MGT
OF AMERICA, INC.





ANNE ARUNDEL COUNTY PUBLIC SCHOOLS

Strategic Facilities Utilization Master Plan

Final Report

AUGUST 31, 2015

ANNE ARUNDEL COUNTY PUBLIC SCHOOLS

STRATEGIC FACILITIES UTILIZATION MASTER PLAN

AUGUST 28, 2015

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1.0 EXECUTIVE SUMMARY

In February 2015, Anne Arundel County, Maryland contracted with MGT of America, Inc. (MGT) to prepare an update of the 2006 Strategic Facilities Utilization Master Plan for Anne Arundel County Public Schools (AACPS). MGT had prepared the original 2006 Strategic Facilities Utilization Master Plan for the school district. The 2015 update, like the original 2006 plan, was intended to address the long-term (ten year) facility needs of the district.

MASTER PLAN GOALS

The goals for the 2015 Strategic Facilities Utilization Master Plan are:

- To update the 2006 Strategic Facilities Utilization Master Plan,
- To provide 10-year recommendations for facilities capital improvements and building utilization,
- To examine best practices regarding school size,
- To provide an inclusive, transparent process for planning, and
- To provide data-driven recommendations.

PLANNING PROCESS

MGT prepared a detailed work plan to guide the planning process for the master plan. The work plan was reviewed by county and district staff to ensure the final master plan would meet the goals of AACPS. The major tasks included:

Task 1.0 – Project Initiation

Task 2.0 – Develop Facilities and Site Inventory

Task 3.0 - Educational Review and Programmatic Priorities

Task 4.0 – Conduct Facilities Assessments

Task 5.0 – Analysis of School and Community Demographics

Task 6.0 – Analysis of Capacity and Utilization

Task 7.0 – Public Involvement and Community Collaboration

Task 8.0 – Develop Standards for Ranking Building Needs

Task 9.0 – Budget Estimates

Task 10.0 – Develop Master Plan Scenarios and Budgets

Task 11.0 – Preparation and Presentation of Final Facilities Master Plan

2006 STRATEGIC FACILITIES UTILIZATION MASTER PLAN STATUS UPDATE

Using the 2006 Strategic Facilities Utilization Master Plan, AACPS has implemented a program of continuous improvement for its school facilities. Beginning with the Fiscal Year 2008 Capital Improvement Plan (CIP), the Anne Arundel County Government and the State of Maryland have provided AACPS with combined fiscal appropriation authority approaching $1.2-Billion. This significant commitment of public resources has been applied toward addressing many of the facility related condition, capacity and utilization concerns identified within the original 2006 plan.

EDUCATIONAL PRIORITIES

Activities related to the educational program were focused on ensuring that MGT understood the district's current and planned instructional programs, especially those with facility implications. This ***Strategic Facilities Utilization Master Plan*** is intended to identify the places where program needs are not met by the facilities and develop strategies and priorities to address those needs.

MGT's work in AACPS includes not only understanding the educational programs in the district, but also defining the facility implications for those programs. In order to complete this work, MGT conducted a thorough analysis of programs, both in place and planned, and then developed the educational suitability assessment that would capture data from each school. MGT conducted a series of focused interviews and discussions with district staff in spring 2015. These interviews included administrative and curricular staff representing each content area (e.g., science, performing arts, technology, media, etc.). From these discussions, MGT developed the ***Educational Suitability and Technology Readiness Reference Guide*** **(see Appendix A)** to define the facility standards**.**

MGT staff assessed each school based on the standards defined in the Guide. MGT's BASYS software has four assessments: Building Condition, Site Condition, Educational Suitability, and Technology Readiness, each of which are on a 100-point scale with 90-100 being "Excellent" or "Good" and scores under 60 being "Unsatisfactory."

SCHOOL SIZE

At the request of the county, MGT conducted research into "Best Practices" for school size. The question of school size is an important issue for a facility master plan, especially for a district the size of AACPS with over 125 schools.

MGT reviewed five recent and prominent studies which included;

The Impact of School Size on Student Achievement: Evidence from Four States
EDRE Working Paper No. 2013-03. Last Updated May 2013

School/District Structure/ Operations: School Size
Education Commission of the States, 2015

School Size Effects Revisited
Springer Education Briefs, 2014

School Size and its Relationship to Achievement and Behavior.
Public Schools of North Carolina, 2014

Evaluation of the Gates Foundation's High Schools
American Institutes for Research, SRI International, National Evaluation of High School Transformation, 2006

In addition, MGT reviewed the **Maryland Equity Project**, prepared for the Maryland State Department of Education.

SCHOOL SIZE CONCLUSIONS

As a result of the school size research cited above, MGT has reached the following conclusions:

- There is no consistent definition regarding "small" and "large" schools.
- Results of school size research varies widely. One study determined the optimal high school size at 300 while another concluded the optimal size to be between 1,200 and 1,600.
- In general, smaller schools tend to show an advantage in regard to academic achievement and student behavior but there is a good deal of discussion regarding the reason. Many studies point to leadership structure, program offerings, extra-curricular offerings, etc. often go hand in hand with school size and contribute to the achievement gains.
- School size is only one factor to consider in evaluating academic performance.
- The advantage gained through smaller schools may not be great enough to advocate for widespread school construction in light of other factors that may produce similar gains.

SCHOOL SIZE RECOMMENDATIONS

As a result of the school size research cited above along with the specific needs in Anne Arundel County, MGT offers the following recommendations for consideration by the District.

- Anne Arundel County Schools should adopt a school size policy to guide further master planning.

  Preferred school sizes are:

High School	1,600
Middle School	1,200
Elementary	600

- School size policy should be a factor in determining master plan priorities.
- As the master plan is implemented, the school size policy should be implemented on an on-going basis.
- High school size reduction should be one of the priorities in the development and implementation of the current master plan.
- Monitor the progress toward a State small schools grant program in order to develop a favorable position to apply for funds.

COMMUNITY COLLABORATION

The AACPS community was engaged throughout the development of this master plan in several ways. Two sets of community charrettes were conducted to provide a forum for discussion of the facility needs and priorities of the district. In addition, each charrette was accompanied by an on-line survey that was open to all community members. The activities were focused initially on gathering **input** – what was working well, what needed attention or focus during the study and for the long-range plan – and then gathering **feedback –** what had we heard, what data had been gathered, and what did the community think about that information.

Anne Arundel County has an involved and interested populace. They attended community sessions even when it was hot and humid, even at schools that were not near their homes, and even when there were other events in competition. Many more community members used the online tools so that they could provide input and feedback at a time convenient for them.

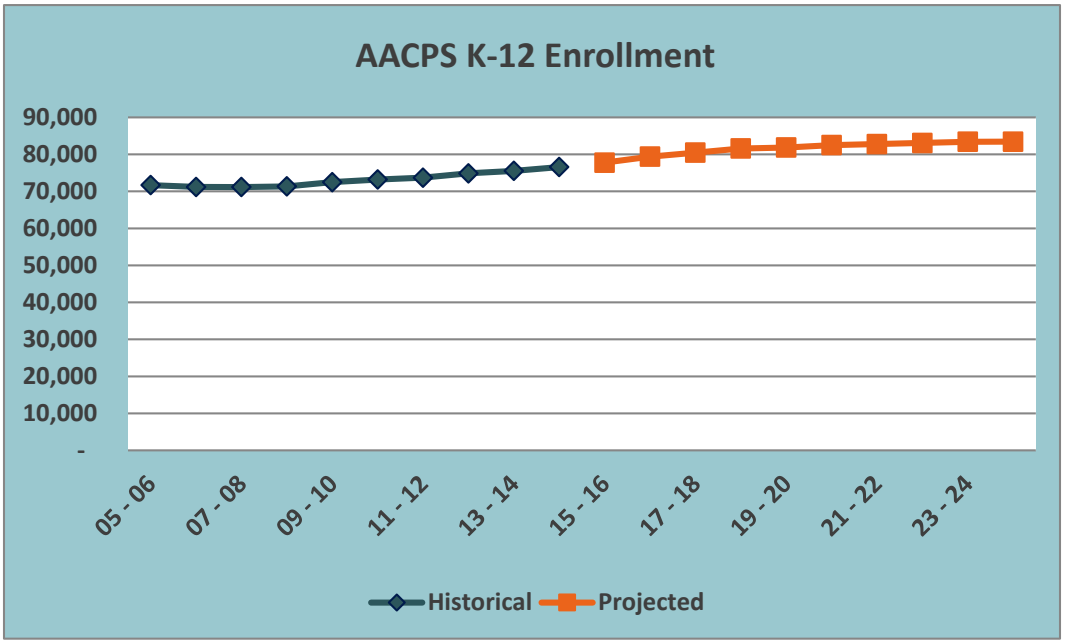
From these data, it is clear that the AACPS community wants the district to focus their efforts on the following issues over the next 10 year plan:

- Fixing identified building deficiencies – including roofs and HVAC.
- General classroom issues – including fixing the open concept schools.
- Size of schools – focusing initially on the size of HS, but including all grade levels as new schools and additions are planned.
- New schools in growing area(s) of the county – focusing on the north and central county areas for ES and HS.

DEMOGRAPHICS

Enrollment projections for the district were developed for the 10-year planning period. MGT researched current yield rates for the number of students per household to inform the new projections. The final projections used to develop future utilization at the district's schools were developed by district staff using updated yield rates and current housing development data from the Anne Arundel County Planning & Zoning Department.

Enrollments are projected to fluctuate slightly in the next few years, but shows a modest increase by the end of the ten year planning period. While this projection somewhat contradicts birth and age data, it is a reasonable conclusion given the historical enrollments and the current and projected level of development.



FACILITIES ASSESSMENTS

Assessments of AACPS's educational facilities were conducted to determine existing deficiencies as measured against the district's facility standards for new schools. The assessments included building and site condition, educational suitability, and technology readiness. Each assessment resulted in a score based on a 100 point scale with the four scores weighted to create a "Combined Score" for each facility.

"Cut-points" were developed for the assessment scores in order to group and prioritize the facility needs. The cut-points utilized five categories; 90 to 100 was considered "Excellent/Like New", 80 to 89 was considered "Good", 70 to 79 was considered "Fair", 60 to 69 was considered "Poor", and below 59 was considered "Unsatisfactory". The individual assessment scores ranged from a low of 47.60 to a high of 100.00, with an average combined score of 82.54. The following exhibits display low, high, and average scores for each assessment.

SITE TYPE	BUILDING CONDITION SCORE RANGE		AVERAGE CONDITION SCORE
	LOW	HIGH	
Elementary Schools	58.97	100.00	85.33
Middle Schools	64.02	96.58	79.98
High Schools	60.07	100.00	82.69
County-Wide Schools	63.95	92.52	80.09
Other Facilities	75.38	79.85	77.61

SITE TYPE	EDUCATIONAL SUITABILITY SCORE RANGE		AVERAGE SUITABILITY SCORE
	LOW	HIGH	
Elementary Schools	53.45	100.00	82.96
Middle Schools	65.37	91.32	78.67
High Schools	65.19	100.00	77.24
County-Wide Schools	59.27	86.51	73.63
Other Facilities	75.26	80.54	77.90

SITE TYPE	SITE CONDITION ASSESSMENT SCORE RANGE		AVERAGE CONDITION SCORE
	LOW	HIGH	
Elementary Schools	63.04	100.00	89.57
Middle Schools	61.03	92.70	81.06
High Schools	69.71	100.00	83.52
County-Wide Schools	52.77	99.67	79.30
Other Facilities	80.39	86.27	83.33

SITE TYPE	TECHNOLOGY READINESS SCORE RANGE		AVERAGE TECHNOLOGY SCORE
	Low	High	
Elementary Schools	47.60	100.00	75.00
Middle Schools	57.60	96.70	71.25
High Schools	60.90	100.00	73.18
County-Wide Schools	47.60	85.90	66.27
Other Facilities	50.10	67.60	58.85

SITE TYPE	COMBINED SCORES RANGE		AVERAGE TECHNOLOGY SCORE
	Min	Max	
Elementary Schools	62.59	100.00	84.20
Middle Schools	65.51	94.10	79.14
High Schools	63.10	100.00	80.35
County-Wide Schools	70.15	90.32	78.47
Other Facilities	75.20	78.93	77.06

Overall, AACPS's facilities are in good condition. The district's capital improvement program has been effective in addressing many, but not all, of its facility needs. Unfortunately, facilities continually age and develop new deficiencies on an on-going basis. In addition, educational programs change to meet the needs of students in a changing society and put new requirements on the school buildings. AACPS

must continue an aggressive capital improvement program to maintain the educational facilities necessary to provide a 21st century educational program.

CAPACITY AND UTILIZATION

The capacity of each school was determined using the State Rated Capacity (SRC) as calculated by the district. Current and projected utilization rates for each school were then calculated for the 10 year planning period. As with the facility assessment scores, "Cut-points" were developed to group and prioritize. The "cut-points" utilized five categories: Utilization above 110% was considered "Inadequate", from 101% to 110% was considered "Approaching Inadequate", from 85% to 100% was considered "Adequate", from 75% to 85% was considered "Approaching Inefficient", and less than 75% was considered "Inefficient".

ELEMENTARY SCHOOLS

The SRC for the elementary schools varies from a low of 158 to a high of 800. The district's elementary schools are being utilized at an "adequate" rate on a district-wide basis of 91%. The projected district-wide utilization for 2024 will remain constant at 91%. However some schools are overcrowded and some schools are underutilized. There are nine schools projected to have a utilization rate of over 110% or in the "Inadequate" range. There are also eleven schools projected to have a utilization rate of under 75% or in the "Inefficient" range.

The district should examine the specific situation for the schools that are projected to have "inadequate" or "inefficient" utilization rates to determine if action is required, and whether the approach will require capital improvements or redistricting.

MIDDLE SCHOOLS

The SRC for the middle schools varies from a low of 1,009 to a high of 2,058. The district's middle schools are presently being utilized at an "inefficient" rate of 73% overall, however the overall utilization will increase to 81% by 2024-25.

The district does have excess capacity at the middle school level, and could examine repurposing some of this space.

HIGH SCHOOLS

The SRC for the high schools varies from a low of 625 to a high of 2,440. The two schools with capacities below 1,000 are the two Career and Technology schools. The district's high school are currently being utilized at an "Adequate" rate of 88%, however, this rate will increase to 106% overall by 2024-25, with six of the high schools at rates over 110%.

RANKING BUILDING NEEDS

The "cut-points" developed for the facility assessments and the utilization rates were used to prioritize the facility needs. In addition, the four facility assessment scores were weighted to develop a combined score that would facilitate comparison of the facilities. The weighting, developed with the district and county staff, was 55% for building condition, 35% for educational suitability, and 5% each for site condition and technology readiness.

