementary

FY 2016

- 22 total active schools in system
- Avg. Adjusted Age, all schools: 1983
- 3 schools inspected: 3 Elementary
- Results:
  - ✓ 0 Superior
  - ✓ 3 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (87.88)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Flintstone E.	38	Good	9	14	5	3	0
2. John Humbird E.	38	Good	7	9	16	1	0
3. South Penn E.	37	Good	3	21	10	0	0
Totals			19	44	31	4	0
Percentage of Total Ratings for System			19%	45%	32%	4%	0%

Anne Arundel County

Nineteen schools were inspected in May and June 2016. The original existing square footage at these schools dates from 1930 to 2015, with adjusted building ages ranging from 49 years to 1 year. Anne Arundel County has on average the seventh oldest school facility inventory in the State, one year older than the statewide average.

While AACPS received three *Superior* ratings this year, they were for schools that were among the newest or most recently renovated. Of the remaining sixteen schools, eleven received only an overall rating of *Adequate*. While still acceptable, these schools are generally older with eight of the schools having an adjusted age of forty years or older. These older "Adequate" schools have true maintenance issues such as filled gutters, exhaust fans not working, leaking roofs, and inadequate or uneven custodial care, and not just deficiencies arising from aging systems or materials. Older schools require much more maintenance than the newer schools and can compete for, or easily monopolize, the time and efforts of maintenance staff. Forty-year old schools, Chesapeake Bay Middle and High Point Elementary, scored the lowest of the group and both displayed a need for better maintenance and custodial care in most areas – site, finishes, fixtures, equipment, and cleanliness, as did forty-eight-year old Glen Burnie High.

As with previous maintenance inspections in AACPS, certain persistent issues will require focused attention from the maintenance departments and school based personnel. Among these are routine repair of roofing, replacement of damaged and stained ceiling tiles, and the deficiencies identified in the management of fire and safety equipment. Of particular concern is the condition of acoustic ceiling tiles and other materials exposed to moisture that have the potential for mold growth. We recommend the roof inspection program be strengthened and supported by a process for the timely correction of identified deficiencies.

Many of the schools also need better in-school oversight for identifying and eliminating the concerns that can be attributed to classroom management. These issues often contribute indirectly to the onsite building staffs' ability to properly clean the interiors of the buildings, or cause damage such as to the finished surfaces of newly constructed walls.

To support AACPS extremely well-prioritized and managed capital improvement program, the following are recommended: upwardly resizing maintenance staff as new buildings come on-line, thorough and continuous training of all maintenance and facility staff, and proactive education of and coordination with administrative personnel in schools.

Lake Shore Elementary

FY 2016

- 123 total active schools in system
- Avg. Adjusted Age, all schools: 1986
- 19 schools inspected: 10 Elementary, 8 Middle, 1 High
  Results:
  - ✓ 3 Superior
  - ✓ 5 Good
  - ✓ 11 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (86.37)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Annapolis M.	52	Adequate	3	18	4	6	2
2. Chesapeake Bay M.	40	Adequate	0	8	15	9	1
3. Crofton M.	28	Good	3	18	6	2	0
4. Glen Burnie H.	48	Adequate	0	8	23	4	0
5. High Point E.	40	Adequate	0	8	18	7	0
6. Jessup E.	40	Adequate	4	14	11	2	1
7. Lake Shore E.	7	Superior	23	8	1	1	0
8. Linthicum E.	24	Adequate	1	14	8	7	0
9. Lothian E.	1	Superior	27	3	1	1	0
10. MacArthur M.	49	Adequate	1	17	7	7	0
11. Manor View E.	45	Good	4	19	6	2	0
12. Mills-Parole E.	1	Superior	27	4	1	1	0
13. Odenton E.	25	Good	10	12	7	4	0
14. Old Mill M. North	41	Adequate	0	12	14	6	0
15. Old Mill M. South	41	Adequate	1	17	12	2	0
16. Severn River M.	29	Adequate	1	14	9	6	1
17. Southern M.	27	Adequate	1	16	7	7	2
18. Southgate E.	5	Good	19	9	1	3	0
19. Tracey's E.	9	Good	16	8	3	5	0
Totals			141	227	154	82	7
Percentage of Total Ratings for System			23%	37%	25%	13%	1%

Baltimore City

Twenty-eight schools were inspected in December 2015 and January 2016. Original existing square footage at these schools dates from 1926 to 2014, with adjusted building ages ranging from 81 years to 1 year at the time of inspection. Also, seven schools that received a score of *Not Adequate* in FY 2014 were re-inspected.

For the FY 2015 maintenance inspection surveys for Baltimore City Public Schools, the IAC took note of 11 maintenance categories that had shown persistently large numbers of *Not Adequate* or *Poor* scores for FY 2013, FY 2014, and FY 2015. For each of these categories, more than 40% of the schools surveyed showed deficiencies in all three fiscal years, with little sign of improvement. The IAC noted that the analysis of the FY 2016 Maintenance Surveys would focus on the status of these 11 categories (Windows, Interior Appearance and Sanitation, Ceilings, Electrical Distribution, Fire and Safety, Equipment Rooms, Ventilation Equipment, FCU/Radiators/Wall Units, Steam Distribution, HVAC Controls, and Plumbing Fixtures/Equipment, Restrooms.

The analysis shows that some improvement has been achieved in almost all of the 11 categories. While progress in reducing the number of schools with *Not Adequate* or *Poor* category ratings is always welcome, these results are very far from acceptable. A *Not Adequate* or *Poor* rating in even *a single* school should be a matter of considerable concern to the Board of School Commissioners, the CEO, and the staff of City Schools. The IAC focused on the 11 noted categories because they showed the most persistent level of deficiencies across multiple fiscal years. In addition, a number of these categories have implications for the safety and health of the building occupants (Electrical Distribution, Fire & Safety, Ventilation Equipment, HVAC Controls, Plumbing Fixtures/Equipment/Restrooms).

The results for a single year of surveys cannot be taken as representing a trend; results vary substantially based on the essentially random sample of schools that are selected for survey each year. In order for the apparent improvements noted above to be accepted as resulting from genuine improvements in City Schools' maintenance procedures and staffing, it will be necessary to see continuing improvement every year in *all* maintenance categories. This will be demonstrated clearly by annual reductions of *Not Adequate* and *Poor* ratings across the entire spectrum of maintenance categories, and a concurrent increase in the *Superior* or *Good* scores for the categories. This gradual movement should be reflected eventually in an improvement in the overall scores of the schools.

This objective is difficult but reasonable, particularly given the current unsatisfactory status of maintenance in City Schools. In every fiscal year FY

Baltimore City College #480

FY 2016

- 162 total active schools in system
- Avg. Adjusted Age, all schools: 1975
- 35 schools inspected: 9 Elementary, 13 PK-8, 1 Elementary/Middle, 1 Middle, 4 Middle/High, 7 High,
- Results:
  - ✓ 0 Superior
  - ✓ 9 Good
  - ✓ 23 Adequate
  - ✓ 3 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Adequate (81.94)**

2013 through FY 2016, *every* maintenance inspection category except one shows a *Not Adequate* or *Poor* rating in one or more schools. In the following categories, more than 20% of the schools surveyed had ratings of *Not Adequate* or *Poor* in the last three fiscal years (FY 2014, FY 2015, and FY 2016): Driveways & Parking Lots, Site Utilities, Exterior Structural Conditions, Entryways & Exterior Doors, Roof Conditions, Flashing & Gravel Stops, Interior Doors, and Sub Structure. Four of the eight categories listed concern the building envelope, the crucial barrier that blocks moisture from degrading the interior of school facilities.

Improvements in all maintenance categories will depend on the quality and comprehensiveness of capital improvement projects that address building components with maintenance deficiencies, particularly roofs and HVAC systems; on continuing the improvement in the Facilities Maintenance and Operation (FM&O) department, particularly with respect to increases in skilled staff; and on the support provided by City Schools leadership to the Executive Director of Facilities to continue the important work of coordinating the three facility

departments. Improvement was noted at Digital Harbor High #416, which opened in 2005 and was damaged by the earthquake of August 2011. This facility received a *Not Adequate* rating in the FY 2014 inspection, and on re-inspection the rating was raised to *Adequate*. The expectation of the IAC is that newer schools will be maintained at a very high level, since they represent the highest value State and local investments.

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Abbottston Bldg. # 050	12	Good	9	15	6	2	0
2. Arundel PK-8 # 164 **(re-insp)**	56	Adequate	0	8	17	8	0
3. Baltimore City College # 480	82	Adequate	0	5	16	11	3
4. Baltimore Polytechnic Inst # 403	48	Adequate	0	10	13	9	1
5. Booker T. Washington Bldg. # 130 **(re-insp)**	33	Adequate	0	4	21	6	1
6. Brehms Lane E. # 231	22	Adequate	0	14	13	6	0
7. Calvin Rodwell E. # 256	34	Good	5	18	6	3	0
8. Cecil E. # 007	16	Good	12	18	2	0	0
9. Collington Square PK-8 # 097	49	Good	5	15	11	1	0
10. Curtis Bay PK-8 # 207	50	Adequate	1	8	13	9	0
11. Dickey Hill PK-8 # 201	50	Good	3	16	10	3	0
12. Digital Harbor H. # 416 **(re-insp)**	11	Adequate	3	6	17	7	0
13. Edgecombe Circle PK-8 # 062	53	Adequate	1	8	15	9	1
14. Fallstaff PK-8 # 241 **(re-insp)**	58	Adequate	7	2	23	1	2
15. Gardenville E. # 211	33	Adequate	5	8	14	5	0
16. George G. Kelson Bldg. # 157 **(re-insp)**	42	Adequate	3	11	10	8	0
17. Hampden PK-8 #055	37	Adequate	2	11	12	7	0
18. Lakewood Early Learning Ctr # 086	49	Adequate	4	12	10	4	0
19. Leith Walk PK-8 # 245	2	Good	9	16	4	4	0
20. Liberty PK-5 # 064	35	Good	3	19	6	5	0
21. Lombard Bldg. # 057	54	Adequate	0	5	15	10	1
22. Mary E. Rodman E. # 204	50	Adequate	0	7	17	5	2
23. Matthew A. Henson E. # 029	52	Good	5	19	9	1	0
24. Mergenthaler Vo-Tech H. # 410	14	Adequate	0	8	16	6	2
25. Morrell Park PK-8 # 220	37	Adequate	1	14	13	5	0
26. Northeast M. # 049	38	Adequate	0	14	16	2	0
27. Northwestern H. #401	49	Not Adequate	0	0	17	8	8
28. Patterson H. # 405	51	Adequate	0	7	14	11	0
29. Paul Laurence Dunbar M.	32	Adequate	1	8	15	10	0
30. Robert Poole Bldg. #056 **(re-insp)**	36	Not Adequate	0	4	13	11	6
31. Sarah M. Roach PK-5 #073	43	Adequate	0	7	12	8	2
32. The Mt. Washington School #221	54	Adequate	3	16	12	3	0
33. Waverly PK-8 # 051	2	Good	12	10	10	2	0
34. West Baltimore Building #080 **(re-insp)**	52	Adequate	0	5	21	6	1
35. Westport PK-8 # 225	39	Not Adequate	1	2	12	13	5
Totals			95	350	451	209	35
Percentage of Total Ratings for System			8%	31%	40%	18%	3%

Baltimore County

Twenty-four schools were inspected in January and February 2016. Original existing square footage at these schools dates from 1930 to 2015 with adjusted building ages ranging from 45 to 4 years. The majority of the schools visited this year have never received full renovation projects. However, 17 of the schools received multi-systemic projects between 1999 and 2004 and two schools received limited renovation projects, in 2009 and 2012. Baltimore County chose to update their schools in this manner instead of through full renovations because it allowed them to provide capital investment for the most needed improvements in more of their schools due to limited funds. Perhaps because of this, most of the schools currently have at least a few areas that are problematic and this keeps the results in the *Good* to *Adequate* range. This should not be misconstrued that they do not maintain their schools. BCPS has many excellent maintenance practices, dedicated maintenance staff, and very good custodial staff in many of their schools, which has a positive effect on the overall conditions throughout the county.

A number of persistent issues were found this year. An apparent problem with storage has many of the schools with inappropriately placed equipment, furnishings and supplies stored in egress corridors and in equipment rooms, blocking quick and easy access which could be dangerous should there be an emergency situation. The fire extinguishing equipment and suppression systems at all visited schools did not have the required yearly and monthly inspections. The LEA reports the personnel positions responsible for managing and conducting these inspections are vacant and have been unfilled for an extended period of time. The LEA could not provide further information regarding a plan to improve the inspection program. Also, for many of the schools, restroom improvements should be considered in future State or Local funding requests to improve the current conditions that exist as a result of age-related deterioration and wear.

The recently completed renovation and addition at Hereford High appears to have greatly benefited the school and surrounding community. The administration and staff at this school are proud of this new facility and it translates to the interior condition as a result of proper and safe utilization practices. Padonia International Elementary is a very nicely maintained school but has a condensate problem with piping that has resulted in ceiling stains in many locations.

Villa Cresta Elementary

FY 2016

- 162 total active schools in system
- Avg. Adjusted Age, all schools: 1985
- 24 schools inspected: 16 Elementary, 5 Middle, 1 Middle/High, 2 High
- Results:
  - ✓ 0 Superior
  - ✓ 14 Good
  - ✓ 10 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (86.35)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Halethorpe E.	26	Adequate	5	13	9	4	0
2. Halstead Academy	33	Good	8	15	9	1	0
3. Hereford H.	4	Good	18	11	3	1	0
4. Lansdowne E.	33	Adequate	2	14	9	8	0
5. Lansdowne M.	27	Adequate	2	16	8	6	0
6. Milbrook E.	32	Adequate	0	18	7	5	0
7. Norwood E.	37	Good	4	18	8	3	0
8. Oliver Beach E.	35	Good	6	15	5	1	0
9. Padonia International E.	31	Good	13	15	1	2	0
10. Parkville M.	45	Adequate	5	10	14	5	0
11. Pine Grove M.	23	Good	7	16	6	3	0
12. Randallstown H.	44	Adequate	1	14	11	7	1
13. Rodgers Forge E.	37	Good	1	23	3	1	0
14. Sandalwood E.	44	Good	8	9	12	1	0
15. Sandy Plains E.	32	Adequate	2	12	8	9	2
16. Seven Oaks E.	24	Good	14	11	4	1	0
17. Southwest Academy	8	Good	2	17	10	3	0
18. Sparrows Point M./H.	30	Adequate	2	13	6	8	0
19. Stemmers Run M.	38	Adequate	3	8	18	4	0
20. Stoneleigh E.	4	Good	8	15	6	4	1
21. Sussex E.	38	Good	6	11	11	3	0
22. Timber Grove E.	32	Good	1	20	6	3	0
23. Victory Villa E.	42	Adequate	3	6	14	6	0
24. Villa Cresta E.	36	Good	3	19	4	5	0
Totals			124	339	192	94	4
Percentage of Total Ratings for System			16%	45%	25%	12%	1%

Calvert County

Five schools were inspected in May 2016. The original existing square footage at these schools dates from 1949 to 2013, with adjusted building ages ranging from 66 to 3 years at the time of the inspection.

Calvert High School was recently constructed as a replacement school, with 11,000 square feet of the existing structure retained and renovated, and is the newest of the five schools inspected. This school received a *Superior* rating, not only as a result of its young age, but also for the attention to detail and care that is given to this facility by the maintenance, custodial, administrative, and teaching staffs. It is a beautiful school.

Hunting Creek Alternative School is the oldest facility inspected this year. This very small school was built in 1944 and an addition in 1960 brought the square footage up to 6,977 square feet. It has received minimal improvements over the years but remains a well-maintained building. Replacement of the windows and asphalt driveway, repairs to the concrete walkways, and updating of the interior finishes should be considered to improve the overall conditions of this aging facility. However, it is reported that the uncertain future use of this building has limited CCPS from investing in significant improvements. This facility currently houses offices for various special education staff members, adult education programs, and child assessment space.

Northern High School has several small deficiencies, including structural, but this facility is to be replaced with a new school on the same site. Construction will begin in 2016 and is expected to be completed in 2019. The Auditorium will remain and be renovated. Given their history of responsible stewardship, CCPS is expected to maintain this school in a comfortable, safe and healthy manner until the new school opens.

As noted in previous reports, Calvert County Public Schools does an excellent job maintaining all facilities regardless of age. The onsite custodial care is consistently very good at public schools throughout the county and this is a result of good leadership, communication, teamwork, and support.

Northern High

FY 2016

- 26 total active schools in system
- Avg. Adjusted Age, all schools: 1994
- 5 schools inspected: 1 Elementary, 1 Middle, 2 High, 1 Special Ed.
  Results:
  - ✓ 1 Superior
  - ✓ 4 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (91.40)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Appeal E.	3	Superior	26	7	1	0	0
2. Calvert H.	35	Good	5	24	2	1	0
3. Hunting Creek Alt.	66	Good	4	19	6	2	0
4. Northern H.	24	Good	12	13	6	2	0
5. Plum Point M.	40	Good	7	17	7	1	0
Totals			54	80	22	6	0
Percentage of Total Ratings for System			33%	49%	14%	4%	0%

Caroline County

One school was inspected in November 2015. Original existing square footage at this school dates from 1978 to 1997 and its adjusted building age was 30 at the time of this inspection.

Ridgely Elementary, originally built in 1978 with renovations and additions in 1995 and 1997, has been nicely maintained by the onsite custodial team, maintenance personnel, and teaching staff.

Several recent State-funded projects, including the replacement of the emergency generator and domestic water heater, and security and playground improvements, were completed to address age-related issues identified by the LEA. Replacement of the roof and all associated components, rooftop equipment, and the control system should be considered due to age and the overall maintenance attention needed to provide consistent operation at all times. These investments and the continuous dedicated and quality approach to maintenance at this facility will ensure safe and efficient utilization.

Ridgely Elementary

FY 2016

- 10 total active schools in system
- Avg. Adjusted Age, all schools: 1992
- 1 schools inspected: 1 Elementary,
- Results:
  - ✓ 0 Superior
  - ✓ 1 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (87.91)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Ridgely E	30	Good	6	17	8	2	0
Totals			6	17	8	2	0
Percentage of Total Ratings for System			18%	52%	24%	6%	0%

Carroll County

Seven schools were inspected in September 2015. Original existing square footage at these schools dates from 1936 to 2013, with adjusted building ages ranging from 44 to 3 years due to additions and renovations constructed over the life of the buildings. All schools were found to be well maintained and receiving very good to excellent care by the custodial staffs.

The new Mount Airy Middle replacement school received the best rating of the schools inspected this year. Construction began in July 2011 and the school building was completed in August 2013. The original middle school was demolished at that time to allow space for the new parking area and bus loop. This school appears to be very well maintained and cared for by the staff, but two areas were found to need attention: the penthouse air handling unit filters were very dirty and in need of changing but were waiting on ordered filters, and debris on one area of the roof was causing the surface to degrade.

The other inspected schools were built thirty-five or more years ago. The school with the oldest adjusted building age, Carroll County Career & Technology Center, is in very good condition for a technology school built in 1970 with no major subsequent building renovation. A State-funded project to replace the roof, reported in the LEA's last three semi-annual roof inspection reports to be in very poor condition, was underway at the time of the survey.

Liberty High, South Carroll High, Sandymount Elementary, and Westminster Middle all received good overall ratings this year but each school had at least one area that needed to be addressed. These ranged from leaking skylights and old single pane windows that should be upgraded to degrading masonry needing sealing and two other roofs in need of replacement. A 2010 fine arts addition at South Carroll High School is a beautiful facility for this school and the community.

All schools received overall high ratings as a result of good maintenance and custodial practices, despite shrinking maintenance budgets. Carroll County Public Schools has recently made very difficult decisions regarding closing schools and redistricting but these changes will ultimately benefit the conditions of the remaining schools in terms of available maintenance funds and staff.

South Carroll High

FY 2016

- 43 total active schools in system
- Avg. Adjusted Age, all schools: 1990
  7 schools inspected: 1 Elementary, 3 Middle, 2 High, 1 Career Tech
- Results:
  - ✓ 1 Superior
  - ✓ 6 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (90.18)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Carroll County Career & Tech.	44	Good	5	14	7	0	0
2. Liberty H.	36	Good	1	22	8	1	0
3. Mt. Airy M.	3	Superior	24	7	1	1	0
4. Northwest M.	30	Good	6	21	4	0	0
5. S. Carroll H.	36	Good	3	20	9	1	0
6. Sandymount E.	24	Good	13	12	4	2	0
7. Westminster East M.	40	Good	1	26	6	0	0
Totals			53	122	39	5	0
Percentage of Total Ratings for System			24%	56%	18%	2%	0%

Cecil County

Four schools were inspected in May 2016. Original existing square footage at these schools dates from 1928 to 2008, with adjusted building ages ranging from 45 to 8 years at the time of inspection. All of the inspected schools have initial construction dates of 1968 or earlier, with Perryville Middle opening in 1928.

This school system consistently demonstrates that older schools can remain in excellent condition over many years if maintenance and repairs are provided routinely and in an effective manner. Leeds Elementary School was built in 1968, with the only major State-funded improvements consisting of a Kindergarten/Pre-kindergarten addition in 2005 and an HVAC replacement project in 2011. Bohemia Manor Middle/High, built in 1958 and renovated with an addition in 1995, has also received no substantial State-funded upgrades in the last 20 years; there was a small project to replace exterior building and site lighting as well as site photocell and occupancy sensor controls in the FY 2014 Energy Efficiency Initiative, and an Aging School Program Gym floor replacement project that was completed in 2014. North East Elementary, built in 1951, has received several additions over the years, as well as a State-funded complete renovation with addition project in 2002 and a Kindergarten/Pre-kindergarten addition in 2005. Perryville Middle has also received several additions over the years and a complete State-funded renovation with addition project in 2008.

Except for improvement to the management of storage and classroom spaces and the need for appropriate storage of chemicals in the science area at Bohemia Manner Middle/High, all of the inspected schools are noted for their cleanliness and good organization. The maintenance and custodial staffs do a laudable job of meticulously maintaining the conditions of their mechanical equipment and the equipment rooms that house them. Excellent leadership and the efforts of dedicated building services staff are clearly demonstrated throughout Cecil County Public Schools facilities.

North East Elementary

FY 2016

- 30 total active schools in system
- Avg. Adjusted Age, all schools: 1990
- 4 schools inspected: 2 Elementary, 1 Middle, 1 Middle/High
- Results:
  - ✓ 2 Superior
  - ✓ 2 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (94.88)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Bohemia Manor M/H	21	Good	16	13	0	1	1
2. Leeds E.	45	Good	14	13	4	1	0
3. North East E.	14	Superior	21	10	0	0	0
4. Perryville M	8	Superior	27	4	1	1	0
Totals			78	40	5	3	1
Percentage of Total Ratings for System			61%	31%	4%	2%	1%

Charles County

Six schools were inspected in April of 2016. All are older schools with adjusted building ages ranging from 42 to 24 years.

Gale-Bailey Elementary was constructed in 1969 and received Kindergarten additions plus a small renovation 1995 and 2009. Dr. Gustavus Brown Elementary, built in 1974, received a Kindergarten/Pre-Kindergarten addition in 2011. The other four schools are all original construction with no additions or renovations. One school was built in 1974, two schools were built in 1977, and Westlake High was built in 1992. The schools constructed in the 1970s have open-space concepts with partial height acoustical dividers. All schools have been well maintained, and although the difficulties of utilizing an open classroom facility typically result in safety issues such as excessive and unorganized clutter, and obstructed egress and evacuation routes, as observed here, these Charles County schools were found to be less cluttered and better managed than open-space classroom schools elsewhere across the state.

Westlake High, the newest school inspected this year, would benefit from replacement of its 1992 roof. At Gale-Bailey Elementary, the locally-funded roof replacement and HVAC project as well as the recent State funded Energy Efficiency Initiative (EEI) lighting upgrade have reportedly made significant improvements to the overall learning environment; however, many of the ceiling tiles throughout the school were left with holes in them as a result of the EEI project and these still needed to be replaced. The site at Maurice J. McDonough High has been damaged from vehicles being allowed to drive and park on the lawn, and the ground is bare of grass in these and other areas, causing an unsightly condition that is also ideal for soil erosion. These conditions warrant study and a permanent solution.