BUDGET DEVELOPMENT

The costs associated with remediating the identified facility deficiencies and building new schools is a key factor in developing a master plan scenario that can be realized. The budgets were developed by first identifying the current cost per square foot for school construction in the Anne Arundel County area. The cost per square foot was then applied to the Facility Condition Index of each existing facility, or the total square foot area of a new school. Costs were inflated at an assumed rate of 4% per year dependent on the year the project was scheduled in the plan.

FINDING AND RECOMMENDATIONS

MGT prepared a set of Phase I recommended projects based on priorities established using the data for the combined scores, utilization rates, and school size findings. Phase I projects met the following criteria:

- Combined score of less than 75, and or
- Projected utilization of over 110%, or
- New schools to provide solutions to overcrowding and to accommodate projected development.

Phase 1-A projects show how the overcrowded conditions will be addressed for those schools that are projected to be over 110% utilization but are not in need of significant master plan condition improvements.

Phase 2 includes those schools with a combined score of less than 80 and phase 3 includes the data for all remaining schools.

The total projected cost for Phase I projects is $1,113,672,100. Assuming an annual inflation rate of 4%, this total would be $1,369,052,740 in ten years. Phase 1 includes projects for 28 schools and are scheduled over the ten year period of the master plan. The projects include:

- 14 new or replacement schools
- 14 renovated schools
- Redistricting to alleviate overutilization and accommodate feeder patterns for new schools is recommended for 16 schools in Phase 1.

2.0 METHODOLOGY AND APPROACH

MGT's approach to developing educational facility master plans is based on the philosophy that facility needs should be based on the school district's educational mission, goals, and objectives. Consequently, we begin by developing an understanding of the facility implications of the educational programs and the program delivery methods which the district is providing across all the schools and in each individual school. The educational mission, goals, and objectives combined with the strategic structure of the district, the grade groupings, feeder patterns, school sizes, and educational specifications, define the architecture of the school facilities.

In addition to a thorough understanding of the educational programs, MGT collects an array of data to drive the decision making process for the prioritization of needs. Data collection activities include facility assessments for site and building condition, educational suitability, and technology readiness. These assessments measure and document various aspects of the existing facilities against the school district's standards for 21st Century Schools.

Demographic data is collected and used to project long-term enrollments, which in turn are used to project future facility capacity needs. Historical data for birth rates, enrollments, census data, housing developments, and economic trends are combined with planning and zoning information for the school district's geographic area to develop enrollment projections for each school by each grade level. This data is analyzed using multiple projection methodologies and GIS mapping.

The capacity of each school is determined using the Maryland State Rated Capacity. The capacities are divided by the current and projected enrollments to determine the rate of utilization and identify where the district needs additional space or has a surplus of space currently and in the future. This determination helps guide decisions regarding new schools, additions to existing schools, and redistricting.

Another key step in formulating an effective facility master plan is developing an understanding and appreciation for the perceptions and priorities of the community which the school district serves. MGT utilizes several processes for community engagement including interviews, focus groups, public charrettes, on-line surveys, and digital media. These effort recognize multi-cultural differences and bi-lingual communities. Our experienced consultants are adept at collaboration and working transparently with all sectors of the school district's community.

The planning process culminates with the development of multiple scenarios or strategies which outline how the school district can meet the current and future facility needs. The development of several approaches to the final master plan is helpful in ensuring all options are examined and compared. The final master plan scheme is developed with prioritized projects and strategies scheduled and budgeted over the ten year planning period of the master plan.

Anne Arundel County Public Schools has successfully implemented the 2006 Strategic Facilities Utilization Master Plan by using it as a guide for an objective and structured capital improvements program. The 2015 plan will build on this successful process and be an effective tool in helping the district and local government achieve its educational mission, goals and objectives.

3.0 2006 STRATEGIC FACILITIES UTILIZATION MASTER PLAN STATUS UPDATE

The 2006 Strategic Facilities Utilization Master Plan was a comprehensive study that contained the following elements:

- Public Involvement and Community Collaboration
- Enrollment Projections
- Capacity and Utilization Analysis
- Facility Assessments
- Findings/Analysis
- Recommendations/Conclusions

Priorities were established using the following standards:

Phase 1: years 2-4
Combined score of less than 65
Exceeds capacity by more than 30%

Phase 2: years 5-7
Combined score of less than 70
Exceeds capacity by more than 20%

Phase 3: years 8-10
Combined score of less than 75
Exceeds capacity by more than 10%

The following chart shows the total projected budget for the recommended projects by school type and priority.

TYPE	PRIORITY 1	PRIORITY 2	PRIORITY 3	TOTAL
Elementary	$198,189,000	$103,179,000	$152,189,000	$453,557,000
Middle		$334,328,000	$96,664,000	$430,992,000
High	$278,868,000	$124,767,000	$128,490,000	$532,125,000
County Wide	$6,154,000	$22,261,000	$46,314,000	$74,729,000
Total	**$483,211,000**	**$584,535,000**	**$423,657,000**	**$1,491,403,000**

Using the 2006 Strategic Facilities Utilization Master Plan, AACPS has implemented a program of continuous improvement for its school facilities. Beginning with the Fiscal Year 2008 Capital Improvement Plan (CIP), the Anne Arundel County Government and the State of Maryland have provided AACPS with combined fiscal appropriation authority approaching $1.2-Billion. This significant commitment of public resources has been applied toward addressing many of the facility related condition, capacity and utilization concerns identified within the original 2006 plan.

For example, since the publication of the 2006 plan, nine schools have or are in the process of being replaced and an additional 14 schools have or are in the process of being comprehensively renovated. Similarly, 24 schools have or are in the process of enclosing their open space classroom environments

with permanently constructed walls. Many other schools have had strategic additions constructed to address classroom capacity needs, kindergarten/pre-kindergarten mandates, and gymnasium space deficiencies. Finally, dozens of systemic replacement projects have been undertaken to address deficiencies in critical building components like roofs, HVAC systems, electrical systems, fenestration elements, and life safety systems. Such targeted reinvestments into the facilities are vital in order to maintain the existing infrastructure base in good functioning order and to extend the useful life of the assets.

In summary, AACPS should be commended for applying a well balanced approach to crafting a comprehensive CIP in support of the districts educational mission as well as protecting the investments that the public has already made into its 125+ facilities.

4.0 SCHOOL SIZE RESEARCH

A key component of the facility master plan update included an analysis of research regarding the effect school size has on academic achievement. Therefore this chapter provides an overview of recent research, an analysis of the Maryland Equity Project report on the impact of smaller schools, and recommendations for school size guidelines in Anne Arundel County.

SCHOOL SIZE RESEARCH

This section provides an overview of the following five studies:

The Impact of School Size on Student Achievement: Evidence from Four States
EDRE Working Paper No. 2013-03. Last Updated May 2013

School/District Structure/Operations: School Size
Education Commission of the States, 2015

School Size Effects Revisited
Springer Education Briefs, 2014

School Size and its Relationship to Achievement and Behavior.
Public Schools of North Carolina, 2014

Evaluation of the Gates Foundation's High Schools
American Institutes for Research, SRI International, National Evaluation of High School Transformation, 2006

The summaries on the following pages provide an overview of the studies intent, the definition of school size, and the conclusions reached.

The Impact of School Size on Student Achievement: Evidence from Four States
EDRE Working Paper No. 2013-03. Last Updated May 2013

Two specific research questions are addressed in this study:

1. Does school size have a significant impact on student achievement?
2. Do school size impacts vary between elementary and secondary school levels?

DEFINITION

There is no consensus in the literature on how to define a "small" school. Lee & Loeb (2000), for example, define small schools as those with fewer than 400 students and large schools as those with greater than 750 students. The Gates Foundation recommends no more than 100 students per grade level, corresponding to 400 students for a typical grade 9-12 high school (Vander Ark, 2002). The U.S. Department of Education set a limit of 300 students through its *Small Schools Initiative* (U.S. Department of Education, 2006). Finally, Lee & Smith (1997) recommend that the ideal small high school should enroll between 600-900 students. For the purposes of this study, we divide school size into quintiles. This regression equation takes the form: $Y_{ist} = \delta_0 + \delta_1 Z_{st} + \delta_2 SizeQuintile_{ist} + \varphi_t + \tau + \lambda_i + \mu_{ist}$ (ii)

CONCLUSION

The study found consistent negative effects of large school size on student math and reading outcomes in the aggregate models. The results for the upper grades, 6 through 10, are highly statistically significant, with math achievement declining by -.043 *SD* and reading achievement declining by -.023 *SD.* These estimates indicate that school size has a meaningful impact on student achievement.

Two key takeaways from this study are apparent for policymakers deliberating over the efficacy of school size reforms. The first is that school size clearly matters. Conditional on average achievement and time invariant characteristics of a student, math and reading outcomes are impacted by the size of a school a student attends. The second key takeaway is that school size matters most in the upper grades where schools are typically larger and students are not confined to a self-contained classroom for most of the day.

School/District Structure/ Operations: School Size
Education Commission of the States, 2015

This review was conducted to determine if small schools have specific advantages over larger schools.

DEFINITION

Researchers have not come to a clear agreement as to what enrollment size constitutes a "small" school. Some choose not to select a precise definition while others have selected enrollment ranges anywhere from 200 to 900 students. Similarly unresolved is the question of when, if ever, a school can be too small.

CONCLUSIONS

Researchers have reached broad consensus on several key issues, including:

- Under the right conditions, as schools get smaller they produce stronger student performance as measured by attendance rates, test scores, extracurricular activity participation and graduation rates.

- Smaller schools appear to promote greater levels of parent participation and satisfaction, and increase communication between parents and teachers.
- Teachers in small schools generally feel they are in a better position to make a genuine difference in student learning than do teachers in larger schools.
- There appears to be a particularly strong correlation between smaller school size and improved performance among poor students in urban school districts. These findings provide evidence that smaller schools can also help narrow the achievement gap between white/middle class/affluent students and ethnic minority and poor students.
- Smaller schools provide a safer learning environment for students.

Despite their numerous potential advantages, researchers agree that small schools do not represent a "silver bullet" in education reform. Creation of effective small schools presents numerous pitfalls and difficulties, including:

- Laws, regulations and policies designed with large schools in mind
- Impatience for improved student achievement on the part of people outside the school
- Staff who do not fully understand and accept why a school has been downsized
- Increased demands on school staff's time and energy
- Difficulties in maintaining long-term stability

One of the most important research findings is that smaller schools tend to produce greater numbers of graduates. While not disputing the fact that larger schools are more cost effective on a per-pupil basis, researchers now argue that small schools can be more efficient when measured on a cost-per-graduate basis. This cost effectiveness is further enhanced by the substantial social costs associated with high school dropouts (including lower earnings, higher unemployment rates, greater reliance on welfare and increased rates of incarceration).

School Size Effects Revisited

Springer Education Briefs, 2014

This report consisted of a review of the research literature on the effect of school size in primary and secondary education on three types of outcomes: student achievement, non-cognitive outcomes and costs per student.

DEFINITION

The criteria defining small and large schools varied among the reports included for review.

CONCLUSIONS:

- School size effects depend strongly on modifying conditions.
- For cognitive outcomes highest scores occurred in schools with over 1,200 but less than 1,600 students.
- Difference in student achievement between large and small schools is less than $1/10^{th}$ of a standard deviation.

School Size and its Relationship to Achievement and Behavior

Public Schools of North Carolina, 2014

This study was completed by the North Carolina Department of Education to analyze the effect of school size on reading and math achievement as well as student behavior.

DEFINITION

Small schools defined as less than 350 students, medium as 350-750 students, large as more than 750 students.

CONCLUSIONS

At the elementary level, reading and mathematics test scores for the smallest schools (less than 350 students) were slightly higher than those for the medium (350-750 students) and large schools (750+ students). While the difference in achievement was statistically significant, it was quite small, approximately one to two score points. The same results were found at the middle school level.

For high school, the achievement data was taken from five core subjects. High schools were divided by size into four groups: schools with less than 700 students; schools with 700-1,000 students; schools with 1,001-1,500 students; and schools with more than 1,500 students. Average achievement test scores in the five subjects were virtually the same across all school sizes.

The data was further analyzed to take into consideration achievement for students from disadvantaged backgrounds. A statistically significant interaction was found, with the "larger size=lower achievement" connection being magnified in schools where a large percentage of students were eligible for free or reduced lunch. In subsequent analyses, however, this finding was nullified when parent education level was taken into consideration. It is not clear whether the negative effects of large enrollments on economically disadvantaged students are due to school size per se, or to other factors associated with the educational background of the family. School size is inextricably intertwined with many other factors that are associated with academic and behavioral outcomes for students, which makes it difficult to identify which of these factors might possibly cause the often-observed relationships between size, and outcomes.

> *Taken together, the prior research on school size and the analyses of North Carolina data appear to show a slight advantage for smaller schools with respect to behavior and achievement. Despite the existence of some contrary findings in the literature, even a skeptical interpretation would likely conclude that larger schools are no better (and may in fact be worse) than smaller schools with respect to academic and behavioral outcomes. This advantage is probably not of sufficient size and clarity to advocate for widespread school construction in order to reduce school size, but it should prompt large schools to examine other ways of achieving these benefits. These findings should also lead local boards of education to consider whether efforts to consolidate smaller schools into larger ones might be achieving the desired efficiency at some cost to achievement and/or behavior.*

Evaluation of the Gates Foundation's High Schools

American Institutes for Research, SRI International, National Evaluation of High School Transformation, 2006

This review was completed to evaluate the results of the small high schools funded by the Gates Foundation.

DEFINITION

Grants were provided for high schools of no more than 600 students, 400 was the preferred size.

CONCLUSIONS

- Better outcomes realized in the small high schools in terms of engagement, attendance, grade-to-grade progression, and quality of work in English/language arts.
- Increased success not found in terms of test scores and student class work in mathematics.
- Staff recruitment challenges were often a problem in the small high schools. Acquiring staff with multiple certifications was often difficult.
- Positive outcomes appear more likely to be obtained through starting new high schools rather than redesigning existing schools.
- Restructuring with increased school choice seen as a possible means to lasting change in some districts.

Exhibit 4-1 below provides a summary of the findings from the five reports.

EXHIBIT 4-1
SUMMARY OF REPORT FINDINGS

REPORT	SCHOOL SIZE DEFINITION	KEY CONCLUSIONS/RECOMMENDATIONS
Impact of School Size on Academic Achievement	Examined various different size models	Negative effect of large school size on math and reading scores.
School District Structure / Operations	Definition of small ranges from 200-900	Smaller schools produce stronger student performance as measured by attendance rates, test scores, extracurricular activity participation and graduation rates. School size is not a "silver bullet".
School Size Effects	Examined various different size models	Highest scores in scores over 1,200 enrollment but less than 1,600.
School Size and Relationship to Achievement/ Behavior	Small defined as less than 350, large as more than 750	Slight advantage to smaller schools in respect to behavior and achievement.
Evaluation of Gates Foundation Schools	Small defined as less than 600, preferred size of 400	Small schools produced better outcomes in language arts, but not in mathematics.