Charles County schools typically display a high level of maintenance and this year is no exception. The onsite custodial attention at these schools is excellent and it appears CCPS encourages a high level of professionalism and pride in all building services staff.

Westlake High

FY 2016

- 37 total active schools in system
- Avg. Adjusted Age, all schools: 1991
- 6 schools inspected: 3 Elementary, 1 Middle, 2 High
- Results:
  - ✓ 0 Superior
  - ✓ 6 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (92.44)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Dr. Gustavus Brown E.	36	Good	13	17	2	0	0
2. Dr. James Craik E.	42	Good	16	11	4	0	0
3. Gale-Bailey E.	38	Good	18	9	3	1	0
4. Maurice J. McDonough H.	39	Good	4	23	6	0	0
5. Piccowaxen M.	39	Good	13	17	1	1	0
6. Westlake H.	24	Good	16	12	4	1	0
Totals			80	89	20	3	0
Percentage of Total Ratings for System			42%	46%	10%	2%	0%

Dorchester County

Two schools were inspected in November 2015. Original existing square footage at these schools dates from 1954 to 1996, with adjusted ages of 34 and 31 at the time of inspection.

A number of State-funded improvements have been made over the years at North Dorchester High, including most recently the installation of stadium lighting and track and athletic field renovations, RTU replacement at the Auditorium, partial paving resurfacing, interior and exterior lighting upgrades, and security upgrades. With the construction of a replacement school scheduled to begin in late 2016, the maintenance efforts have reportedly shifted to a more reactive role to minimize overall expense while still maintaining a safe and functional facility while it is still being occupied.

Hurlock Elementary, constructed in 1982 with additions in 1990 and 1996, is a well maintained school with very good custodial care. Although never fully renovated, the school has benefited from numerous CIP, ASP and QZAB projects. The replacement of the aged carpeting and mechanical equipment, as well as improvements to the portable classroom building are much needed improvements.

Hurlock Elementary

FY 2016

- 14 total active schools in system
- Avg. Adjusted Age, all schools: 1988
- 2 schools inspected: 1 Elementary, 1 High
- Results:
  - ✓ 0 Superior
  - ✓ 1 Good
  - ✓ 1 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (86.11)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Hurlock E.	31	Good	10	15	7	0	0
2. North Dorchester H.	34	Adequate	0	9	20	2	0
Totals			10	24	27	2	0
Percentage of Total Ratings for System			16%	38%	43%	3%	0%

Frederick County

Eleven schools were inspected in May 2016. The original existing square footage at these schools dates from 1952 to 1985, with adjusted building ages ranging from 50 to 20 years at the time of this inspection. All eleven schools inspected this year received overall ratings of *Good* with very little deviation from the scores received from their previous IAC inspection. This can be attributed to the combination of a maintenance and custodial staff that is well trained as well as effective and progressive leadership.

New Market Middle and Wolfsville Elementary scored the highest this year. New Market Middle has benefited from several State-funded systemic renovations in recent years including roof, boiler, chiller, window and door replacements, and although Wolfsville Elementary has not, both have been exceptionally well cared for by their onsite custodial teams. All of the schools inspected this year were originally built between 1952 and 1985 and, although there have been additions with some renovation at two of the schools in the last several years, none of these schools have ever received total renovations.

Roofing, windows, exterior doors, and entryways at many of the schools are aged and deteriorating and should be considered for future replacement despite the best efforts of the onsite and maintenance staffs. Urbana Elementary, constructed in 1960 as an open-space school, is the top ranked elementary school in FCPS's facility assessment of renovation needs, and has been approved for replacement planning in the next few years.

Frederick County Public Schools continues to achieve consistently good scores through a well-balanced approach to maintenance and custodial practices, facility planning, and the respectful utilization of the students and staff.

Brunswick Middle

FY 2016

- 68 total active schools in system
- Avg. Adjusted Age, all schools: 1990
- 11 schools inspected: 6 Elementary, 4 Middle, 1 Career Tech
- Results:
  - ✓ 0 Superior
  - ✓ 11 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (90.43)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Brunswick E.	37	Good	10	17	6	0	0
2. Brunswick M.	20	Good	16	13	3	0	0
3. Career & Tech. Ctr.	36	Good	2	20	8	0	0
4. Emmitsburg E.	42	Good	8	14	9	0	0
5. Middletown E.	42	Good	10	20	3	0	0
6. Middletown M.	48	Good	5	21	7	1	0
7. New Market M.	42	Good	20	11	3	0	0
8. Urbana E.	50	Good	3	16	12	0	0
9. Walkersville E.	22	Good	12	16	5	0	0
10. Walkersville M.	40	Good	4	16	10	2	0
11. Wolfsville E.	31	Good	18	11	2	1	0
Totals			108	175	68	4	0
Percentage of Total Ratings for System			30%	49%	19%	1%	0%

Garrett County

Two schools were inspected in September 2015. The original existing square footage at these schools dates from 1958 to1998 with adjusted building ages of 39 and 31 years at the time of inspection.

Southern Middle School received State approval in FY 2014 for local planning to renovate the original building and to construct a Performing Arts Center addition. State funding for construction was requested and approved in FY 2017, but withdrawal of local funding support due to limited availability of funds resulted in a rescission of the initial funding. This 1977 school has received minor upgrades over the years with State funding, but has never been fully renovated. However, it has been well maintained by both the LEA's maintenance staff and the school's custodial staff. Southern Middle School is located adjacent to Broad Ford Elementary School and shares the use of a boiler and chiller located at Southern Middle School.

Swan Meadow Elementary School is a very small neighborhood school that has served the Mennonite community in this area for a significant period of time and includes grades 1 to 8. The interior, exterior and grounds of this facility are also very well maintained.

Southern Middle

FY 2016

- 13 total active schools in system
- Avg. Adjusted Age, all schools: 1988
- 2 schools inspected: 1 Elementary/Middle, 1 Middle
- Results:
  - ✓ 0 Superior
  - ✓ 2 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (91.50)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Swan Meadow E.	31	Good	16	13	1	1	0
2. Southern M.	39	Good	8	15	7	1	0
Totals			24	28	8	2	0
Percentage of Total Ratings for System			39%	45%	13%	3%	0%

Harford County

Nine schools were inspected in February 2016. Original existing square footage at these schools dates from 1941 to 2009, with adjusted building ages ranging from 47 to 7 years.

Bel Air High School was the newest school inspected and was rated close to superior as is to be expected from a school of this age. This was the school's first inspection since the replacement facility was completed in 2009 and it appears to have been very well maintained and utilized to date. Two storage issues should be corrected at this school: the storage of gasoline powered equipment should not be stored in the school's mechanical room within the main building, and the storage of salt/ice-melt compound should not be stored around electrical equipment since it can severely damage electrical wiring and controls.

Several schools inspected this year would greatly benefit from roof replacements and interior upgrades. Except for Bel Air High, these schools have never been renovated or were renovated before 1990, and none were first built before 1980. Components and finishes are aging. In particular, the renovation of restrooms would provide an improvement that would have a significant impact on the overall school condition as well as the custodial ability to maintain these schools. Loose toilets, aging fixtures, and damaged partitions all contribute to the below par conditions. Fortunately, Havre de Grace High has received approval for a much-needed replacement school and Prospect Mill received funding approval in the FY 2016 CIP for an open-space enclosure renovation.

Regardless of age, the interiors of all schools inspected this year are very well maintained by the onsite custodial teams. Based on past inspections, this appears to be a consistent trend throughout all Harford County Public Schools.

Bel Air High

FY 2016

- 53 total active schools in system
- Avg. Adjusted Age, all schools: 1988
- 9 schools inspected: 5 Elementary, 2 Middle, 2 High
- Results:
  - ✓ 0 Superior
  - ✓ 8 Good
  - ✓ 1 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools **Good (89.92)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Bel Air H.	7	Good	21	4	1	3	0
2. Dublin E.	29	Good	19	5	3	0	0
3. Edgewood M.	46	Good	1	19	6	2	0
4. Havre de Grace H.	39	Good	5	18	8	2	0
5. Jarrettsville E.	39	Good	13	13	2	1	0
6. Magnolia M.	37	Good	13	10	9	0	0
7. Prospect Mill E.	36	Good	6	17	4	2	0
8. Riverside E.	47	Adequate	0	8	18	3	0
9. William S. James E.	40	Good	8	16	2	0	0
Totals			86	110	53	13	0
Percentage of Total Ratings for System			33%	42%	20%	5%	0%

Howard County

Twelve schools were inspected in April and May 2016. The original existing square footage at these schools dates from 1972 to 2015 with adjusted building ages ranging from 28 years to 1 year at the time of inspection.

As in past years, this school system demonstrates a very high standard of overall maintenance in its schools. Its well-balanced program of renovations and capital renewal projects is complemented by a thorough roof inspection and repair program. The IAC inspector was accompanied by a member of the Howard County Public Schools (HCPS) roofing department at every school inspection this year. This unusual level of cooperation and communication allows the IAC to gain considerable insight into the details of HCPS's roof maintenance practices. The roofs appear to be well managed and well maintained.

Maintenance of kitchen equipment is a significant deficiency identified at a majority of the schools inspected in the last two years. The onsite staff reported insufficient support from the firm that is responsible for contractual maintenance. Many of the kitchen appliances had not received needed maintenance; the condition of the dishwashers in nearly every school was the most noticeable deficiency, with equipment at one school reported to be nonfunctioning for several months. This condition is reported to affect the ability of kitchen staff members to prepare meals as required. Additional oversight of the contractor or review of the contract is required; alternatively, the school system may need to consider performing the maintenance of this equipment as an in-house function.

Hammond Middle

FY 2016

- 73 total active schools in system
- Avg. Adjusted Age, all schools: 2000
- 12 schools inspected: 4 Elementary, 6 Middle, 2 High
- Results:
  - ✓ 2 Superior
  - ✓ 10 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (92.43)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Atholton H.	1	Superior	28	3	2	1	0
2. Deep Run E.	24	Good	6	10	2	3	0
3. Hammond M.	25	Good	15	14	2	1	0
4. Harpers Choice M.	15	Good	6	15	9	1	0
5. Laurel Woods E.	7	Good	19	9	4	1	0
6. Lisbon E.	10	Good	12	15	5	1	0
7. Longfellow E.	2	Superior	27	4	1	0	0
8. Mayfield Woods M.	25	Good	17	10	4	2	0
9. Mount View M.	23	Good	16	13	4	1	0
10. Oakland Mills H.	28	Good	11	11	6	3	1
11. Oakland Mills M.	18	Good	6	18	2	4	0
12. Patuxent Valley M.	27	Good	17	6	3	1	0
Totals			180	128	44	19	1
Percentage of Total Ratings for System			48%	34%	12%	5%	0%

Kent County

One school was inspected in May 2016. The original existing square footage at this school dates from 1951, with an adjusted age of 53 years as a result of additions in 1957, 1962 and 1974. At the time of the 1957 addition, the original 6,400 square foot building constructed in 1928 was demolished.

Although Galena Elementary has never been fully renovated, several systemic improvements utilizing State CIP, ASP, and QZAB funding have benefited this aging facility. The planned replacement of the 1993 roof system and associated components, as well as the older rooftop HVAC units, is greatly needed based on the observed ceiling tile damage caused by the current roofing deficiencies. Also of concern are the deteriorated asphalt and parking lot surfaces. Allowing pavement wear to continue unchecked will lead to further distress and possibly the need for a more costly resolution. The custodial staff, with the support of the administration and faculty, does a great job in maintaining the interior despite aging conditions.

Galena Elementary

FY 2016

- 7 total active schools in system
- Avg. Adjusted Age, all schools: 1977
- 1 school inspected: 1 Elementary
- Results:
  - ✓ 0 Superior
  - ✓ 0 Good
  - ✓ 1 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected school: **Adequate (84.03)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Galena E.	53	Adequate	3	14	8	5	1
Totals			3	14	8	5	1
Percentage of Total Ratings for System			10%	45%	26%	16%	3%

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Montgomery County

Thirty-two schools were surveyed in February and March 2016. Original existing square footage at these schools dates from 1934 to 2015, with adjusted building ages ranging from 45 years to 1 year. Ten of the schools surveyed this year had an adjusted building age of 30 or more years.

While twenty-seven of the thirty-two schools inspected in FY 2016 scored in the superior and good range, there are certain persistent issues that require focused attention from the maintenance department and school-based personnel. The current roof conditions at many of the schools inspected this year are a matter of considerable concern for the IAC, since as in previous years, it suggests that roof replacement projects may be submitted in the annual Capital Improvement Program prematurely due to a lack of appropriate maintenance. At a large number of the schools, there is a disjuncture between the roof inspections carried out by the staff of Montgomery County Public Schools and the repairs that should follow these inspections in a timely manner. We also note that roof warranties will likely be voided by the manufacturer if these regular and necessary repairs are not made in a timely manner.

After consultation with MCPS this spring while 2016 State inspections were ongoing, a very thorough and detailed action plan was provided by MCPS to improve the quality and value of the semi-annual roof inspection reporting and the timeliness of repairs to ensure appropriate measures are in place to extend the service life of roof systems. Timely repairs must be completed to maintain the watertight integrity of the building envelope and sustainability of costly State investments. This aspect of the LEA's facility management program will be a subject of close attention by the IAC in the coming years.

As in prior year inspections, fire and safety concerns were found in a majority of the schools inspected. Most commonly, fire extinguishers and sprinkler systems had not been properly maintained or certified, as required by NFPA. Other areas of concern include the excessive storage and organization in equipment rooms, and damaged and stained ceiling tiles resulting from leaks caused by either condensation or roof defects.

Montgomery County is an excellently managed school system with a well-prioritized, objectively developed capital improvement program. However, as commonly found among all of Maryland's counties, systems that have experienced growth and, consequently, the building of new schools that enlarge their building inventory, have generally not received increases of their resources. Many have seen a decrease in maintenance staffing and funding resources in recent years which increases the overall maintenance burden and accelerates deterioration.

Pine Crest Elementary

FY 2016

- 208 total active schools in system
- Avg. Adjusted Age, all schools: 1994
- 32 schools inspected: 19 Elementary, 6 Middle, 6 High, 1 Alternate
- Results:
  - ✓ 4 Superior
  - ✓ 23 Good
  - ✓ 5 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (88.94)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Baker (John T.) M.	40	Good	1	22	8	2	0
2. Bells Mill E.	7	Good	13	15	3	1	0
3. Bethesda Chevy Chase H.	14	Good	15	13	5	1	0
4. College Gardens E.	9	Superior	25	2	4	1	0
5. Damascus H.	38	Adequate	1	12	13	7	0
6. Darnestown E.	18	Good	12	12	7	2	0
7. Dufief E.	41	Good	5	16	8	3	0
8. Ewing (Blair G.) Ctr.	45	Good	0	20	10	2	0
9. Fairland E.	17	Good	10	12	6	5	0
10. Gaithersburg M.	26	Adequate	2	13	8	10	0
11. Germantown E.	44	Good	12	14	6	1	0
12. Glenallan E.	3	Superior	27	2	2	2	0
13. King (Dr. Martin Luther, Jr.) M.	21	Good	11	14	5	2	0
14. Meadow Hall E.	20	Good	3	21	8	1	0
15. Neelsville M.	34	Adequate	0	12	8	12	0
16. Olney E.	26	Good	6	15	9	3	0
17. Paint Branch H.	4	Good	22	5	3	3	0
18. Parkland M.	9	Good	16	10	4	3	0
19. Pine Crest E.	24	Good	11	11	6	4	1
20. Poolesville E.	41	Adequate	0	18	6	6	1
21. Quince Orchard H.	28	Good	7	17	9	1	0
22. Redland M.	30	Good	10	15	3	3	0
23. Ritchie Park E.	21	Good	8	16	3	5	0
24. Rock Creek Forest E.	1	Superior	23	6	1	2	0
25. Rockville H.	12	Good	9	18	4	2	0
26. Stonegate E.	40	Adequate	1	13	12	5	1
27. Viers Mill E.	19	Good	10	14	6	2	0
28. Walter Johnson H.	9	Good	14	14	3	3	0
29. Washington Grove E.	19	Good	13	13	4	2	0
30. Weller Road E.	4	Superior	28	3	1	0	0
31. Woodlin E.	34	Good	3	21	9	1	0
32. Wyngate E.	14	Good	5	16	6	6	0
Totals			323	425	190	103	3
Percentage of Total Ratings for System			31%	41%	18%	10%	0%

Prince George's County

Thirty-two schools were inspected in October and November 2015. Original existing square footage at these schools dates from 1951 to 2013, with adjusted building ages ranging from 62 to 3 years. Seventeen of the 32 inspected schools have adjusted ages greater than 40 years, and twelve schools have adjusted ages between 25 and 40 years. There is a modest improvement in the overall scores this year when compared to past years, with two schools scoring *Superior* and no schools receiving scores of *Not Adequate* or *Poor*. This may have to do with the random selection of these specific schools but we believe that the improvement can be at least partially attributed to the structural changes that have taken place within the facility management departments. With these schools still having many deficiencies to correct or improve upon, it is noteworthy that only three of the 32 schools have an average age less than 29 years. This is an indication of the maintenance burden on Prince George's County Public Schools which has the third oldest schools in the State, behind only Kent County and Baltimore City.

While all but two of the thirty-two schools inspected in FY 2016 scored in the adequate to good range, the two scores of *Superior* were the first since FY 2012. As in the past, there are persistent issues that require focused attention from the maintenance department and school-based personnel, but as previously reported in the FY 2015 report, it is anticipated that the intensified oversight by the administrative staffs and maintenance personnel will continue to improve facility conditions. At several inspections, the school's administration was very interested in the physical condition of the school and in the observations and comments by the maintenance inspectors.

This year, a large number of schools received *Superior* or *Good* ratings in the following categories: Site and Site Structures; Site Utilities; Exterior Building Appearance; Playgrounds, Athletic Fields and Equipment; Exterior Structural Condition; Gutters and Downspouts; Roof Drains; Interior Appearance; Floors; Walls; Interior Lighting; Equipment Rooms; Boilers; and HVAC Controls. It is noteworthy that the Boilers received no rating less than *Superior* or *Good* for any of the 32 schools inspected, indicating well-maintained equipment, or well-planned and/or performed replacement of essential operating equipment.

However, as we did in FY 2015, we also identified a number of areas in which at least 20% of the schools inspected received ratings of *Not Adequate* or *Poor*. These include Driveways and Parking Lots; Windows; Entryways and Exterior Doors; Roof Conditions; and Gravel Stops; Rooftop Equipment; Ceilings; Electrical Distribution; Ventilation Equipment; and Steam Distribution. A large number of inspected schools this year have old, deteriorated, and inefficient window systems that are also unsightly. Many of the schools have damaged parking lots and driveways that have deteriorated to the extent they are beyond repair and replacement will be needed.

Prince George's County Public Schools has identified an enormous need for improvements and associated funding. A new 20-year

Northwestern High

FY 2016

- 198 total active schools in system
- Avg. Adjusted Age, all schools: 1981
- 32 schools inspected: 16 Elementary, 2 Elementary/Middle, 1 PreK-8, 3 Middle, 6 High, 1 Science, 3 Special Ed.
- Results:
  - ✓ 2 Superior
  - ✓ 14 Good
  - ✓ 16 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (86.33)**

Educational Facilities Master Plan for FY 2017 and beyond identifies roughly 25 schools for full or limited renovation or replacement over a six year period. Under this plan, they will also address the shifting enrollments within their county. PGCPS has developed a well-balanced and well-considered approach to combining these types of projects with much needed systemic projects at other schools, all supported by a strengthened maintenance program.

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Apple Grove E.	45	Adequate	3	9	12	6	0
2. Arrowhead E.	47	Good	4	19	9	1	0
3. Avalon E.	3	Superior	25	5	1	0	0
4. Brandywine E.	37	Adequate	1	13	13	5	0
5. C. Elizabeth Rieg Regional School	38	Adequate	2	16	6	8	0
6. Chillum E.	38	Good	3	18	7	5	0
7. Clinton Grove E.	50	Good	1	21	6	4	0
8. Dwight D. Eisenhower M.	46	Good	5	13	10	5	0
9. Forest Heights E.	62	Adequate	1	10	13	7	1
10. Frances R. Fuchs Early Childhood	33	Good	9	18	3	1	0
11. Francis T. Evans E.	46	Good	7	17	6	0	0
12. Friendly H.	42	Good	3	17	9	4	0
13. Howard B. Owens Science Ctr.	36	Good	15	17	0	0	0
14. James E. Duckworth Regional	38	Good	5	20	5	1	0
15. John Hanson Montessori	56	Adequate	0	12	14	6	0
16. Kettering M.	38	Good	3	18	10	0	0
17. Largo H.	45	Adequate	3	9	11	9	0
18. Laurel E.	42	Good	10	17	4	1	0
19. Laurel H.	38	Adequate	2	17	12	4	0
20. Maya Angelou French Immersion	51	Adequate	1	8	19	2	0
21. Northwestern H.	18	Adequate	0	17	14	3	0
22. Oxon Hill H.	4	Superior	31	1	1	0	0
23. Patuxent E.	29	Adequate	1	9	11	11	0
24. Rogers Heights E.	35	Adequate	0	7	13	13	0
25. Rose Valley E.	48	Adequate	1	20	7	3	1
26. Stephen Decatur M.	40	Good	7	15	9	0	0
27. Surrattsville H.	30	Good	16	16	3	0	0
28. Tayac E.	49	Adequate	1	17	10	4	0
29. Templeton E.	45	Adequate	0	17	11	5	0
30. Thomas Claggett Teacher Leadership Ctr.	44	Adequate	1	13	13	6	0
31. Thomas G. Pullen Creative & Perf. Arts Acad.	47	Adequate	0	17	10	6	1
32. University Park E.	35	Good	3	18	8	2	0
Totals			164	461	280	122	3
Percentage of Total Ratings for System			16%	45%	27%	12%	0%

Queen Anne's County

Two schools were inspected in November 2015. Original existing square footage at these schools dates from 1991 at Bayside Elementary School and from 1916 to 1998 at Church Hill Elementary School, with adjusted building ages of 25 and 17 years respectively due to no additions or renovations to Bayside, and an addition/renovation in 1998 at Church Hill. Inspection results at both school facilities demonstrate a high level of attention given to maintenance.

Bayside Elementary received a number of State-funded CIP systemic and Aging Schools Program projects that were completed from 2008 to 2014. The standing seam metal roof has reached the end of its life expectancy and replacement should be planned so that the interior is protected.

The 1998 addition and complete renovation at Church Hill Elementary School, originally constructed in 1916, more than doubled the size of the school. The principal and staff show a high regard for the appearance and cleanliness of this building that includes the original historic school. The school is well maintained and in very good condition, except for the membrane roof which has open seams needing repair and the wood at the pediment, fascia and soffit at the front of the 1916 building. The wood in this location has significantly rotted and needs immediate repair or replacement in order to keep out birds and pests, and to preserve the appearance and structural integrity of this community landmark. The standing seam metal roof over the 1916 building is aging and needs repairs as well. The membrane roof on the other portions of the building is nearing the end of its useful life and should be scheduled soon for replacement. The LEA's roof inspection reports indicate its condition as rapidly declining from one six-month inspection to another. Replacement of this roof system and repairs to the wood on the 1916 building are much needed improvements for this otherwise well maintained facility.

Church Hill Elementary

FY 2016

- 14 total active schools in the system
- Avg. Adjusted Age, all schools: 1999
- 2 schools inspected: 2 Elementary
- Results:
  - ✓ 0 Superior
  - ✓ 2 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (90.91)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Bayside E.	25	Good	9	17	5	1	0
2. Church Hill E.	17	Good	13	15	3	2	0
Totals			22	32	8	3	0
Percentage of Total Ratings for System			34%	49%	12%	5%	0%

St. Mary's County

Four schools were inspected in April 2016. Original existing square footage at these schools dates from 1966 to 2005, with adjusted building ages ranging from 42 to 32 years.

Spring Ridge Middle School was undergoing a limited renovation at the time of inspection that was expected to be completed in Summer 2016. The administration and custodial staff appear to have done an excellent job keeping this occupied school clean and safe during the multi-phased construction process.