MARYLAND EQUITY PROJECT

Prepared for the Maryland State Department of Education
Submitted by APA Consulting. June, 2015.

RESEARCH FINDINGS:

- Evidence suggests that school operating efficiency is actually "U" shaped. Very small schools do experience greater inefficiencies, but as schools grow larger, their efficiency advantage is diminished by the increasing costs of administration and coordination of a larger, more complex school organization.
- Some research suggests that smaller schools may be more efficient when it comes to producing higher levels of student performance.
- Small schools that moved the needle forward on student outcomes decreased enrollment as a part of a suite of related reform efforts. Early implementers and proponents of small schools conjectured that, with fewer students, school staff would be able to form deeper and more supportive relationships with learners. This hypothesis was proven to be true – but only in the schools that also changed their approached to community engagement, instruction, and school structure.
- Research shows smaller schools and smaller learning environments have a more pronounced effect on children from low-income families.
- Research around the advantages of smaller schools is not unanimous. Several recent studies have found a larger school performance advantage.
- Research regarding extracurricular activities is mixed. In a comparison of small (enrollment < 800) high schools with large (enrollment > 1600) finds that larger schools tend to offer more varied opportunities enhancing the likelihood that students will be able to find an activity of personal interest, while smaller schools have a narrower range of opportunities, but have students who feel encouraged or compelled to participate in multiple activities.
- Staff at smaller schools tend to cultivate better attitudes towards work among school administrators and teachers, leading to greater staff collaboration and more successful school improvement efforts. However, this is difficult to attribute solely to enrollment size. Smaller schools may use a different leadership model and may enjoy greater support from the district office.

It is important to note that in order to develop an optimal school size, multiple factors must be considered.

SCHOOL SIZE POLICIES

- Only two states, Arizona and North Carolina currently have a published statute or guideline regarding school size. In both cases the guidelines are presented as recommendations rather than requirements.

Arizona:	Maximum of 500 at Elementary and Middle Schools Maximum of 1,000 at High Schools

North Carolina has two ranges of recommendations:

School climate priority:	300-400 elementary 300-600 middle 400-800 high
Economic efficiency priority:	450-700 elementary 600-800 middle 800-1,000 high

Florida adopted a school size statute in 2000 that was amended in 2001 and eliminated in 2002. The elimination came in response to limited available funding.

Many states have policies or guidelines regarding classroom size, site size, and square ft. /student.

MARYLAND SCHOOL SIZE POLICIES

Eleven Maryland Districts have adopted school size policy or guidelines. The median and range for both the maximum and minimum size guidelines in those eleven districts are:

Medium of Maximum School Size Policies:

Elementary	650	Range of 550-822
Middle	900	Range of 700-1,200
High	1,600	Range of 1,200-2,600

Medium of Minimum School Size Policies:

Elementary	400	Range of 200-500
Middle	600	Range of 400-900
High	950	Range of 700-1,575

RECOMMENDATIONS

The Maryland Equity Project developed the following two recommendations:

1. Create a policy establishing maximum school sizes by school level (elementary, middle, and high). These maximum school sizes would be set at the enrollment levels at which operating costs were no longer benefiting from economies of scale and where student performance begins to decrease due to larger school size. (The report goes on to recommend enrollment limits of 700 students for elementary schools, 900 students for middle schools, and 1,700 students for high schools)
2. Institute a competitive grant program to support the construction of small schools and/or the renovation of existing large school buildings. Such a program would help accommodate school-within-school models – that is, the program would be targeted toward replacing or reconfiguring the lowest-performing large schools in the State.

SCHOOL SIZE CONCLUSIONS

As a result of the school size research cited above MGT has reached the following conclusions:

- There is no consistent definition regarding "small" and "large" schools.
- Results of school size research varies widely. One study determined the optimal high school size at 300 while another concluded the optimal size to be between 1,200 and 1,600.
- In general, smaller schools tend to show an advantage in regard to academic achievement and student behavior but there is a good deal of discussion regarding the reason. Many studies point to leadership structure, program offerings, extra-curricular offerings, etc. often go hand in hand with school size and contribute to the achievement gains.
- School size is only one factor to consider in evaluating academic performance.
- The advantage gained through smaller schools may not be great enough to advocate for widespread school construction in light of other factors that may produce similar gains.

SCHOOL SIZE RECOMMENDATIONS

As a result of the school size research cited above along with the specific needs in Anne Arundel County, MGT offers the following recommendations for consideration by the District.

- **Anne Arundel County Schools should adopt a school size policy to guide further master planning**.

  Preferred school sizes are:

High School	1,600
Middle School	1,200
Elementary	600

- **School size policy should be a factor in determining master plan priorities.**
- **As the master plan is implemented the school size policy should be implemented on an on-going basis.**
- **High school size reduction should be one of the priorities in the development and implementation of the current master plan.**
- **Monitor the progress toward a State small schools grant program in order to develop a favorable position to apply for funds.**

5.0 COMMUNITY ENGAGEMENT

MGT was contracted by Anne Arundel County Public Schools to gather information and data in order to develop a long-range facility master plan. An important component of a viable master plan is data gathered from various community sources to ensure that critical perspectives have been heard and considered in the development of the final plan.

To ensure broad-based input, MGT conducted two sets of open community forums with an online survey aligned to the discussions at the community meetings, and invited internal and external input from identified individuals. The internal input included interviews with the superintendent, school board, and senior staff, as well as the curriculum staff, as described further in **Section 6.0.** The external input included interviews with the county executive and county planning staff. The goal of each of these sessions was to identify overall strengths and challenges for the district and explore any specific issues unique to that person's role or function. The discussions with county planning staff were intended to provide information about planned developments across the county that could affect the schools – both number of students and location of students. Information from the internal and external interviews were used to shape the open community engagement activities.

The community engagement activities included two types of community engagement activities in support of the district's goal to create a long-range facility master plan. The activities were focused initially on gathering **input** – what was working well, what needed attention or focus during the study and for the long-range plan – and then gathering **feedback –** what had we heard, what data had been gathered and what did the community think about that information. Both types of activities included face-to-face meetings as well as online survey opportunities available in both English and Spanish.

COMMUNITY INPUT ACTIVITIES

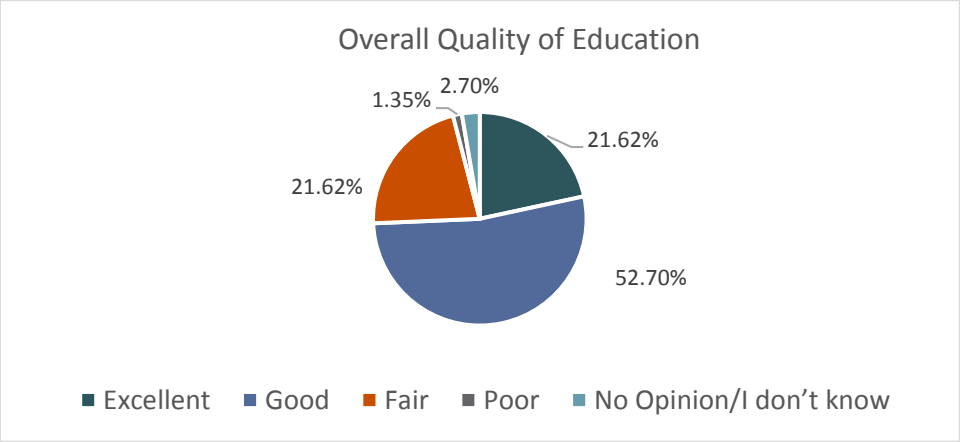
In order to gather community input regarding the long range facility plans for the district, MGT conducted two large group sessions open to the public and provided an online survey that included the same set of questions used during the large group sessions.

- Input Sessions –Annapolis HS, March 24 and Old Mill HS, March 26, 2015.
- Survey #1 – posted to district website in English and Spanish and available from March 23 – May 20

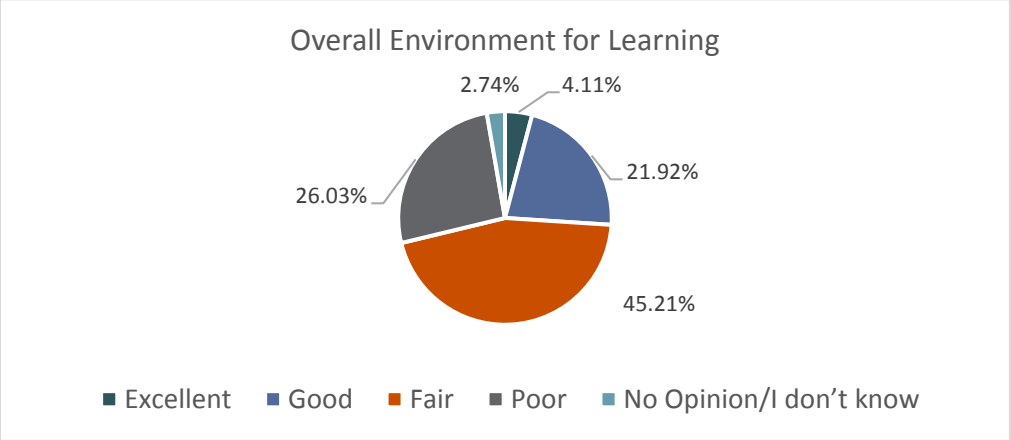
FINDINGS

For the purpose of this report, we have combined the data gathered from the community input sessions and the online survey, since nearly the same data were gathered through each venue.

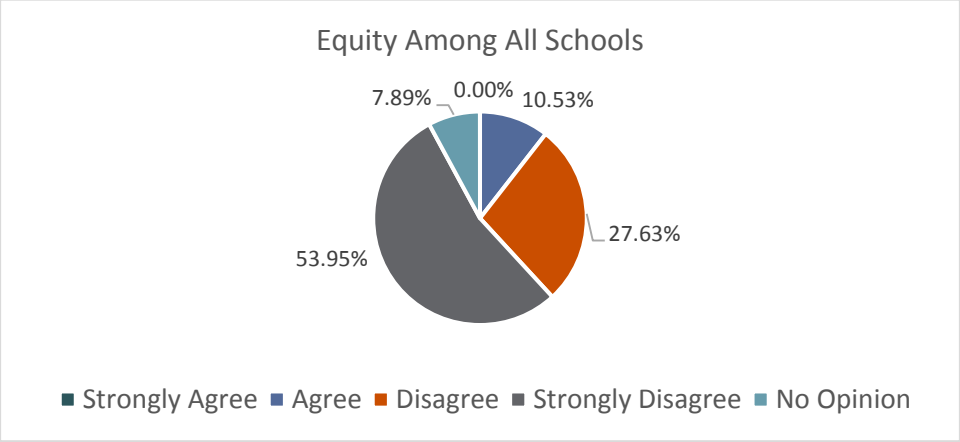
- 874 individuals participated in charrettes (N = 87) or took the online survey (English and Spanish versions) (N = 787)
- Over 70% of respondents feel the quality of education is "Excellent" or "Good." Respondents cited the opportunities for AP and other advanced coursework, the magnet programs, and the quality of teachers.



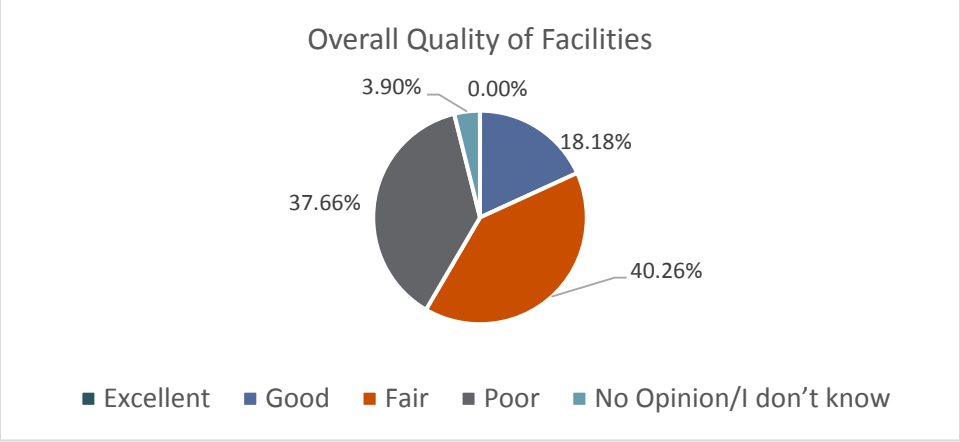
- However, nearly 40% of respondents feel the environment for education is "Fair" or "Poor." Many respondents cited leaking roofs or HVAC issues as examples. There were also concerns about open concept schools that lack walls between classrooms making instructional spaces too noisy.



- Over 80% of charrette respondents feel there is a lack of equity among the schools. Comments included concerns about differences in both facilities and instructional programs, including issues about perceived geographical inequities where school buildings vary in condition, size, and technological "haves" by community and concerns that educational programs are geared towards those that petition the board for the most. There were also concerns about the range of "over-crowding" across the district since some schools are "under-enrolled" and others are over-crowded.



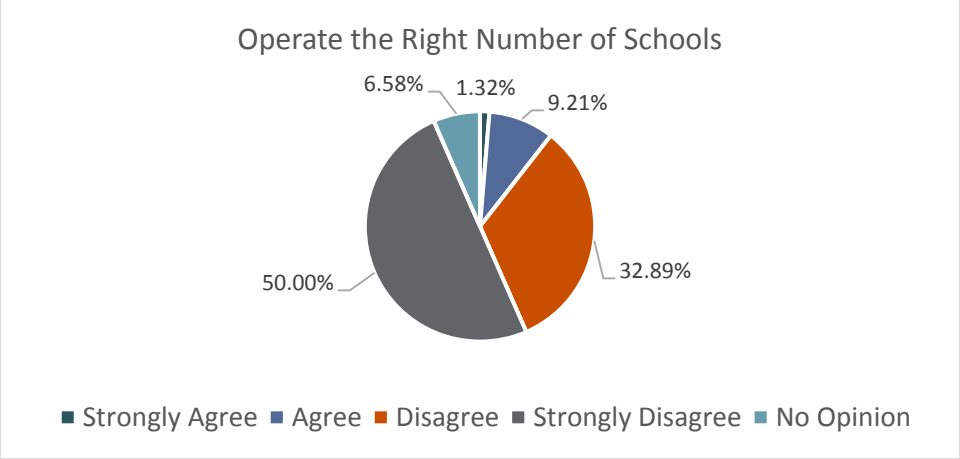
- Nearly 78% rated the overall quality of facilities as "Fair" or "Poor." As described earlier, many respondents reported facilities with HVAC and roof issues, but there were also comments about the overall poor condition of some schools. Some respondents tied quality to size, indicating that they would rather have larger facilities that were in good condition with great spaces than more, smaller, "junky facilities."