The three remaining schools have never received full renovations and only a few State-funded system upgrades throughout their lifespans. An HVAC project was completed at Oakville Elementary in 2012 and the new system is performing very well. Green Holly Elementary School consists of two separate buildings, built in 1973 and 1989 respectively that are joined by a corridor. A deteriorated greenhouse, old and deteriorated or damaged exterior surface lighting, a damaged gutter and downspout system, stained ceiling tiles from roof leaks, and several roof drains blocked with leaves and other debris were among the deficiencies found at this school. This school would benefit from facility upgrades but the maintenance and custodial staff do a commendable job keeping the electrical and HVAC equipment functioning past their normal life expectancies at this school.
Although St. Mary's County has the fifth highest average age of square footage in the state, it also has its share of older facilities as demonstrated in these four schools.

Spring Ridge Middle

FY 2016

- 27total active schools in system
- Avg. Adjusted Age, all schools: 1995
- 4 schools inspected: 3 Elementary, 1 Middle
- Results:
  - ✓ 0 Superior
  - ✓ 3 Good
  - ✓ 1 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (90.83)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Green Holly E.	33	Adequate	0	19	9	3	0
2. Lettie Marshall Dent E.	32	Good	11	16	5	0	0
3. Oakville E.	42	Good	21	9	2	1	0
4. Spring Ridge M.	42	Good	14	12	4	1	0
Totals			46	56	20	5	0
Percentage of Total Ratings for System			36%	44%	16%	4%	0%

Somerset County

One school was inspected in November 2015. Original existing square footage at this school dates from 1952, with an adjusted age of 19 years at the time of inspection.

Crisfield Academy & High School was constructed in 1952, renovated with an addition that more than doubled its size in 1973, and received another renovation in 1997, although it appears that some areas and items in the school were not upgraded. State funding was approved in the FY 2017 CIP for a small Renovation/Addition to relocate the "Shore Up! Head Start Center" to this school.

As previously identified in the FY 2011 maintenance inspection report, there are numerous stained ceiling tiles, some having the appearance of possibly containing mold. This may be related to both the condition of the 1997 roof system, which appears to be leaking, as well as to piping that was observed to have damaged insulation and control valves. This needs investigation and, until the roof can be replaced, the cause of the leaks must be identified, repairs made, and stained tiles replaced on a regular basis. Ceiling tiles are also significantly sagging in many areas, suggesting high humidity. Additionally, damaged frames and hardware on several interior doors, exterior doors that leak at times of heavy rain and high winds, some insufficiently maintained or aged mechanical units, damaged flooring and walls, and aged restroom fixtures, faucets and drains suggest other upgrades are needed at this school.

Until improvements can be made, more effective and routine maintenance and improved cleaning practices will correct many of the deficiencies found at this school. For fire safety, attention is needed to address the numerous expired and uninspected fire extinguishers that were observed. The significant structural cracking in the Gym, reported at the time of the previous inspection, appears to have stabilized and the openings have been caulked, but a permanent repair should be considered.

Crisfield Academy & High

FY 2016

- 10 total active schools in system
- Avg. Adjusted Age, all schools: 1995
- 1 school inspected: 1 Middle/High
- Results:
  - ✓ 0 Superior
  - ✓ 0 Good
  - ✓ 1 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Adequate (80.62)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Crisfield Academy & H.	19	Adequate	0	11	15	7	0
Totals			0	11	15	7	0
Percentage of Total Ratings for System			0%	33%	45%	21%	0%

Talbot County

One school was inspected in November 2015. Original existing square footage at this building dates from 1966 to 1999, with an adjusted building age of 19 years at the time of inspection.

Easton High School was constructed in 1966 and had additions in 1971 and 1976. The entire building was renovated in 1997 when another addition was added, and two small additions including an Automotive Technology wing that was constructed using private funds were added in 1999. Other than the minor concern over some moderately blocked roof drains and the more serious concern for the need to provide monthly visual inspections of the fire extinguishers, this facility is very well maintained.

Talbot County has consistently demonstrated good maintenance practices and has clean, attractive, and well-managed schools. Talbot County is tied with Howard County for having the newest school facility inventory in the State, as measured at the end of FY 2016. The average age of the facilities for these two systems is 16 years, 13 years above the statewide average age of 29 years.

Easton High

FY 2016

- 9 total active schools in system
- Avg. Adjusted Age, all schools: 2000
- 1 schools inspected: 1 High
- Results:
  - ✓ 0 Superior
  - ✓ 1 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (92.46)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Easton H.	19	Good	**13**	**17**	**2**	**1**	**0**
Totals			13	17	2	1	0
Percentage of Total Ratings for System			39%	52%	6%	3%	0%

Washington County

Eight schools were inspected in September 2015. Original existing square footage at these schools dates from 1953 to 2014, with adjusted building ages ranging from 45 years to 1 year. The newest school, Bester Elementary, is a replacement school constructed over a three year period on the same property as the original 1930 and 1965 buildings. This required a substantial amount of site preparation as the original site was unstable with underground springs and constant movement. The new Bester Elementary has been nicely constructed with well-planned instructional space, open shared space, as well as maintenance and equipment areas that do not require instructional or classroom interruption for service or repairs.

The HVAC is supplied through a geothermal ground source closed loop system with energy efficient water source heat-pumps and high efficiency rooftop energy recovery systems. A majority of the roof is pitched which should provide additional years of service over a flat roof in an area where significant snowfall occurs. Good quality construction practices with excellent oversight has provided an outstanding educational facility. Of the other seven surveyed schools, three have received additions and renovations since 1997 with State funding. As in past years, these schools are being maintained well and will be modernized as funding becomes available.

The collaborative attention by the administrative, maintenance, and custodial staffs ensures the needed supervision and support to efficiently utilize and maintain the facilities. The maintenance department continues to comprehensively address all identified concerns, and regularly inspects and preventatively maintains all WCPS facilities.

Several future systemic projects in the next few years were reported to be planned, including an HVAC replacement at Williamsport High and roof replacements at Smithsburg High and Williamsport Elementary. These improvements will benefit the facilities greatly.

Williamsport Elementary

FY 2016

- 47 total active schools in system
- Avg. Adjusted Age, all schools: 1985
- 8 schools inspected: 5 Elementary, 3 High
- Results:
  - ✓ 3 Superior
  - ✓ 4 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (92.44)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Bester E.	2	Superior	28	5	0	0	0
2. Boonsboro H.	39	Good	11	19	2	0	0
3. Old Forge E.	43	Good	4	17	8	1	0
4. Potomac Heights E.	45	Good	10	19	1	0	0
5. Smithsburg E.	19	Superior	21	10	0	0	0
6. Smithsburg H.	41	Good	9	20	4	0	0
7. Williamsport E.	13	Good	10	17	5	1	0
8. Williamsport H.	44	Good	6	19	6	2	0
Totals			99	126	26	4	0
Percentage of Total Ratings for System			39%	49%	10%	2%	0%

Wicomico County

Four schools were inspected in November 2015. Original existing square footage at these schools dates from 1931 to 2008, with adjusted building ages ranging from 39 to 8 years at the time of inspection.

All schools were constructed or have remaining square footage from between 1931 and 1955. The only areas that have been demolished are the 1969 and 1971 additions at Prince Street Elementary, currently a 1949/1954 facility that was fully renovated in 2008 and thus has an adjusted age of eight years. The three other schools have adjusted ages of 31, 38, and 39 years, and have received numerous systemic renovation and other small projects including a total of 30 Aging Schools Program projects since 2000. This school system routinely takes advantage of the available funds in this program. Wicomico County continues to exhibit very good maintenance practices as is evident at these schools, and both the maintenance as well as the custodial staffs are to be commended. It is also noteworthy that the school system greatly benefits from the expertise of the professionals in its Planning and Construction Department who have demonstrated consistent, knowledgeable, and well-conceived project planning over the years.

Wicomico Middle

FY 2016

- 24 total active schools in system
- Avg. Adjusted Age, all schools: 1991
- 4 schools inspected: 3 Elementary, 1 Middle
- Results:
  - ✓ 1 Superior
  - ✓ 3 Good
  - ✓ 0 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (91.69)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Fruitland Primary	39	Good	17	12	2	0	0
2. Pinehurst E.	31	Good	11	15	5	2	0
3. Prince St. E.	8	Superior	23	8	1	1	0
4. Wicomico M.	38	Good	3	16	10	4	0
Totals			54	51	18	7	0
Percentage of Total Ratings for System			42%	39%	14%	5%	0%

Worcester County

Two schools were inspected in November 2015. Original square footage at these schools dates from 1958 to 2011, with adjusted building ages ranging from 19 to 5 years at the time of the inspections. A complete renovation/addition project at the 1958 Pocomoke High School, which had received a prior renovation and addition in 1984, was completed in 2011. Stephen Decatur Middle School was constructed in 1997.

The 2011 renovation/addition project at Pocomoke High substantially improved this facility. However, the loose and dislodged flashing observed on the roof suggests that maintenance is insufficient. This may be of considerable concern, because the IAC inspection conducted when the school was under construction in 2008 also found deficiencies in roof maintenance. The muddy condition of the municipal water where it enters the building is also an item that needs to be resolved before it causes damage to equipment.

Stephen Decatur Middle was found to have a number of deficiencies. The poor condition of the 1997 shingle roof is the most serious, and it appears to have continued to deteriorate since it was rated as *Poor* in the 2009 IAC inspection; at that time, the roof was only 12 years old. Dislodged shingles were observed to be littered around the site. Although some repairs are evident, the repairs do not appear to be sufficient or frequent enough, and numerous roof leaks appear to be responsible for the multitude of stained ceiling tiles. At only 19-years old, the entire roof is in need of replacement; its premature deterioration is possibly due to a deficiency of funding for routine preventative and corrective maintenance.

Insufficient funding for maintenance and operations appears to place an excessive burden on the staff of this LEA, and the effects of the poor roof conditions have a significant impact on the overall interior condition of the school. An adequate maintenance budget is needed to minimize future damage to school structures and interior finishes. An addition is being planned for Stephen Decatur Middle School with a request for State construction funding expected in three to five years; attention to the matter of maintenance funding is required prior to then, and may affect State support for future projects.

Pocomoke High

FY 2016

- 14 total active schools in system
- Avg. Adjusted Age, all schools: 1990
- 2 schools inspected: 1 Middle, 1 High
- Results:
  - ✓ 0 Superior
  - ✓ 1 Good
  - ✓ 1 Adequate
  - ✓ 0 Not Adequate
  - ✓ 0 Poor
- Overall condition of inspected schools: **Good (88.79)**

School Name	Adjusted Age	Overall Rating	Rating of Individual Categories (does not include items not rated)				
			Superior	Good	Adequate	Not Adequate	Poor
1. Stephen Decatur M.	19	Adequate	2	13	8	6	2
2. Pocomoke H.	5	Good	22	6	2	2	0
Totals			24	19	10	8	2
Percentage of Total Ratings for System			38%	30%	16%	13%	3%

21st Century School Facilities Commission

October 13, 2016

Baltimore City Schools

Long Term Investment

Before Completion

- Effective Process
  - Planning
  - Design
  - Construction
- Quality Control
  - Leadership
  - Management
  - Checks and Balances

Baltimore City Schools

Long Term Investment

After Completion

- Effective Process
  - Planning
  - Design
  - Construction
- Quality Control
  - Leadership
  - Management
  - Checks and Balances

Baltimore City Schools

Long Term Investment

MSA Process

- Program Level
  - Program Manager
    - Leadership
    - Technical Resource
    - Staff Augmentation
  - LEED Consultant
    - Establish LEED Requirements
    - Assist in management of LEED Process
    - Coordinate Projects
  - Code Consultant (MSA Projects)
    - Inspect
    - Certify

Baltimore City Schools

Long Term Investment

MSA Process

- Project Level
  - Project Manager
    - Assigned 1-2 Projects
    - Integrated into Team
  - A/E - CM
    - Procured simultaneously
    - Construction knowledge shapes Design
  - Commissioning Agent
    - Procured prior to 100% Design Development phase
    - Enhanced commissioning for LEED
  - Testing and Inspection Agent
    - Concrete, Soils, Steel

Baltimore City Schools

Long Term Investment

Commissioning Agent

- Design
  - Participates as a team member
  - Reviews Design Submissions
    - Critical Systems
    - Envelope
    - Operations and Maintenance Review
  - Develops Building Maintenance Plan

Baltimore City Schools

Long Term Investment

Commissioning Agent

- Construction
  - Envelope Commissioning
    - Inspects
    - Approves
  - Critical Systems
    - Mechanical
    - Electrical
- Coordinates Owner Training
- Coordinates User Manuals
- Engaged for two years after Completion for performance verification

Baltimore City Schools

Long Term Investment

Commissioning Agent

- Construction
  - Envelope Review
    - Inspects
    - Approves
  - Critical Systems

    Mechanical

    Electrical
- Coordinates Owner Training
- Coordinates User Manuals
- Finalizes BMP's for input to CMMS
- Engaged for two years after Completion

Baltimore City Schools

Long Term Investment

CMMS

- City Schools procured CMMS system
  - Program paid half of the cost
  - MSA participated in procurement

- **Questions/Answers**

BALTIMORE CITY PUBLIC SCHOOLS

21st CENTURY SCHOOLS
BALTIMORE

2016 Comprehensive Maintenance Plan

Presentation to Maryland State Board of Public Works
Knott Commission on Public School Construction

Lynette K Washington, PhD
Executive Director Facilities Operations

October 13, 2016

Sonja B. Santelises, Ed. D.
Chief Executive Officer, Baltimore City Public Schools

Mignon R. Anthony, Executive Director
21st Century School Buildings Program

OVERVIEW

- Guidance
- Key Elements of City Schools' CMP Plan
- CMMS
- Metrics

2013 MOU requirements

"...a **Comprehensive Maintenance Plan (CMP)** for preventative maintenance and ongoing maintenance of all school buildings, which shall provide for sufficient funding to implement the CMP..."

- 10 year plan projects
- Existing school buildings
- All school buildings touched by the Capital Improvement Plan (CIP)
- Demonstrate sufficient staffing, budget and organization
- Metrics

Building Maintenance Plans (BMP) for each school building in the 21st Century portfolio, are a subcomponent of the District's Comprehensive Maintenance Plan (CMP) and developed during the end of the design process, and as part of the final construction bid packages for each school.

21st CENTURY SCHOOLS
BALTIMORE

21st Century School Buildings Status

PLANNING	PRE-DESIGN	DESIGN	CONSTRUCTION - OCCUPANCY
8 months	2-4 months	12-18 months	18-24 months

MONTHS 1 2 3 4 5 6 7 **8** 9 10 11 **12** 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 **30** 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 **54**

PLANNING

* Fairmount-Harford
* John Ruhrah
* Calvin M. Rodwell
* Medfield Heights
* Cross Country
* Govans
* Walter P. Carter/Lois T. Murray
* Bay-Brook
* Calverton
* Montebello
* Harford Heights
* Mary E. Rodman
* Highlandtown #237
* Commodore John Rodgers
* Robert W. Coleman
* James Mosher
* Northwood

PRE-DESIGN

^ Patterson - Claremont

DESIGN

^ Arlington
^ Cherry Hill
^ Forest Park
^ Pimlico

CONSTRUCTION

^ Arundel
^ Lyndhurst
^ John Eager Howard
^ Robert Poole
^ Fort Worthington
^ Frederick

OCCUPANCY

2017 - 2 schools
2018 - 9 schools
2019 - 9 schools
2020 - 8 schools

^ Year 1 School
* Year 2 School

Updated_9/9/2016_KS

Key CMP Elements

The 2016 Comprehensive Maintenance Plan (CMP):

- Completed October, 2016: Serves as the district's maintenance plan for City Schools' portfolio of facilities.
- Updates the original 5-year CMP approved by the Baltimore City Board of School Commissioners and the Interagency Committee on Public School Construction (IAC) on September 11, 2014
- Key areas that the CMP also addresses:
  - Organization and staffing
  - Inventory of facilities spaces
  - Processes and systems
  - General fiscal challenges

CMP: Organization

FY 16 - created an improved management structure that allowed an expansion from 3 to 10 repair regions.

- Results:
  - Established 3 regions supported by 13 Educational Building Supervisors (EBSs)

    10 = Community Learning Networks, 3 = Inspection and PM oversight
  - Developed complete school readiness plans and schedules for all Baltimore City school buildings
  - Annual performance targets

CMP: Professional Development

FY 17 - focus on advanced professional development for EBSs.

- Operations and Maintenance
- Project Management
- Business and Finance
- Leadership and Strategy
- Equipment

- City Schools' internal key performance indicators (KPI)

  TARGET - Total time to complete emergency and repair work orders

  - Total number of open and completed emergency and repair work orders
  - Total number of preventative maintenance work orders

CMP: Preventative Maintenance (PM)

- Increasing preventive maintenance is a main objective
- Increased funding as part of the 21st Century Plan allows for additional capacity for preventative maintenance and inspections to meet City, State, Federal mandates (fire alarms, roofs, elevators, etc)
- In FY 15 and 16, additional operating funds to address PM for boilers, chillers, specialized systems and supplement staff capacity

Computerized Maintenance Management System

21st CENTURY SCHOOLS
BALTIMORE

9

- The School Board approved procurement of a Computerized Maintenance Management System (CMMS) (Schools Dude) in accordance with the 21st Century MOU.
- The CMMS utilizes automated work flows to streamline all aspects of repair and maintenance work orders, preventative maintenance, asset management, and inventory management.
- January to August 2016 system customization – including ability to integrate Building Information Management (BIM) data from 21st C projects
- City Schools Systems Manager has begun implementation. Data will become available as system loads information across all schools.

CMP: Key Metrics

Objective	Metric	Status
Reduce the number of vacancies	Fill vacant and newly created skilled positions	Adjust needed positions according to budget
Reduce square footage per staff FTE	Increase staffing	Aggressive recruitment and hiring for existing vacant positions
Plan and direct contractor resources to Preventive Maintenance (PM)	Further PM efforts - repairs, replacements, training	On track
Complete City, State and Federal Mandated Inspections	Further PM and repairs (fire alarms, roofs and elevators)	On track
Plan, schedule and complete PM work orders	Employ the CMMS to track progress	Post October 2016 training

QUESTIONS

Office of the Chief Operating Officer

Dr. Lynette Washington
Executive Director, Facilities
lkwashington@bcps.k12.md.us

For more information on

21st CENTURY SCHOOLS
BALTIMORE

www.baltimore21stcenturyschools.org

ACLU
AMERICAN CIVIL LIBERTIES UNION of MARYLAND
EDUCATION REFORM PROJECT

MEMORANDUM

To: Martin Knott, Chair of the 21st Century School Facilities Commission & Members of the Commission
From: Frank Patinella, Senior Education Advocate, ACLU of Maryland
CC: Senate President Miller, House Speaker Busch
Date: Tuesday, October 11, 2016
Re: Draft Recommendations to the 21st Century School Facilities Commission

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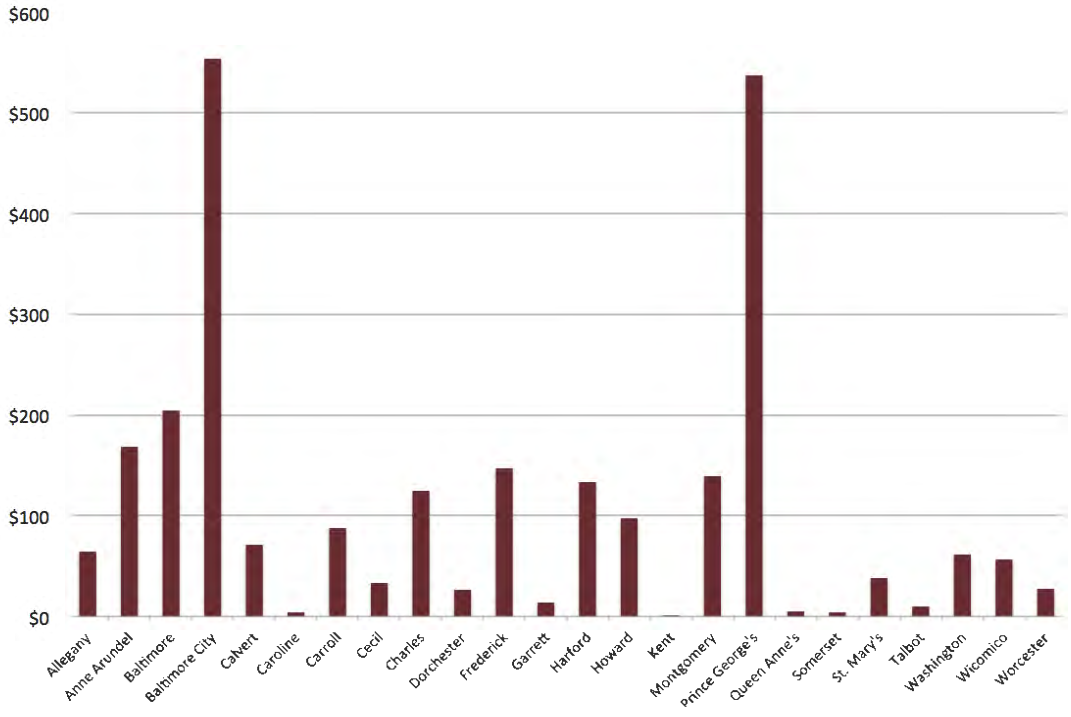
The ACLU testified and provided written testimony (attached) for the commission on July 21, 2016. The ACLU would like to reiterate our request that the commission recommend another "Kopp-like" survey be completed. Given the high need for building and improving school buildings, we also want to the commission to recommend the use of alternative financing approaches to implement large scale school construction programs.

Recommend Update of the Kopp Task Force's "Most Important Accomplishment" – The Facilities Survey. The Commission is charged with reviewing the Kopp Task Force's findings and implementation towards progress. To meet its goal of addressing "issues related to the adequacy and equity of the State's public school construction program," the Kopp Task Force completed the first statewide Facility Assessment Survey and touted it as its "**most important accomplishment" for "policymakers and the public in the long-term.**" The chart below shows the amount of state funding needed to address the minimum facility needs reported by the Kopp Task Force in 2004.

Estimated State Funding Needed to Bring Maryland School Facilities to Minimum Adequacy[1]



[1] Task Force to Study Public School Facilities, Final Report, Annapolis, MD 2004, http://dls.state.md.us/data/polanasubare/polanasubare_edu/Task-Force-to-Study-Public-School-Facilities.pdf

The Kopp survey, designed to identify the facility conditions that impact health and safety, student capacity, and other factors related to supporting the education program, showed a large disparity in building conditions. After 12 years of investment and many changes at the district level, it is critical to re-assess the current conditions of schools buildings now. The survey, developed in-house at no additional cost by the state's Public School Construction Program, was used by Maryland school districts to assess every school building in the state. Public School Construction Program staff performed random sample assessments to ensure consistency and quality of the data. Without formally assessing the needs of all Maryland school districts, the Commission will not be able to make informed recommendations to address long-term school facility planning, capital investments, and maintenance costs. **The ACLU urges the Commission to recommend that the State complete another Kopp-like survey.**

Looking into the future, the Commission should recommend that the State formalize a process by which facility conditions be assessed periodically. New Mexico's program uses a statewide assessment database, which ranks the condition of every school building relative to statewide adequacy standards. Facilities with the greatest need are given funding priority[2].

Recommend Local Governments Use Alternative Financing. Alternative financing and public-private partnerships have proven to be a useful strategy in addressing districts with high need and low wealth. The primary goals of these models are to reach beyond state and local debt limitations to borrow large amounts of funding up front to fully renovate and build many new schools in the short term. City Schools' 21st Century Schools Program is an example of an alternative financing model.

Baltimore City Public Schools' Jacobs Report showed that most of Baltimore City's schools needed to be fully renovated or completely rebuilt due to building structures and mechanical systems that are long past their useful life[3]. With combined local and state capital funding averaging $50-60 million annually, city school buildings were deteriorating faster than they could be fixed. Based on successful models nationwide, the ACLU proposed a financing model that would allow the district to acquire large amounts of funding up front through a third party borrower. The legislature adopted this approach in 2013 and established the Maryland Stadium Authority as the financer and construction manager. Further, the MSA is issuing 30-year bonds as opposed to the state's 15-year bonds, which allows for larger amounts of borrowing up front. The city school system, City, and state have committed $20 m. each annually over the next 30-years to pay off the bonds. The MSA estimated that up to 28 schools can be built by 2021. Building many schools over a short period of time also reduces the impact of construction cost escalation and further deterioration of the facilities over the long-term.