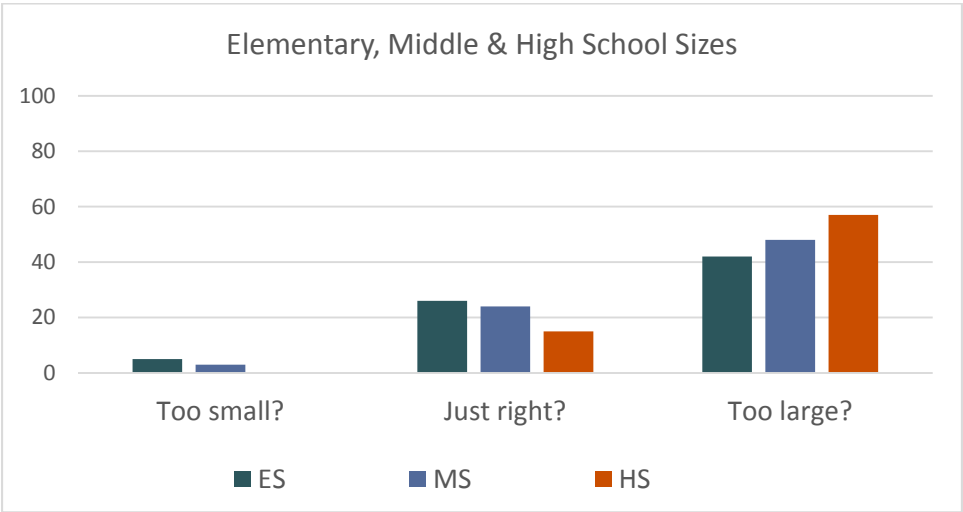
- Respondents identified the highest priority need as having adequate learning spaces, including the following:
  - Performing Arts
  - Special Education
  - Parking, traffic patterns, and access routes

- More than 80% felt that the district did not operate the right number of schools with 50% who selected, "Strongly Disagree." During discussions and in comments from the online survey,

respondents indicated that the district needed more schools in some areas of the county where growth was occurring. A large group of respondents wanted a new high school in Crofton. Others wanted to have permanent buildings rather than portables at all the over-crowded schools.



- A majority of respondents feel schools (at all levels) are too large. Respondents were provided the average enrollment at AACPS schools (ES – 483, MS – 890, HS – 1832) and had an opportunity to indicate if schools at each level were "Too small", "Too large", or "Just right". As shown, the largest response (nearly 60%) was regarding high schools being "Too large," but more than 20% of respondents thought elementary and middle schools were "Just right."



These perceptual data regarding school size were helpful as part of MGT's review of school size issues. A separate portion of the MGT long range plan includes a best practices review of school size based on the literature and contemporary practices in high achieving schools across the country. These community perspectives are very important in developing any final recommendations for the master plan.

COMMUNITY FEEDBACK

In order to provide the community an opportunity to respond to data gathered from onsite visits and provide feedback, MGT again conducted two large group sessions and provided a second online survey that included the same set of questions as those presented during the feedback community meetings.

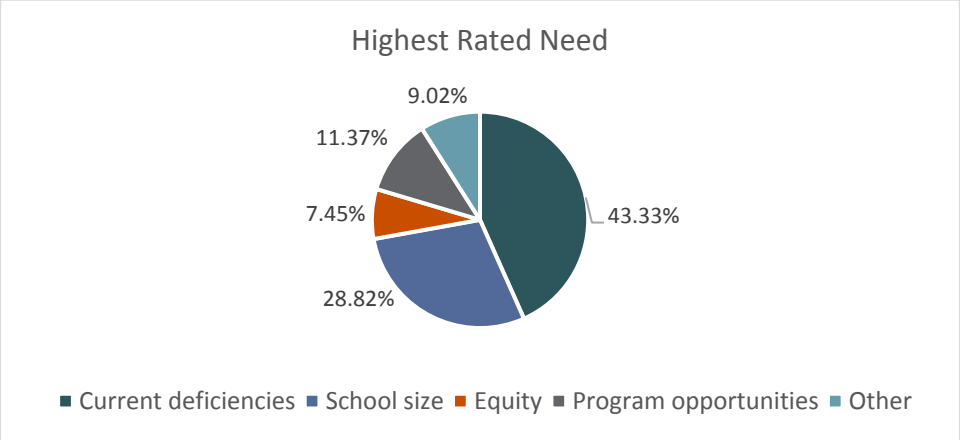
- **Feedback Sessions** - Broadneck HS, May 27 and North County HS, May 28, 2015
- **Survey #2** – posted to district website in English and Spanish and available from May 28 – July 3, 2015.

This second set of meetings and online survey allowed MGT to share initial findings from the earlier community input sessions and also initial data from the school condition and educational suitability assessments. These data were presented in a PowerPoint at the beginning of the community feedback sessions and were also available on the district website: www.aacps.org/fyi/commengage.ppsx . Additionally, these feedback sessions provided MGT with an opportunity to probe issues that had been identified earlier, and gather more detailed perspectives or concerns.

FINDINGS

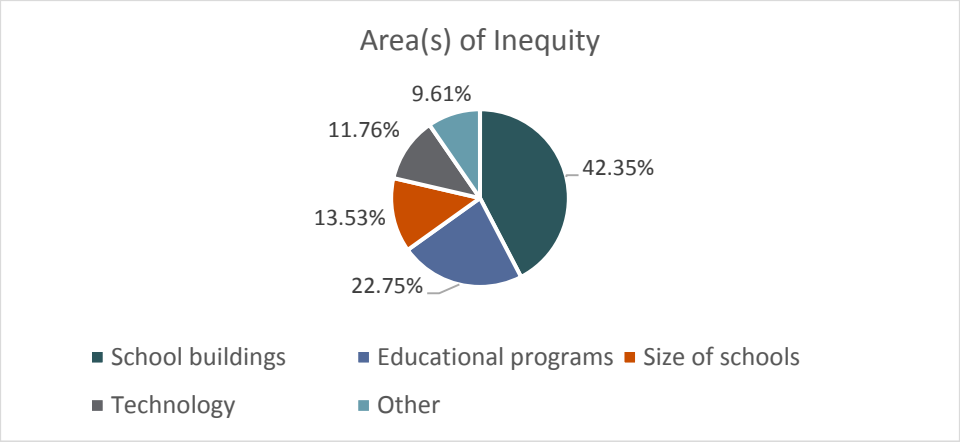
For the purpose of this report, we have combined the data gathered from the community input sessions and the online survey, since nearly same data were gathered through each venue. Additionally, it should be noted that the two community meetings drew only a small number of attendees (N= 20), but the online survey had wide participation (N=510 completed responses).

- When asked what the highest need in the district was, 43% indicated that the district needed to deal with the current physical condition deficiencies. More than 25% identified school size.

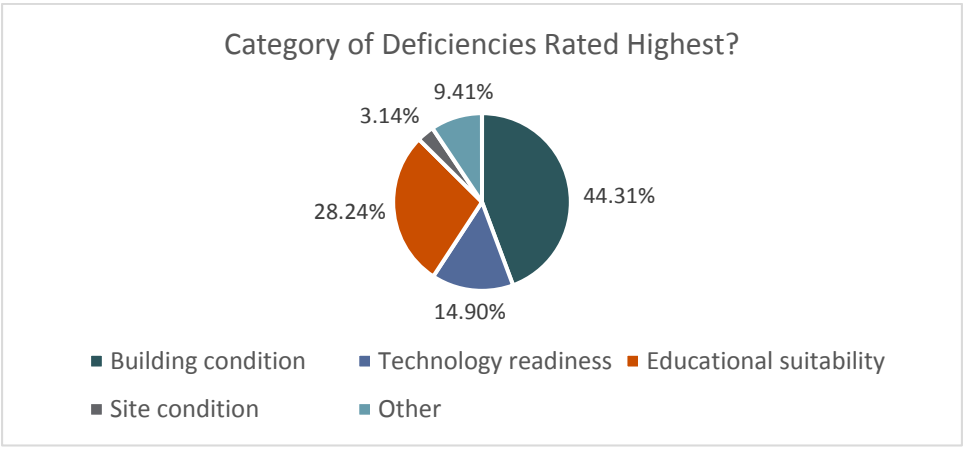


Comments from the survey relative to this question regarding the highest need included comments requesting a new high school to be built in Crofton reducing class sizes, rezoning over-crowded sectors of the district, including adding new schools in those areas, and reviewing the curriculum.

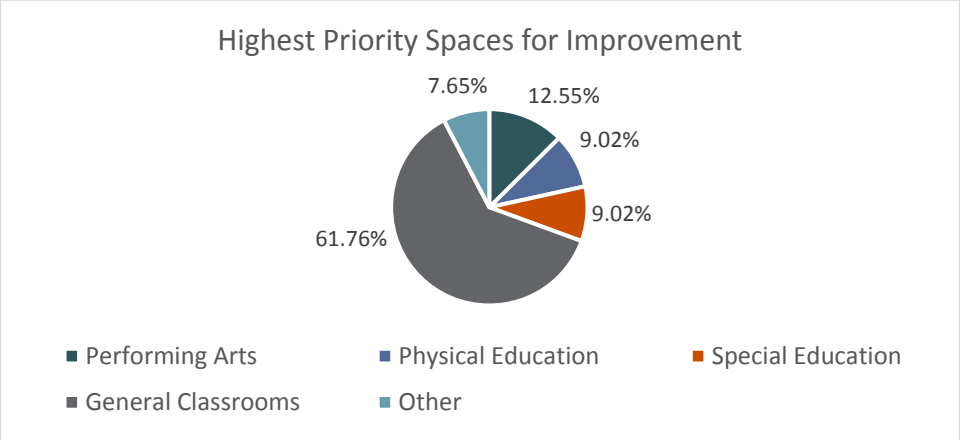
- 42% of respondents identified inequity in school buildings and another 23% identified their concerns with inequitable educational programs. The issue of equity was identified as a concern in the early input sessions. In order to understand the area(s) of inequity, MGT asked respondents in the feedback sessions to define the "most inequitable aspect."



- These survey data show that 42% of respondents thought the school buildings were inequitable, but nearly a quarter of respondents (22.75%) thought there were inequities in program offerings. A capital improvement plan could address the facility issues, but the district should review program offerings and student needs to ensure that all students, regardless of their school, have opportunities for program access.
- 44% of respondents recommended that Building Condition deficiencies should be rated highest with 28% recommending that Educational Suitability issues should be highest. These data were used in the decision-making process as the district identified the weighting factors to use in setting priorities. (See **Section 8.0** for a description of the weighting factors used to develop planning priorities.)

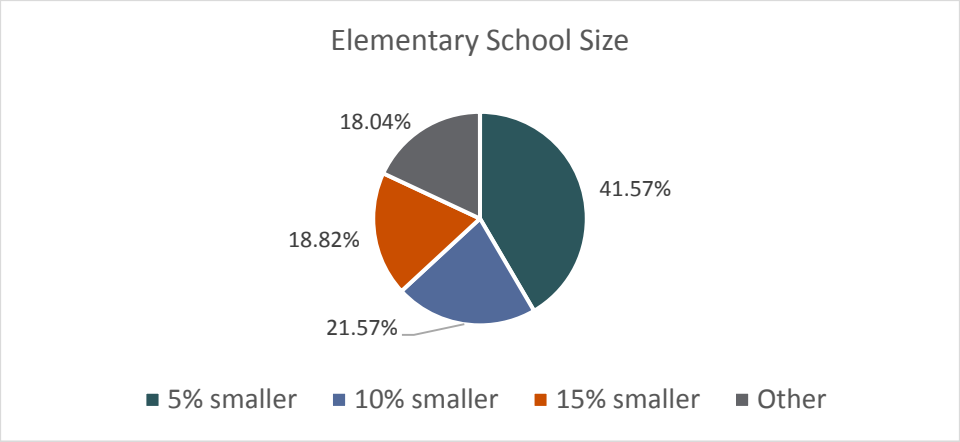


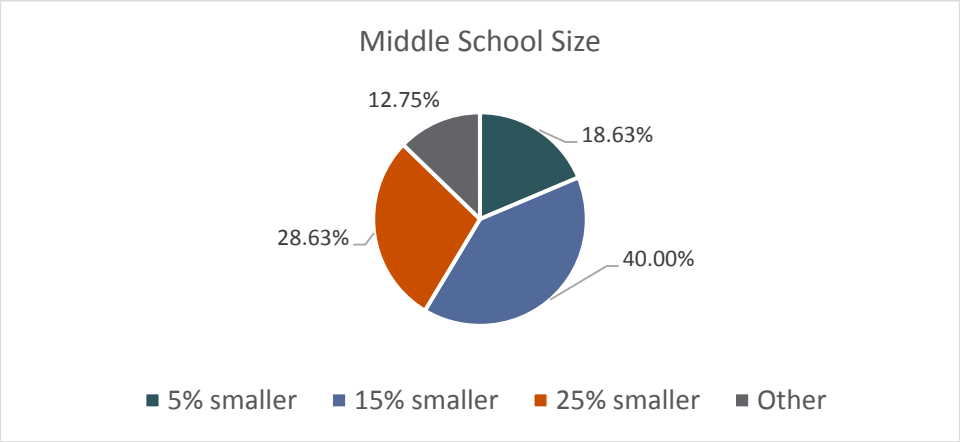
- A majority of respondents (61%) identified the general classroom spaces as "Poor" and indicated that they should have the highest priority for improvement. Respondents also identified performing arts (12%), physical education and special education (9% each) as spaces that should have high priority for improvement. Respondents who selected "Other" identified spaces including STEM and engineering, middle school sports programs, and computer program spaces as areas that needed improvement.

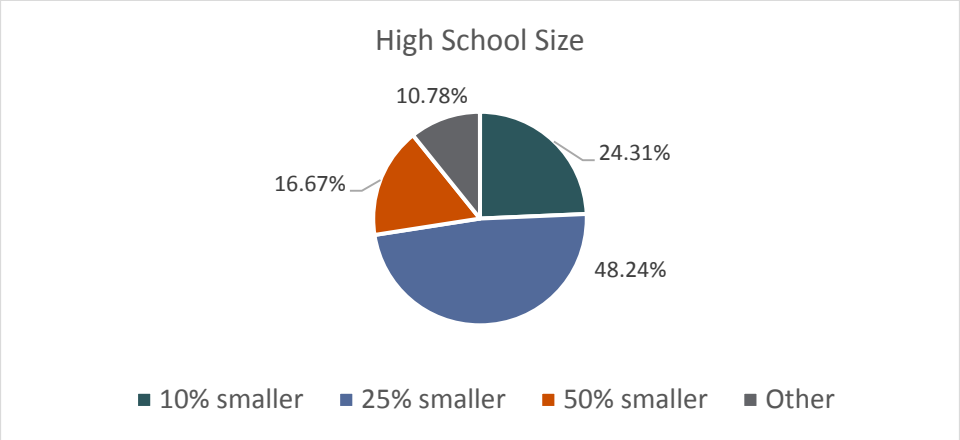


- The issue of school size was explored more deeply by providing information about average size of schools in AACPS and in the state of Maryland as well as providing information that respondents could use to judge if they thought the schools should be 5% to 15% to 50% smaller. The data below provide the majority response to the questions for ES, MS, and HS.
    - 41% thought the ES should be 5% smaller, which would mean adding 4 more ES.
    - 40% thought the MS should be 15% smaller, which would mean adding 3 more MS.
    - 48% thought the HS should be 25% smaller, which would mean adding 3 more HS.