Maryland counties could use local government authorities to borrow funding up-front to implement large school construction programs in the short term. While bonds issued by local authorities may be slightly more expensive than general obligation bonds, large savings can be captured if construction can be implemented quickly. Expedited construction programs can significantly reduce the impact of cost escalation, further deterioration of school buildings, and maintenance costs in the long term. Local funding must be committed to pay down the additional debt.

The commission should recommend that counties explore the use of separate authorities for borrowing or other alternative financing models to address school facility needs.

[2] How New Mexico Public Schools are Funded, New Mexico Public Education Department, School Budget and Finance Analysis Bureau, http://www.ped.state.nm.us/div/fin/school.budget/2016/How%20New%20Mexico%20Schools%20Are%20Funded%204-7-16.pdf

[3] State of School Facilities, Baltimore City Public Schools, Jacobs, June 2012 http://www.baltimorecityschools.org/cms/lib/MD01001351/Centricity/Domain/8784/PDF/2012June-JacobsReport.pdf

Testimony for the 21st Century School Facilities Commission
July 21, 2016

Prepared by: Frank Patinella, Education Advocate, ACLU of Maryland Education Reform Project

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The ACLU of Maryland believes that safe and healthy school facilities equipped to support modern academic programming are integral to providing a quality education. For schools with high concentrations of poverty and homeless students, it is also essential that space is allotted for services beyond the academic program – such as school-based health clinics, afterschool enrichment programs, family support services, and other services under the rubric of Community Schools. Given the dire school construction needs statewide, the ACLU commends Senate President Miller and House Speaker Busch for establishing the 21st Century School Facilities Commission to study and make recommendations to improve state school construction policies and practices. The commission should be guided by the state's Public School Construction Program goal to "equalize educational facilities and opportunities throughout the State." To this end, in accordance with the objectives laid out by these legislative leaders, the ACLU urges the commission to:

1. Recommend that the state complete another "Kopp" survey to comprehensively assess the condition of each school building in each district;
2. Recommend a funding level and revenue options to address critical facility needs;
3. Review the state's cost-share formula and local wealth and effort towards school construction to inform new ways to distribute funding to Maryland districts equitably; and
4. Ensure the school districts have the flexibility and authority to design and build schools according to their population's unique needs.

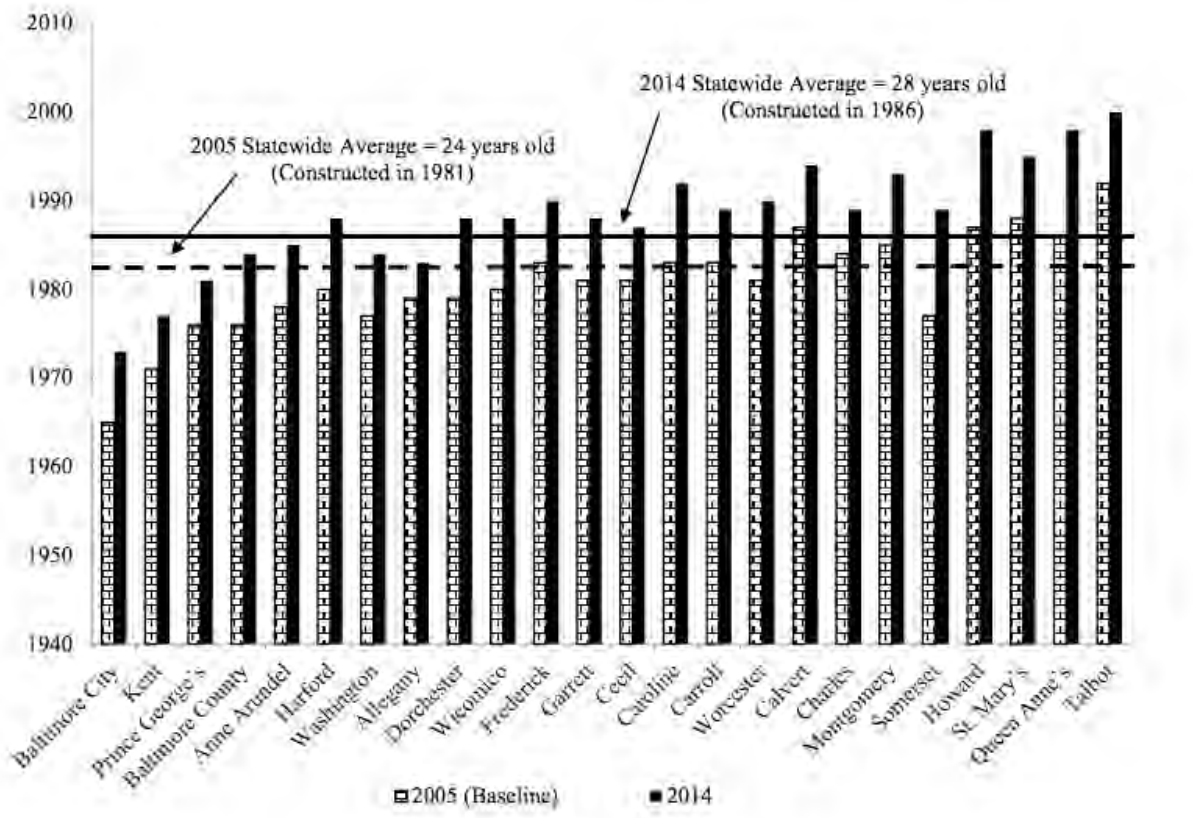
Another "Kopp"-type Survey is Necessary

The Kopp Task Force was established in 2002 to study "issues related to the adequacy and equity of the State's public school construction program." The final report touted the completion of the Facility Assessment Survey as the Task Force's "most important accomplishment" for "policymakers and the public in the long-term." To continue working towards adequacy and equity, it is critical that another school building survey be completed. Based on the survey in 2004, the Kopp Task Force reported that "Maryland faces a crisis in public school construction" and that nearly $4 billion was needed to bring all Maryland school facilities to "minimum" adequacy. The survey showed a large disparity in building conditions, with low wealth districts having the most deficiencies. The report stated that many of these schools need to be fully renovated or rebuilt as "the building systems in these schools are at the end of their useful life and do not align with contemporary educational standards." The survey also reported on additional capacity needed in school buildings to accommodate enrollment growth. Since then, the state and local governments have made significant investments in school infrastructure but the state has not tracked the progress on its goal to meet standards of adequacy and equity. As one of the stated tasks, the 21st Century School Facility's Commission should review "the Kopp Commission findings and progress toward implementation." Given recent reports from the IAC showing that the estimated need statewide has grown to roughly $15 billion, it is imperative that another comprehensive facility assessment be completed to show progress in each district over the past 12 years and to determine how the state's school construction program can achieve adequacy and equity for all of Maryland's public schoolchildren.

State Funding Should Be Increased

While changes in state school construction policies and practices can improve efficiencies and allow for more construction to be completed, it is imperative that the commission highlight the connection between the statewide need and available funding. The state's investment of approximately $300 million annually in school construction falls far short of the estimated $15 billion in needs, especially given the dramatic rise in construction costs over the past decade. If the status quo continues, school construction needs will continue to outpace funding resources – especially in low wealth districts. The chart below shows the average age of school buildings in Maryland districts, which is one critical measure of the need and disparities in facility conditions statewide.

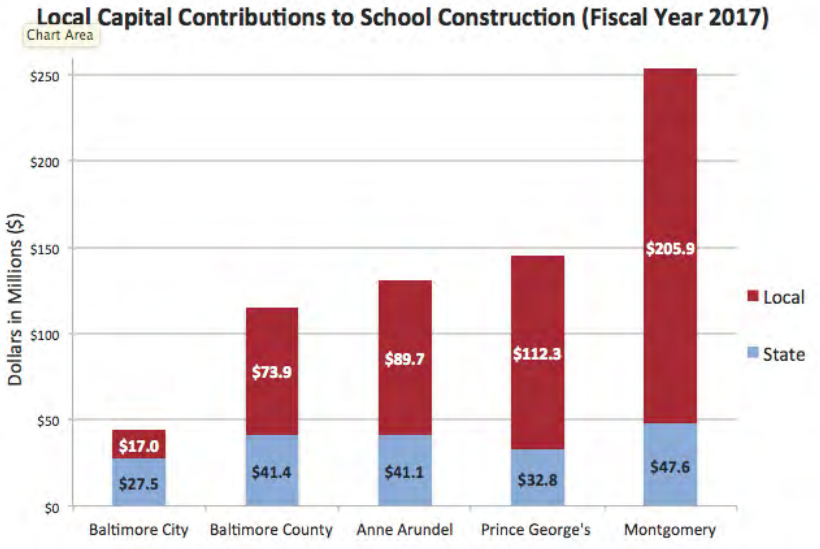
Average Construction Year of School Facilities in Each Maryland District



Source: Interagency Committee on School Construction, Fiscal 2005; Governor's Budget Books, Fiscal 2014

In exploring funding options for Maryland's school construction program, the Kopp Task Force reviewed several programs in other states. In Arizona, litigation forced the state to reform its school facility finance program to ensure that enough funding was available for districts to address deficiencies and rebuild old facilities based on a statewide survey. North Carolina also undertook a similar survey and funded their school construction program by a corporate tax. They also distributed funding based on local wealth and allowed counties to use a local option sales tax to meet cost share obligations. The Kopp Task Force report also provided a review of potential revenue sources for Maryland to consider. The commission should update revenue options reported by the Kopp Task Force and explore new revenue options for the state's school construction program (i.e. combined reporting).

Ensure Equitable Distribution of State School Construction Dollars



The capacity of each district to incur debt or contribute PAYGO funds to school construction is based on local wealth and varies greatly among Maryland districts. While all districts have historically given approximately 30% of their capital budget for school construction – showing similar local effort – low-wealth districts have a lot less capacity and therefore, cannot generate large amounts of funding for school construction. And the state's cost-share formula does not address this disparity – it does not guarantee more funding for low wealth districts and less for high wealth districts. The cost-share formula only applies to individual projects that are approved by the IAC, and does not consider the total amount given to each district.

Given Baltimore City's low capacity and high need, the ACLU proposed an innovative program to begin rebuilding city school facilities, using a third party borrower for the financing. This approach was adopted by the legislature in 2013. The school system has committed $20 million each year in operating funding towards this effort and the City passed a 5-cent beverage container tax to meet its $20 million annual obligation, along with the state's $20 m. contribution. This program will end in 2021 and more than 100 city school buildings will continue to deteriorate if they continue to be dependent on the limited CIP funding provided by the city and state. Recently, certain counties that have a large number of relocatable classrooms and are growing significantly in student enrollment have successfully advocated for an additional $40 million in state capital funding for school construction. There are many other districts – especially low-wealth rural districts – that have high needs and are not included in these programs. Thus, it is critical to not only comprehensively assess facility needs statewide, but also analyze the local wealth and effort of each district to determine how state funding should be distributed.

The commission should also explore alternative financing options for districts that have low capacity and high needs. Greenville Public Schools in South Carolina formed its own nonprofit organization to issue bonds for its $1 billion school construction program and used its existing funds to pay off the debt over 25 years. Other districts increased their borrowing for school construction through their Industrial Development Authorities or through public-private partnerships. However, increased borrowing will demand additional funding to pay off debt. The commission should examine these financing models but ensure that recommendations for state support is based on local wealth and capacity.

Local Authority Is Important

Educational specifications for school buildings are adopted by each district's school board. It is important that the state continues to allow local school districts to determine their own space requirements so that schools can be designed to meet the unique academic and social-emotional needs of their students. For at-risk populations, space for small group learning, counseling, remedial courses, family support services, and other resources might be needed.

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Phone: 410.889.8555 • Fax: 410.366.7838
Education Reform Project, Bebe Verdery, Director

AIA Maryland

Promoting Maryland Architecture Since 1965

13 October 2016

21st Century School Facilities Commission
c/o Department of Legislative Services
Legislative Services Building
90 State Circle
Annapolis, MD 21401

Atten: Mr. Martin G. Knott, Jr., Chair

Re: 21st Century School Facilities Commission Testimony

TESTIMONY

Mr. Chairman and Commissioners:

My name is Dan Bailey, Past-President and current Director of AIA Maryland, and President of Penza Bailey Architects, a 35-year old Maryland firm designing Public Schools since 1987.