The graphics showing the percentages of respondents regarding school sizes for each grade level are provided on the following page. As shown, the majority believe that AACPS schools should be smaller, but discussions following the community meetings and available from the comments suggest that school size should be adjusted as new schools and renovations are planned, rather than by making size the only priority. There were lots of comments about school size provided through the online survey. Many comments dealt with an interest in adding a new HS at Crofton, but other comments suggested that ES size was fine, but class sizes were too high. Other comments identified concerns about portables on various campuses and the need for more core space – cafeteria, gyms, etc.


Elementary School Size
18.04%
41.57%
18.82%
21.57%
5% smaller
10% smaller
15% smaller
Other


Middle School Size
12.75%
18.63%
28.63%
40.00%
5% smaller
15% smaller
25% smaller
Other


High School Size
10.78%
24.31%
16.67%
48.24%
10% smaller
25% smaller
50% smaller
Other

CONCLUSIONS

In order to gather community input and feedback, MGT used a variety of tools throughout the process of development of this Strategic Facilities Utilization Master Plan. The goal for community engagement was to ensure that all interested members of the community had multiple opportunities for both input and feedback.

- **Input** processes asked the community - what is important, what needs attention, what is working well, and what needs to be different?
- **Feedback** processes asked the community – given these preliminary data, what should be the priorities, how should issues be weighted, what is **most** important to do?

Anne Arundel County has an involved and interested populace. They attended community sessions even when it was hot and humid, even at schools that were not near their homes, and even when there were other events in competition. Many more community members used the online tools so that they could provide input and feedback at a time convenient for them.

From these data, it is clear that the AACPS community wants the district to focus their efforts on the following issues over the next 10 year plan:

- Fixing identified building deficiencies – including roofs and HVAC.
- General classroom issues – including fixing the open concept schools.
- Size of schools – focusing initially on the size of HS, but including all grade levels as new schools and additions are planned.
- New schools in growing area(s) of the county – focusing on the north and central county areas for MS and HS.

6.0 EDUCATIONAL PROGRAM

Activities related to the educational program were focused on ensuring that MGT understood the district's current and planned instructional programs, especially those with facility implications. For example, when the district decided to add all day kindergarten, the facility implications were significant. They needed to ensure that every kindergarten student was housed in a space that met their educational specifications.

The space requirements for programs are significant and the facility implications of instructional decisions are very important to ensure that all students are provided opportunities to learn in adequate and equitable spaces, regardless of where they go to school. Adjusting to changing program needs is a huge challenge to districts. Many schools were built long before there were special education, English Language or Title I programs, each of which requires space to do that work. Buildings designed before the mid 1970's had classrooms only. There were no spaces for itinerant PT/OT staff, psychologists to do testing, or ELL/special education/Title I staff to do pull-out groups or instruction. Schools that lack these offices and instructional resource spaces may have to put counselors in closets, speech therapists on the stage, and English tutors out in the hallway. Additionally, many districts have agreed that a comprehensive curriculum includes various arts offerings and other career and college-focused classes. Each of these course areas requires specialized spaces within the school. Schools that lack these spaces use whatever is available, but they may not be adequate to fully support the instructional program.

Recent changes in curriculum involving science and technology have also impacted schools. AACPS has implemented an impressive STEM (Science, Technology, Engineering, and Mathematics) curriculum component, but providing space for these new programs has been difficult in some schools. Unfortunately, programs are placed where they can fit, rather than in the spaces they need because some buildings lack planned spaces to support the educational program. We often describe this as "fitting a square peg in a round hole." This ***Strategic Facilities Utilization Master Plan*** is intended to identify the places where program needs are not met by the facilities and develop strategies and priorities to address those needs.

MGT's work in AACPS includes not only understanding the educational programs in the district, but also defining the facility implications for those programs. In order to complete this work, MGT conducted a thorough analysis of programs, both in place and planned, and then developed the educational suitability assessment that would capture data from each school. Each component is described in the following sections.

EDUCATIONAL PROGRAM DEVELOPMENT

MGT conducted a series of focused interviews and discussions with district staff in spring 2015. These interviews included administrative and curricular staff representing each content area (e.g., science, performing arts, technology, media, etc.). For each area, MGT asked questions regarding both current and planned program changes. Some specialized programs require specialized spaces. For example:

- Triple E (EEE) for Enhancing Elementary Education, provides students the opportunity to work in teams to collaboratively ask questions, creatively solve problems, and enthusiastically learn through hands-on exploration. Teams of students will work on real-world problems alongside their teachers and other professionals from the community. Technology tools will be available as needed for researching a topic, calculating a budget, measuring distance or time, creating artistic works, programming robots, and preparing presentations. Foundational learning in language arts, mathematics, science, social studies, and cultural arts will be enhanced through the project-based thematic work conducted by students during their weekly, hour-long Triple-E project time. The superintendent proposed expanding the program to the 19 elementary schools in the Chesapeake, Meade, and Southern clusters in addition to the North County cluster. Although the program does not yet exist at each elementary school, space for EEE was evaluated during the site assessments based on having a large enough space with adequate storage.
- BioMedical and Allied Health Magnet Career Programs provide an opportunity for interested students to pursue specialized course work and additional Summer Bridge programs focused around medical issues. Spaces for all Career and Technical Education programs were evaluated during the site assessments, based on the planned location(s) for each program.

During the discussions with AACPS staff, MGT provided a template to guide the discussion, including the four areas used for facility reviews: learning environment, size (GSF), location (based on adjacency to other areas), and fixed equipment/storage requirements.

The discussions always began with a review of existing and planned programs, including the planned timeline for new program implementation. Discussed were issues of equity – did/should the programs exist in all schools or were they only in magnet schools? AACPS staff provided information about both what currently existed and what was planned for future implementation.

From these discussions, MGT developed the ***Educational Suitability and Technology Readiness Reference Guide*** **(see Appendix A)** to define the facility standards**.** These standard are based on the district's current educational specifications and design practices. This document was reviewed and approved by the district and used as the basis for the Educational Suitability assessments. The standards define four components for each type of instructional space:

- Learning environment – Does the space provide an appropriate physical configuration, HVAC, lighting, acoustical treatment, etc. to support student learning?
- Size – Does the space meet the defined size standard for square footage?
- Location – Does the space exist in the right location?
- Storage/Fixed Equipment – Does the space have what teachers and students need to be successful, including safety equipment, permanent cabinetry, and technology?

In addition, the Guide defines standards for non-instructional areas like cafeteria, administration, and health suite and deals with safety issues like security vestibules, fencing, and bus/parent traffic patterns.

In addition to curricular areas, MGT discussed the district's current and planned technology structures in support of instruction. IT staff from AACPS reviewed standards and assisted in the development of the tool used to assess Technology Readiness. The Technology Readiness assessment reviews how well the infrastructure in the schools supports technology. It does not include an evaluation of the IT software or equipment. Instead, it reviews the infrastructure required to support current and future technology: electrical service to support charging of devices, wireless access, video streaming capacity, etc.

All MGT staff who conducted assessments were trained to use this document as the standard when assessing each school.

EDUCATIONAL SUITABILITY ASSESSMENT

As described, MGT developed the Educational Suitability and Technology Readiness Reference Guide.

The guide was used to calibrate the MGT software, BASYS (Building Assessment System). BASYS was used in AACPS in 2005-06 as the assessment software when the last district-wide facility assessment was conducted. (Note: BASYS has been revised since 2005-06 to provide greater emphasis on the learning environment and instructional flexibility.) The Reference Guide was also used to train the assessors who visited each school and document the suitability scores. (See **Section 8.0** for the Educational Suitability Assessment data.)

MGT staff assessed each school based on the standards defined in the Guide. The assessments were conducted by trained evaluators. Each evaluator met with the school principal to review the program(s) at each site and then walk the school to observe the spaces available to support the planned programs. Site visits were scheduled by MGT through the district to ensure that knowledgeable staff were available at each site during the visit.

Assessment data were entered into the BASYS software as each evaluation was completed and all data have been reviewed by the district. MGT's BASYS software has four assessments: Building Condition, Site Condition, Educational Suitability, and Technology Readiness, each of which are on a 100-point scale with 90-100 being "Excellent" or "Good" and scores under 50 being "Unsatisfactory." This scoring system is easily understood by the public that is accustomed to educational grading systems on the 100-point scale. . (For more information about the assessments conducted, see **Section 8.0**.)

7.0 DEMOGRAPHICS AND ENROLLMENT PROJECTIONS

This section presents the demographic analysis and enrollment projections for the master planning period. The demographic analysis was completed by MGT staff and the enrollment projections for the ten-year planning period were prepared by the district. Over the next ten years, enrollment is expected to increase modestly across the district. The specific impact of future student enrollment on school building capacities is outlined in the section on Capacity and Utilization.

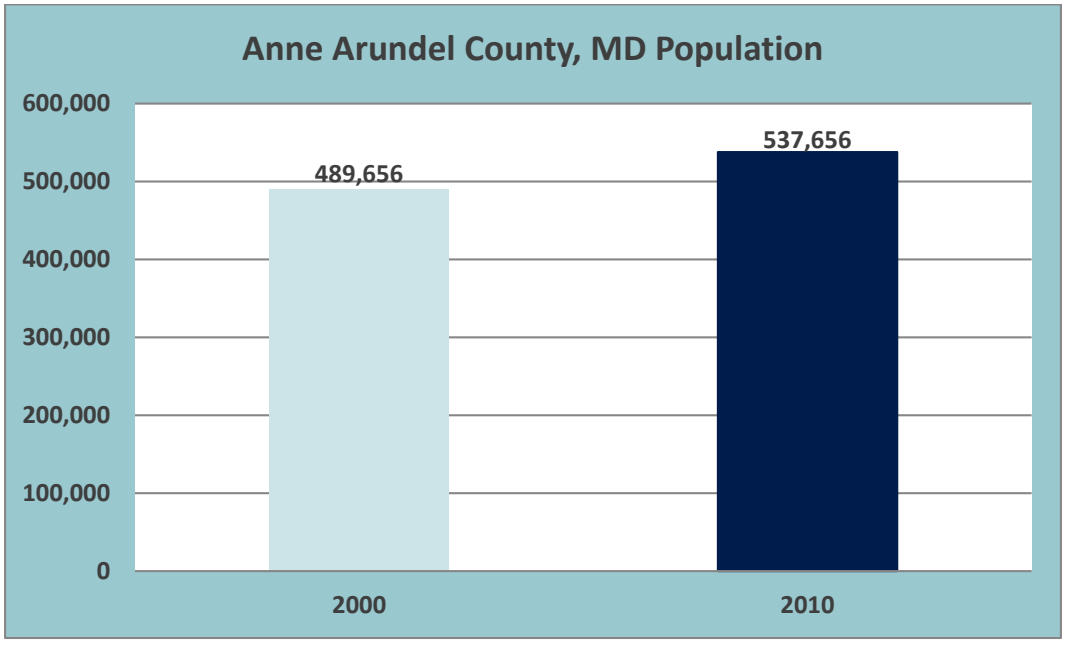
HISTORICAL DATA

An analysis of both quantitative and qualitative data forms the basis for the enrollment projections. Quantitative data comes from the district, the county, and the U.S. Census Bureau ("Census"). Quantitative data provides the basic understanding of trends "by the numbers." Qualitative data is gathered from conversations with district officials familiar with enrollment trends (and county planners), and provides the "why" behind the numbers. Both forms of data are critical to the preparation of enrollment projections for the district's ten-year facility master plan.

ANNE ARUNDEL COUNTY POPULATION TRENDS

It is important to understand the context in which enrollment trends occur within the district. Anne Arundel County, MD had a population of 489,656 in 2000; Census data indicates that number has increased to 537,656 in 2010. **Exhibit 7-1** shows the increase in total population from 2000 to 2010.

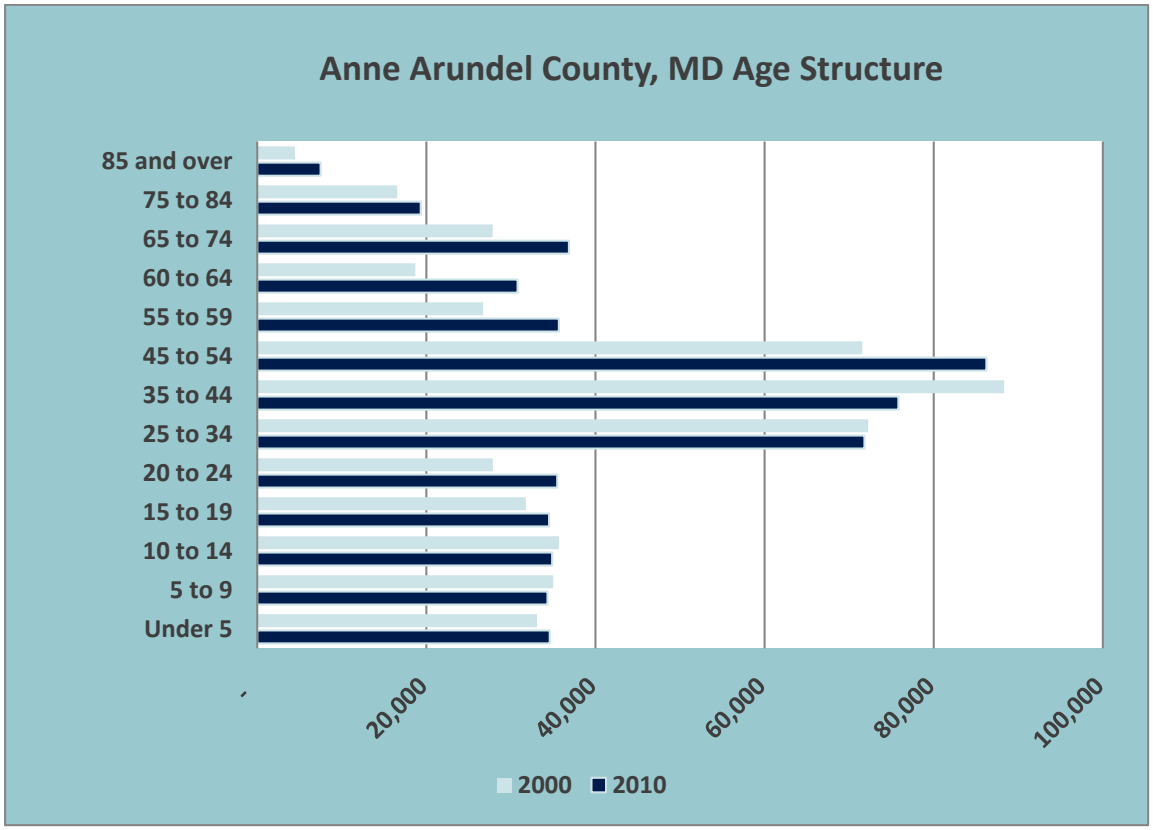
EXHIBIT 7-1
ANNE ARUNDEL COUNTY
TOTAL POPULATION
2000 TO 2010



SOURCE: U.S. CENSUS BUREAU.