AIA Maryland has testified before the State on school design best practices, the significant challenges with prototype school design methodologies, the benefits high performance schools, and new teaching paradigms with respect to the built environment. But rather than re-present past testimonies, I would like to challenge both our profession and this commission. The A/E community recognizes how extremely difficult it is for both the Public School Construction Program (PSCP) and the Local Education Authority (LEA) to present CIP's that are subject to significant political and budgetary scrutiny. Recognizing this, Maryland design professionals and public school facilities must collaborate to meet 21st century quality school design challenges, community demands, and fiscal constraints. So how can we strategically implement cost-effective quality designs and systems that can also decrease long-term operating and maintenance costs? We can:

- Define clear and consistent performance-based design criteria that have built-in algorithms to adjust to changing codes, improvements in technology and infrastructure, and redefined educational specifications:
    - Too often we as design professionals become caught in past design protocols and standards that are no longer prudent solutions, or operationally efficient;
    - Too often, the LEA standard construction specifications are outdated and not consistent with current trends and technologies. We have worked with recent LEA guideline documents that called for systems and practices not even provided or permitted today;
- Develop a workable system of shared lessons-learned between the Design Professionals, the LEA's, and the Public School Construction Program; this collaboration must not be static:
    - Though many professionals work closely with the LEA facility groups to perform its services, there is no vehicle to share project lessons learned between A/E teams working on that jurisdictions projects, or between LEA's;

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- We recommend the formation of a workshop of State, LEA and A/E school design professionals that can annually review and discuss best practices, lessons learned, and new technologies to advance consistency in school design;
- Consider a centralized web-based non-static clearinghouse of quality-based and cost effective construction guidelines and best practices consistent with Maryland's public school design educational specifications;
- Make use of national resources of best practices available through organizations such as the *Association for Learning Environments (formerly CEFPI)* and the *Collaborative for High Performance Schools (CHPS);*
- Shared lessons learned also may include new directions in educational programs that may impact costs; for example: many LEA's have rethought their approach to the provision of full-service kitchens with the provision of satellite re-therm kitchens that receive prepared lunches from a central food service location;

- Strategize on construction delivery methods, such as CM-at-Risk, where preconstruction services can become an invaluable tool to significant cost savings through meaningful constructability reviews and value engineering, more effective control of school construction schedules, and greater limitations on cost overruns:

  - Design-Bid-Build has been the typical direction used by many LEA's. However, there are numerous delivery methods available: Construction Management At-Risk (CMR), Construction Management Agency (CMA), Design-Build, Integrated Project Delivery, to name just a few;
  - Many LEA's are beginning to change regulations and procurement standards to permit alternative delivery methods, but LEA's still struggle with structuring effective agreements that provide clear paths to cost savings, proper pre-construction services, and equitable liability coverage;
  - Certain jurisdictions use Construction Management Agency, typically structured with Multiple Prime Agreements. This particular method must be seriously reconsidered. Significant costs are spent for CMA services without any value in return. More importantly, within most agreements, minimal liability extends to the CMA. If you have no stake in the game, the incentive to collaborate and provide effective recommendations is minimized. CMR has a much greater return on the investment;

- Better monitor market fluctuations in materials and systems so that both the capital budget process and the A/E's cost estimating process run current with trends and cycles. This is evidenced by noticeable shifts within the last year, in particular, in sitework and HVAC systems:

  - Design professionals must be continually on top of cost trends. As noted above, the industry is seeing increases in sitework and HVAC due to increased systems costs, but more importantly, constriction in supply of labor availability. Both design professionals and LEA facility groups must recognize the effect that labor has on school construction. It typically accounts for greater than 50% of systems costs, and hence, has an enormous proportional effect on overall costs. Therefore, the design professional and the LEA must be willing to look at systems that are less labor intensive:
    - Building Envelope Systems: Curtainwall systems; Prefabricated panelized systems (metal, phenolic, fiber-reinforced, etc.); Precast insulated wall systems; Rainscreen systems;
    - New HVAC technologies: Variable Refrigerant Flow (VRF) systems, Chilled Beam systems; The old 2 and 4-pipe boiler-based systems, or the VAV type Air handling-based systems less efficient, labor intensive, and maintenance intensive, all translating into greater capital and operational costs;
    - Self-adhering waterproofing systems;
    - New technologies in perimeter system applied insulations;

- Support the Design Team's effective use of current design technology such as Building Information Modeling and Life Cycle Cost Analyses in a manner that promotes proper systems integration, and cost projections:

  - Most reputable Architectural firms are now fully immersed into Building Information Modeling as a design tool and a construction documentation tool. But as a tool, it needs to be integrated fully with all design-team members, the LEA facility groups, the construction manager and contractor, and the physical plants;

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- Unfortunately, not all of these entities are on board, in particular the LEA facilities and physical plants. This creates costly disconnects, especially with respect to reviews and coordination, effective sharing of documents, energy management, and maintenance and operations;

- Encourage better attention to Site Design and Planning which has a significant effect on cost. Site design can affect roughly 15 – 20% of a projects cost:

  - Proper siting of building can greatly influence HVAC system size and operational costs;
  - Proper site planning can minimize access drives and parking areas to limit stormwater management requirements – a major cost factor;
  - Use of energy efficient site lighting and effective location of fixtures can reduce costs;
  - Use of site geothermal systems, though costly upfront, will significantly reduce long term energy costs;
  - Proper site planning and design is often hindered by the use of prototype building designs given the unique characteristics of each site: topography, orientation, soil types, access, etc.

- Seek to manage and reduce construction schedules with better project management, upfront collaboration with construction management teams, and effective use of Design teams throughout the construction period

  - Often the Design team's role in construction is reduced with a belief that the design fee savings is a cost benefit. As many LEA's have become aware, this has not proven to be true. In fact, it has been shown that well-managed construction administration by the design team can actually prevent additional construction costs. The ability to collaborate with the construction team and resolve issues early will benefit the bottom line;
  - Construction Administration fees run about 2 – 3% of the total project costs. Reduction in fee cannot be justified when compared to the cost benefit;

Some of these recommendations may be challenged or restricted by State and County regulations and policy, local needs and expectations, or political demographics. But we need to start a dialogue around solutions, rather than drawing lines in the sand around philosophical differences on prototype design that nationally has been shown not to work. The one thing on which we all can agree is that our children deserve quality, flexible, and evolving built-environments that accommodate each child's unique learning experiences. Good school design can teach, can engage, can improve learning, and can invigorate.

Thank you
Sincerely,

Daniel L. Bailey, AIA
Past President and Current Board Director, AIA Maryland

cc: Martin G. Knott, Jr., Chair, 21st Century School Facilities Commission

Commissioners:

Stephen M. Baldwin	John L. Bohanan, Jr.	Gary Brennan	Galen R. Clagett
Judith F. Davis	James E. DeGrange, Sr.	Donna S. Edwards	Jamel R. Franklin
Jan H. Gardner	Jefferson L. Ghrist	Brian J. Gibbons	Barbara A. Hoffman
Jan Holt	Adrienne A. Jones	Pless B. Jones, Sr.	Nancy J. King
Nancy K. Kopp	Donald A. Manekin	Kevin M. Maxwell, Ph.D.	Aruna Miller
Richard M. Reznick	Andrew M. Roud	Andrew A. Serafini	Kathleen Sherrill, AIA
Rowena Shurn	Brig. Gen. Warner I. Sumpter	Alex L. Szachnowicz	Clayton M. Wilcox, Ed.D.

Note: Blue Text shall not be read into hearing testimony, but provided as additional information.

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	Entity	Entity Composition	Level of Autonomy	Approval Process	Funding Source	State Share of Capital Outlay (94-13)	Unique Features
Maryland	Interagency Committee on School Construction (IAC)	State Superintendent; Secretary of General Services; Secretary of Planning; 2 public members appointed by the legislature	IAC reports all recommended projects for final approval by the Board of Public Works (BPW)	The IAC designees evaluate each project requested by the LEAs and recommend project approvals and funding allocations by LEA to the IAC. IAC then makes recommendations to BPW.	State general obligation bonds, Pay-as-you-go, previously authorized contingency funds	26%	
Arizona	School Facilities Board	9 public members appointed by the Governor, confirmed by the Senate. State Superintendent serves as tenth nonvoting member	The Board is an independent state agency	Districts qualify for funding based on Building Adequacy Guidelines, which include minimum square feet per student	Portion of state transaction privilege tax and state trust land revenues, directed at discretion of legislature	21%	
Connecticut	School Construction Project List Review Committee	12 legislators; chairs and ranking members from each of three committees in each house	Committee reviews and approves projects selected by the Commissioner of Administrative Services; can only add projects approved by the commissioner.	Local school systems submit projects to the Commissioner of Administrative Services for review and approval; project list is then reviewed and approved by legislative committee.	State general obligation bonds	57%	Final approval made by legislative committee.
Massachusetts	Massachusetts School Building Authority (MSBA)	State Treasurer; Secretary of Administration and Finance; Commissioner of Education; and 4 members appointed by the State Treasurer	MSBA is a quasi-independent government authority	Project funding is determined based on building condition and overcrowding, with funds going to the neediest projects first.	State bonds supported by dedicated revenue stream of one penny of the state's sales tax	67%	State funds can be used for planning, design/engineering, construction, furniture, fixtures and equipment.
New Jersey	New Jersey Schools Development Authority (SDA)	Commissioner of Education; Commissioner of the Department of Community Affairs; State Treasurer; Executive Director of Economic Development Authority; 11 public members nominated by the Governor and confirmed by the Senate	SDA is an independent authority in, but not of the Department of Treasury	Prioritized by educational need; a comprehensive budget and schedule must be approved by SDA Board before a project can begin. NJ authorized $3.9 billion in 2008.	New Jersey Economic Development Authority School Facilities Construction Bonds	32%	State funds can be used for planning, design/engineering, construction, land acquisition, environmental assessment/abatement, furniture fixtures/equipment and debt service
New Mexico	Public School Facilities Capital Outlay Council	9 *ex officio* members (or designees), including Governor, State Superintendent, Secretary of Finance and Administration, President of State Board, President of School Board Association, Director of Construction Industries Division, and three legislative staff	Autonomous state entity staffed by the Public School Facilities Authority (PSFA)	PSFA recommends projects based on need, feasibility, maintenance planning, reasonable costs, and other related factors. Need is established by use of Facilities Condition Index, which is based on the level of repairs needed to meet adequacy standards. Final approval made by council.	Supplemental Severance Tax Bonds, which are financed with dedicated revenue stream from state oil and gas extraction taxes	20%	Facilities Condition Index measures the physical condition of every school building in the state against adequacy standards.
Ohio	Ohio School Facilities Commission	Three voting members: Director of Office of Budget and Management, Director of Administrative Services, State Superintendent. Four nonvoting members from the legislature.	Independent agency within the Ohio Facilities Construction Commission	Districts qualify for matching grants based on their ranking on an equity list. Rankings determined through three year average based on value on property in the district.	School Facilities Bonds paid through General Funds. Some PAYGO	27%	Construction Capital funding in Ohio must be released by Controlling Board, made up of Director of Office of Budget and Management and six members of the legislature
Virginia	Virginia Public School Authority	State Treasurer, State Comptroller, State Superintendent, 5 members appointed by the Governor and confirmed by Legislature	The Authority acts as a conduit to the bond market for small localities.	Localities can submit a project to be funded through the low-interest loans through the Literary Fund, but the list can be 7-8 years long. The Literary funding is authorized by the legislature and administered by the Department of Education	The Literary funds which include criminal fines, fees, and forfeitures, unclaimed and escheated property, and unclaimed lottery winnings.	5%	The Authority can be used to issue bonds in order to get a better rate and is completely separate and a more common route for funding than using Literary Funds.
West Virginia	School Building Authority	Governor or designee (chair), State Superintendent (ex officio), three members of State Board of Education, six public members appointed by Governor and confirmed by Senate	The Authority is an independent government agency	Reimbursements provided to individual approved capital projects, as evaluated and determined by the Authority	PAYGO and state bonds supported by lottery revenue	9%	