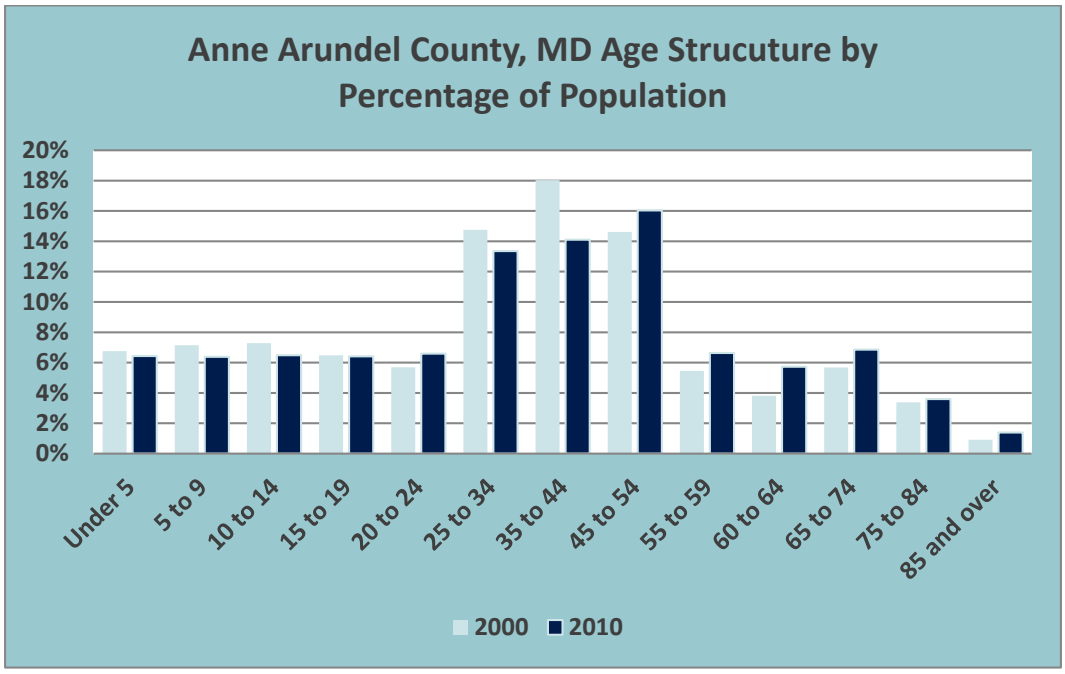
An examination of the age structure of Anne Arundel reveals that the largest segment of the population is between 25 and 54 years of age. **Exhibits 7-2** and **7-3** illustrate the age structure of Anne Arundel County population in 2000 and in 2010. The 2000 census age population groupings limit how we can split up the data.

EXHIBIT 7-2
ANNE ARUNDEL COUNTY, MD
POPULATION AGE STRUCTURE
(TOTAL BY AGE GROUP)
2000 TO 2010



SOURCE: U.S. CENSUS BUREAU.

EXHIBIT 7-3
ANNE ARUNDEL COUNTY
POPULATION AGE STRUCTURE
(BY PERCENTAGE OF POPULATION)
2000 TO 2010

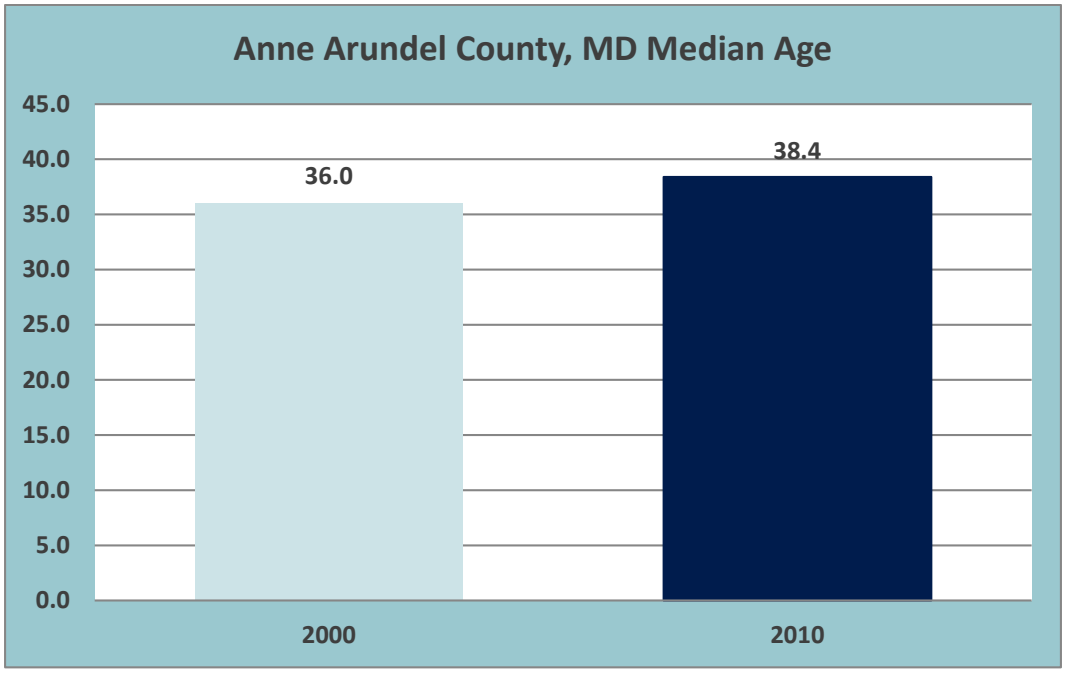


SOURCE: U.S. CENSUS BUREAU.

Analysis of the age structure does not necessarily lead to any specific conclusions, but it does offer some interesting observations. Note that the population from *Under 5* through the *15 to 19* segment shows a decline from 2000 to 2010, which indicates a decline in the school age population as a percentage of the whole population. Also note that the segments from *45 to 54* through *60 to 64* show an increase from 2000 to 2010. This indicates that the older poupulation is growing, while the younger population is declining.

Of additional interest is the change from 2000 to 2010 in the age segments for *20 to 24* and *25 to 34*. In 2000, the total number and percent of population increased from one group to the next. In 2010, the trend continued but at a much slower rate. This indicates that the largest segments of the population are getting older, a fact that is also evidenced by the increase in the median age of the Anne Arundel population. **Exhibit 7-4** shows the increase in median age from 2000 to 2010.

EXHIBIT 7-4
ANNE ARUNDEL COUNTY
MEDIAN AGE OF POPULATION
2000 TO 2010



SOURCE: U.S. CENSUS BUREAU.

The percent change in population at each age segment further reveals that the population in Anne Arundel County is getting older. **Exhibit 7-5** shows the percent change in population for each age segment. The *Under 5* population decreased approximately 5% from 2000 to 2010. In addition, the *5 to 9* and *10 to 14* age segments decreased 10.7% and 11%, respectively, over that same time period. This data possibly suggests that children who are born in Anne Arundel move out of the area *before* those children start attending school. The exhibit also emphasizes the overall decrease in the childbearing aged populations.

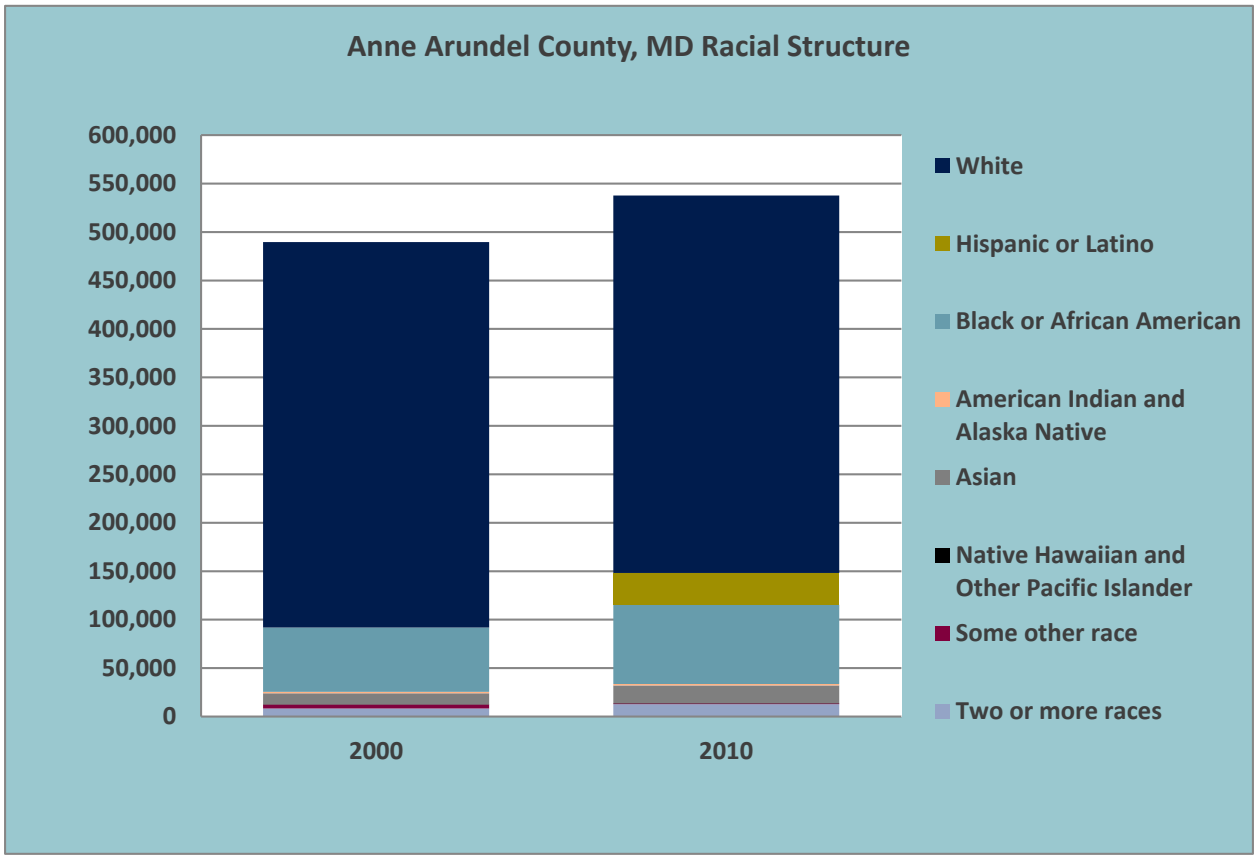
EXHIBIT 7-5
ANNE ARUNDEL COUNTY, MD
PERCENT CHANGE IN POPULATION - 2000 TO 2010
(BY AGE SEGMENT)

AGE SEGMENT	% CHANGE
Under 5	-4.8%
5 to 9	-10.7%
10 to 14	-11.0%
15 to 19	-1.1%
20 to 24	15.9%
25 to 34	-9.5%
35 to 44	-21.8%
45 to 54	9.8%
55 to 59	21.6%
60 to 64	50.0%
65 to 74	20.6%
75 to 84	6.4%
85 and over	53.6%

SOURCE: U.S. CENSUS BUREAU.

The white population decreased from 397,789 in 2000 to 389,386 in 2010, the white population also decreased as a percentage of total population (-8.8%). Other races accounted for the remaining 19% and 28% of the Anne Arundel County population in 2000 and 2010 respectively, with the Hispanic or Latino population showing a significant increase. **Exhibit 7-6** illustrates the racial structure in Anne Arundel County for 2000 and 2010.

EXHIBIT 7-6
ANNE ARUNDEL COUNTY
RACIAL STRUCTURE
(TOTAL POPULATION BY RACE)
2000 TO 2010



SOURCE: U.S. CENSUS BUREAU.

The data presented thus far builds the context for the following discussion regarding future AACPS enrollment.

HISTORICAL ENROLLMENT

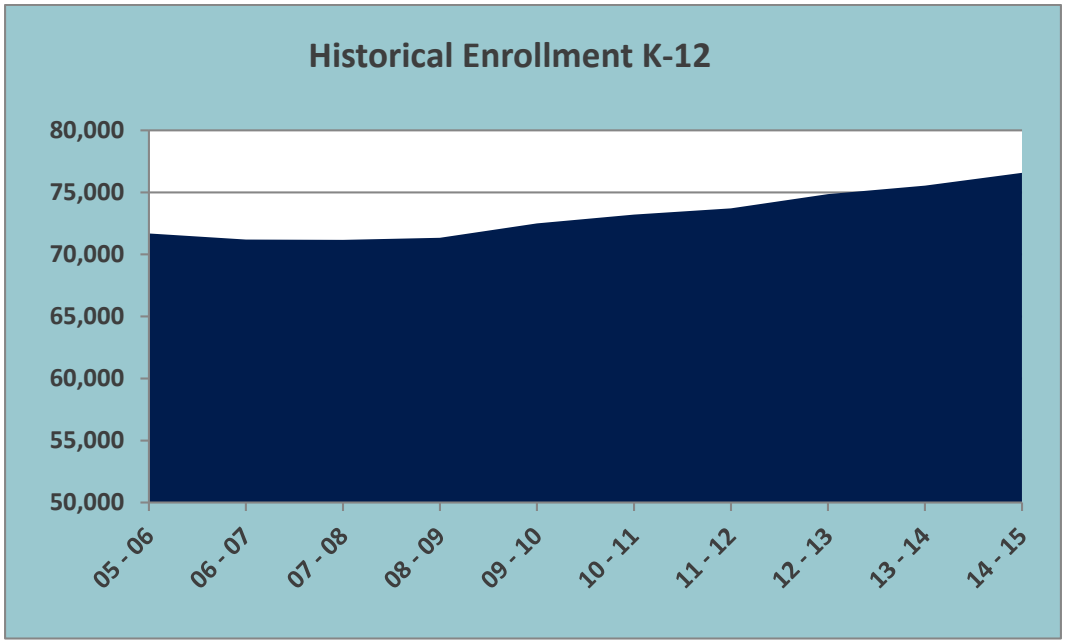
The core body of data used to develop an enrollment projection is historical enrollment. Total enrollment in Anne Arundel County Public Schools stood at 73,633 students in 2005-06. Since then, enrollment has increased to 79,518 in 2014-15. **Exhibit 7- 7** details the enrollment history of PK-12 students. **Exhibit 7-8** charts the history.

EXHIBIT 7-7
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
ENROLLMENT HISTORY*
2005-2014

Grade	05 - 06	06 - 07	07 - 08	08 - 09	09 - 10	10 - 11	11 - 12	12 - 13	13 - 14	14 - 15
K	4,822	4,812	5,258	5,406	5,667	5,717	5,909	6,320	6,359	6,288
1	5,224	5,303	5,235	5,541	5,679	5,864	5,777	6,074	6,425	6,429
2	5,277	5,183	5,385	5,328	5,581	5,763	5,911	5,852	6,040	6,463
3	5,321	5,348	5,234	5,486	5,465	5,706	5,837	5,943	5,916	6,085
4	5,405	5,294	5,393	5,355	5,531	5,494	5,717	5,892	5,949	5,950
5	5,505	5,399	5,375	5,457	5,472	5,670	5,571	5,791	5,907	5,970
6	5,547	5,565	5,442	5,380	5,537	5,562	5,591	5,559	5,757	5,867
7	5,575	5,575	5,580	5,487	5,462	5,604	5,566	5,632	5,588	5,799
8	5,811	5,541	5,539	5,605	5,503	5,530	5,531	5,587	5,563	5,551
9	6,599	6,730	6,255	6,275	6,313	6,131	6,012	6,005	5,917	5,972
10	6,066	5,525	6,010	5,796	5,996	5,862	5,816	5,737	5,675	5,704
11	5,645	5,762	5,125	5,584	5,431	5,582	5,549	5,529	5,510	5,553
12	4,895	5,156	5,342	4,642	4,864	4,731	4,924	4,941	4,944	4,948
Grades K-5	31,554	31,339	31,880	32,573	33,395	34,214	34,722	35,872	36,596	37,185
Grades 6-8	16,933	16,681	16,561	16,472	16,502	16,696	16,688	16,778	16,908	17,217
Grades 9-12	23,205	23,173	22,732	22,297	22,604	22,306	22,301	22,212	22,046	22,177
K-12 Total	**71,692**	**71,193**	**71,173**	**71,342**	**72,501**	**73,216**	**73,711**	**74,862**	**75,550**	**76,579**
Total Elementary (Ungraded)	1,146	1,120	1,445	1,516	1,516	1,525	1,739	2,028	2,013	1,957
Total Elementary Special Ctr.	293	274	261	264	282	236	298	309	295	284
Evening High School Ungraded	166	199	213	212	201	196	144	166	166	192
Total Secondary Special Ctr.	336	325	313	324	282	308	411	405	476	506
District total	**73,633**	**73,111**	**73,405**	**73,658**	**74,782**	**75,481**	**76,303**	**77,770**	**78,500**	**79,518**

SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

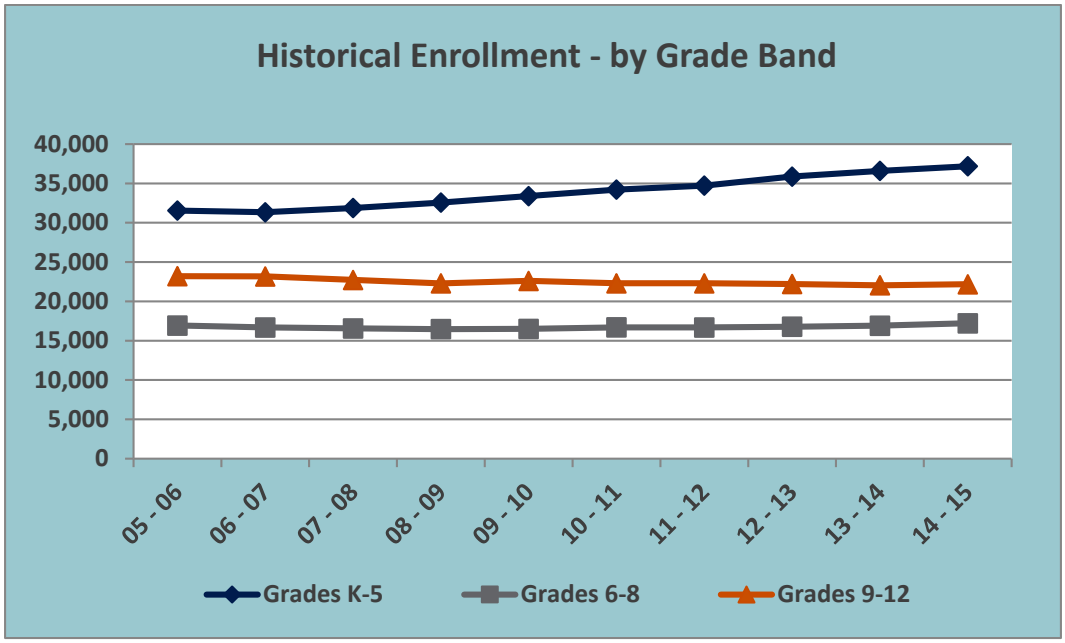
EXHIBIT 7-8
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL ENROLLMENT
2005-2014



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

An examination of historical enrollment at the grade-band level reveals that the increase in overall enrollment over the last ten years has been led by an increase in enrollment at the K-5 grade band, which increased 18%. The 6-8 grade band increased in enrollment by 2%, and the 9-12 grade band decreased by four percent in enrollment. **Exhibit 7-9** illustrates the historical enrollment for each grade band.

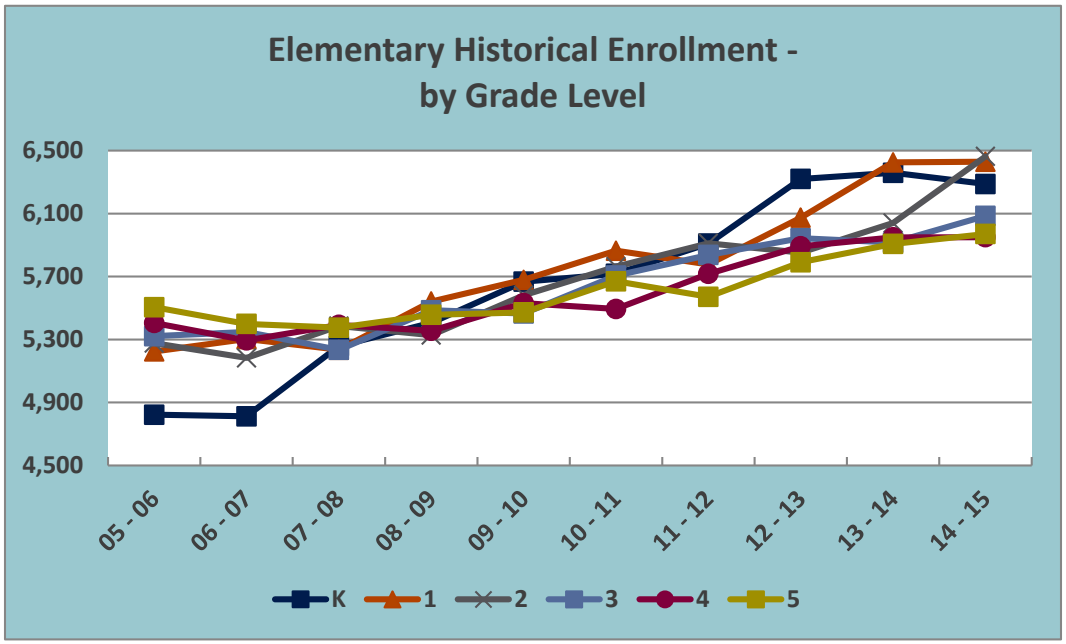
EXHIBIT 7-9
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL ENROLLMENT
(BY GRADE BAND)



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

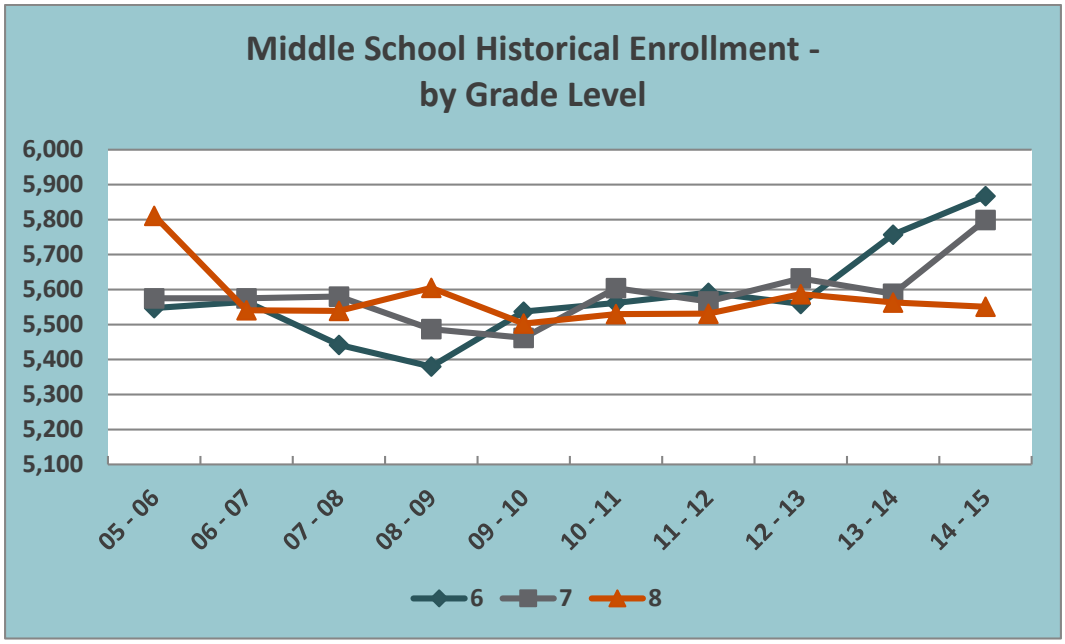
A closer look at historical enrollment at individual grade levels does not reveal any clear trends. Elementary grade-level enrollment data have all historically trended upward with no individual grade having an evidently stronger influence than another grade. Likewise, the middle and high school grade-level enrollment data do not indicate any particular grade influencing the overall trend in historical enrollment. The following **Exhibits 7-10**, **7-11**, and **7-12** illustrate the historical enrollment for each grade level.

EXHIBIT 7-10
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL ELEMENTARY SCHOOL ENROLLMENT
(BY GRADE LEVEL)



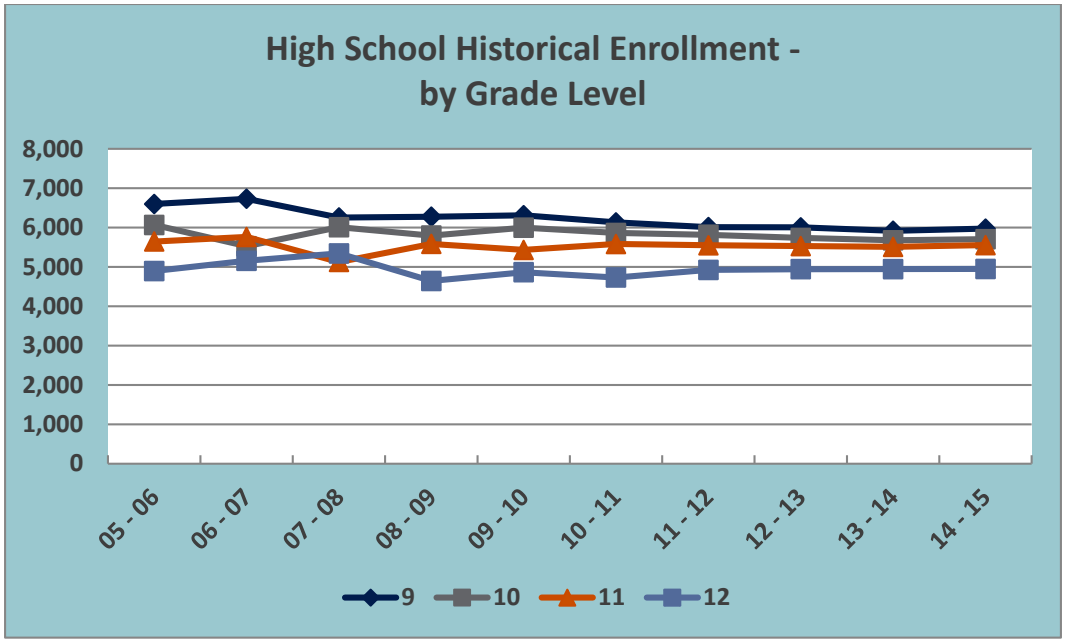
SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

EXHIBIT 7-11
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL MIDDLE SCHOOL ENROLLMENT
(BY GRADE LEVEL)



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

EXHIBIT 7-12
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL HIGH SCHOOL ENROLLMENT
(BY GRADE LEVEL)



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

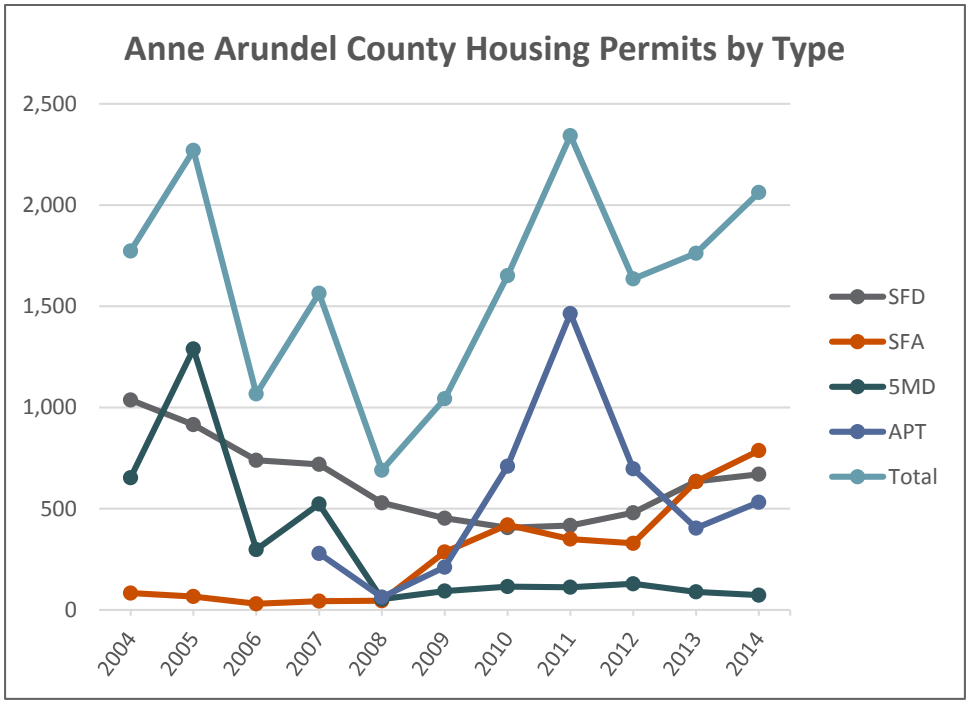
The trends observed in the historical enrollment data will form a key component of the enrollment projections prepared as a part of this master plan.

HOUSING UNITS

Another factor used to develop enrollment projections is an analysis of the trends in housing units in the county. The U.S. Census Bureau recorded 192,435 housing units in Anne Arundel County in the 2000 Census and 212,562 housing units in 2010. The census data provides a starting point for this analysis, but building permits provide additional information upon which to base an assumed number of housing units following the 2000 and 2010 Census.

Since 2004, the number of housing permits issued each year in Anne Arundel County has fluctuated greatly. **Exhibit 7-13** illustrates the number of housing permits issued each year since 2004 in Anne Arundel County, which includes both single- and multi-family building permits. Given this erratic history, housing unit projections were made based on knowledge of current projects and future potential development based on available building sites.

EXHIBIT 7-13
ANNE ARUNDEL COUNTY, MD
HISTORICAL RESIDENTIAL BUILDING PERMITS



SOURCE: ANNE ARUNDEL COUNTY, 2015.

KEY	
SFD	Single Family Detached
SFA	Single Family Attached
5MD	Multi-Family Dwelling
APT	Apartment

CONCLUSIONS AND OBSERVATIONS ABOUT HISTORICAL DATA

Based on the analysis of data presented in this section, we have concluded the following regarding the demographics of Anne Arundel County:

1. Census Bureau population counts show a 9.8% increase in population from 2000 to 2010.
2. The population is getting older, which could lead to fewer students being born in the district.
3. Housing units will continue to increase but the rate of increase is speculative and dependent on the economy and the growth policies of the county.

ENROLLMENT PROJECTION METHODOLOGY

Enrollment projections are an *estimate* of future populations based on the historical data and information provided. As demonstrated by the district calculations over the past ten years, there can be constant variations in growth. These numbers can be highly accurate, but it must be remembered that the numbers are still a projection or estimate. During the implementation of any of the recommendations provided in this master plan, it is critical that the district reassess these numbers on a regular basis and adjust plans accordingly.

To identify trends and prepare for adequate spaces, teaching staff, and materials and supplies, educational leaders use several methods of projecting enrollment. Among the most commonly used models are *Average Percentage Annual Increase, Cohort Survival, Linear Regression*, and *Student-per-Housing Unit* models. Because no one model is foolproof, the district has used both the Cohort Survival and the Student-per-Household models to arrive at its enrollment projection.

COHORT SURVIVAL MODEL

This model calculates the growth or decline in a grade level over a period of ten years based on the ratio of students who attend each of the previous years, or the "survival rate". This ratio is then applied to the incoming class to calculate the trends in that class as it "moves" or graduates through the school system. For example, if history shows that between the first and second grades, the classes for the last ten years have grown by an average of 3.5%, then the size of incoming classes for the next ten years is calculated by multiplying them by 103.5%. If the history shows a declining trend, the multiplying factor would be 100% minus the declining trend number.

The determination of future kindergarten enrollment estimates is critical, especially for projections exceeding more than five years. There are two methods of projecting kindergarten enrollment. The first model is based on the correlation between historical birth rates (natality rates) and historical kindergarten enrollment. The second model uses a linear regression line based on the historical kindergarten enrollment data. The correlation method was used for AACPS due to the relatively strong correlation coefficient between live births and kindergarten enrollment.

STUDENTS-PER-HOUSEHOLD MODEL

This model utilizes the estimated number of housing units as its base data. Using the housing unit data and historical enrollment data, MGT and the District created a student generation factor for each projected housing unit. By taking the total enrollment by grade level and dividing it by the current housing levels, a *student generation factor* (SGF) was calculated for each grade level. This factor indicates the number of students within each grade level that will be generated by each new housing unit. These SGF's were compared with SGF's used by several peer districts to ensure reliability. **Exhibit 7-14** on the following page list the peer districts (based on demographic characteristics) and their SDF's. **Exhibit 7-15** presents the SGF's used for the current projections.

EXHIBIT 7-14
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
STUDENT GENERATION FACTORS FOR PEER DISTRICTS

SCHOOL DISTRICT	DISTRICT YIELD RATIO	SINGLE FAMILY OR SINGLE FAMILY DETACHED			MULTI FAMILY OR MULTI FAMILY ATTACHED			TOWNHOUSE		
		ES	MS	HS	ES	MS	HS	ES	MS	HS
Jefferson County Public Schools, CO	1.170	0.580	0.040	0.550						
Prince William County Public Schools, VA	0.578	0.294	0.156	0.206	0.176	0.070	0.085	0.285	0.128	0.155
Metropolitan Nashville Public Schools, TN	0.562	0.137	0.098	0.093	0.113	0.065	0.055			
Austin Independent School District, TX		0.208	0.057	0.094	0.215	0.062	0.123	0.041	0.012	0.034
Long Beach Unified School District, CA		0.261	0.096	0.124	0.229	0.111	0.167			

*DATA FOR THE VARIOUS DISTRICTS ARE NOT ALL FOR THE SAME YEAR.
*GRADES INCLUDED AS ES, MS AND HS VARY BETWEEN DISTRICTS
SOURCE: MGT OF AMERICA, 2015.

EXHIBIT 7-15
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
STUDENT GENERATION FACTORS BY HIGH SCHOOL ATTENDANCE ZONE

ATTENDANCE ZONE	ES AVERAGE YIELD	MS AVERAGE YIELD	HS YIELD
Annapolis HS	0.142	0.054	0.063
Arundel HS	0.224	0.092	0.126
Broadneck HS	0.198	0.100	0.139
Chesapeake HS	0.178	0.086	0.117
Glen Burnie HS	0.188	0.066	0.094
Meade HS	0.258	0.079	0.096
North County HS	0.181	0.105	0.114
Northeast HS	0.187	0.081	0.116
Old Mill HS	0.154	0.073	0.092
Severna Park HS	0.268	0.134	0.174
South River HS	0.181	0.092	0.127
Southern HS	0.156	0.078	0.109
Average/Total	**0.194**	**0.084**	**0.114**

SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

ENROLLMENT PROJECTIONS

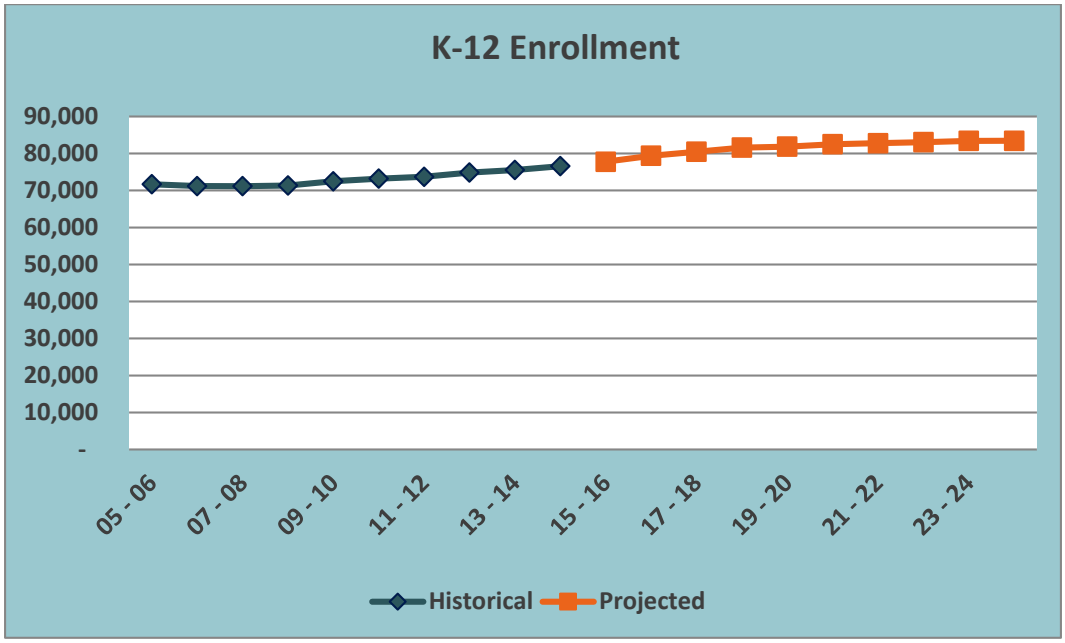
AACPS staff has utilized the methodology described above to forecast enrollment for the district over the next ten years, which are shown in **Exhibit 7-16. Exhibit 7-17** on the following page illustrates the historical and projected enrollment for the entire district.

EXHIBIT 7-16
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
PROJECTED ENROLLMENT

PROJECTED ENROLLMENT										
Grade	**15 - 16**	**16 - 17**	**17 - 18**	**18 - 19**	**19 - 20**	**20 - 21**	**21 - 22**	**22 - 23**	**23 - 24**	**24 - 25**
K	6,116	6,045	6,144	6,018	6,060	6,205	6,210	6,213	6,216	6,216
1	6,381	6,319	6,232	6,166	6,107	6,142	6,208	6,283	6,318	6,313
2	6,429	6,450	6,345	6,259	6,201	6,129	6,152	6,215	6,287	6,318
3	6,557	6,562	6,473	6,369	6,325	6,253	6,163	6,192	6,302	6,311
4	6,132	6,585	6,615	6,545	6,425	6,351	6,263	6,168	6,230	6,227
5	5,998	6,286	6,651	7,127	6,583	6,450	6,360	6,268	6,213	6,230
6	6,124	6,244	6,441	6,830	6,881	6,723	6,613	6,543	6,469	6,206
7	5,860	6,169	6,133	6,390	6,791	6,787	6,708	6,598	6,528	6,522
8	5,719	5,913	6,115	6,095	6,355	6,741	6,748	6,680	6,462	6,558
9	6,099	6,219	6,456	6,541	6,540	6,851	7,294	7,262	7,130	7,077
10	5,826	5,916	5,957	6,343	6,406	6,376	6,589	7,050	7,033	6,987
11	5,553	5,674	5,713	5,699	6,019	6,074	6,038	6,236	6,637	6,689
12	4,981	5,010	5,189	5,215	5,164	5,420	5,439	5,372	5,586	5,786
K-5	37,613	38,247	38,460	38,484	37,701	37,530	37,356	37,339	37,566	37,615
6-8	17,703	18,326	18,689	19,315	20,027	20,251	20,069	19,821	19,459	19,286
9-12	22,459	22,819	23,315	23,798	24,129	24,721	25,360	25,920	26,386	26,539
K-12	77,775	79,392	80,464	81,597	81,857	82,502	82,785	83,080	83,411	83,440
Total Elementary (Ungraded)	**2,146**	**2,146**	**2,146**	**2,146**	**2,146**	**2,146**	**2,146**	**2,146**	**2,146**	**2,146**
Total Elementary Special Ctr.	**284**	**284**	**284**	**284**	**284**	**284**	**284**	**284**	**284**	**284**
Evening High School Ungraded	**192**	**192**	**192**	**192**	**192**	**192**	**192**	**192**	**192**	**192**
Total Secondary Special Ctr.	**506**	**506**	**506**	**506**	**506**	**506**	**506**	**506**	**506**	**506**
District total	**80,903**	**82,520**	**83,592**	**84,725**	**84,985**	**85,630**	**85,913**	**86,208**	**86,539**	**86,568**

SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

EXHIBIT 7-17
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – K-12



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

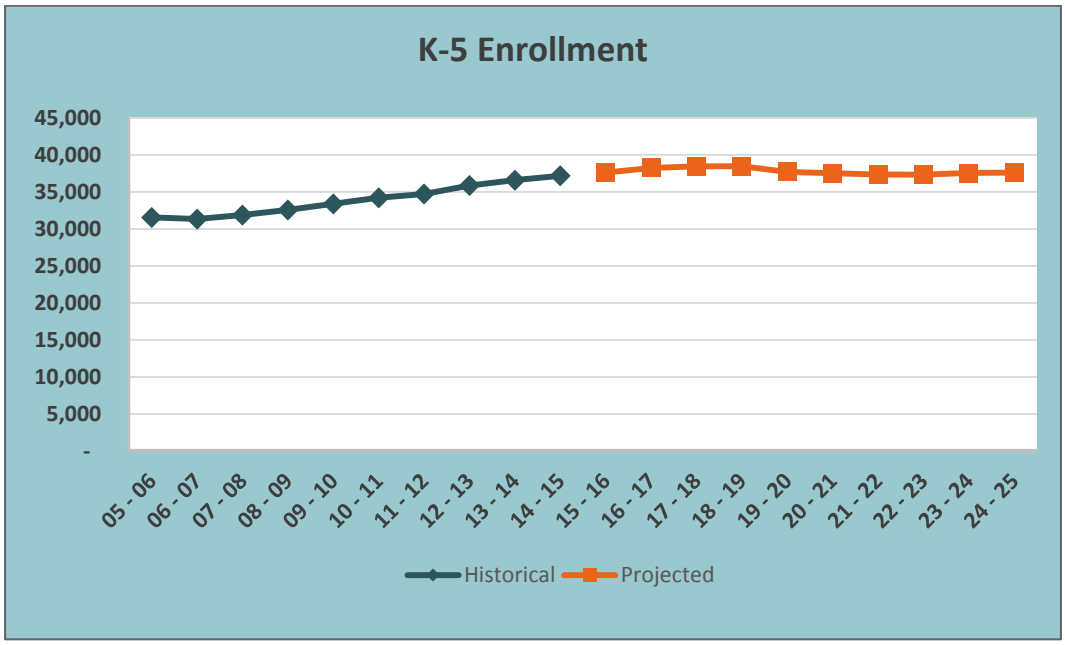
FINDINGS

As the foregoing **Exhibit 7-17** shows, enrollment across the district is expected to fluctuate slightly in the next few years, but shows a modest increase by the end of the ten year planning period. While this projection somewhat contradicts birth and age data, it is a reasonable conclusion given the historical enrollments and the current and projected level of development;

- Live births are projected to decrease which will counteract growth in housing.
- While there is a strong correlation between the live birth rate and the kindergarten capture rate, the capture rate has historically been less than 100 percent indicating some level of exodus of students out the district.
- The census data from 2000 to 2010 has shown a decrease in elementary age children.
- While the slowing economy has negatively affected the rate of construction of homes, there is a general consensus among stakeholders that the rates of building and migration into the county will increase as the economy improves.

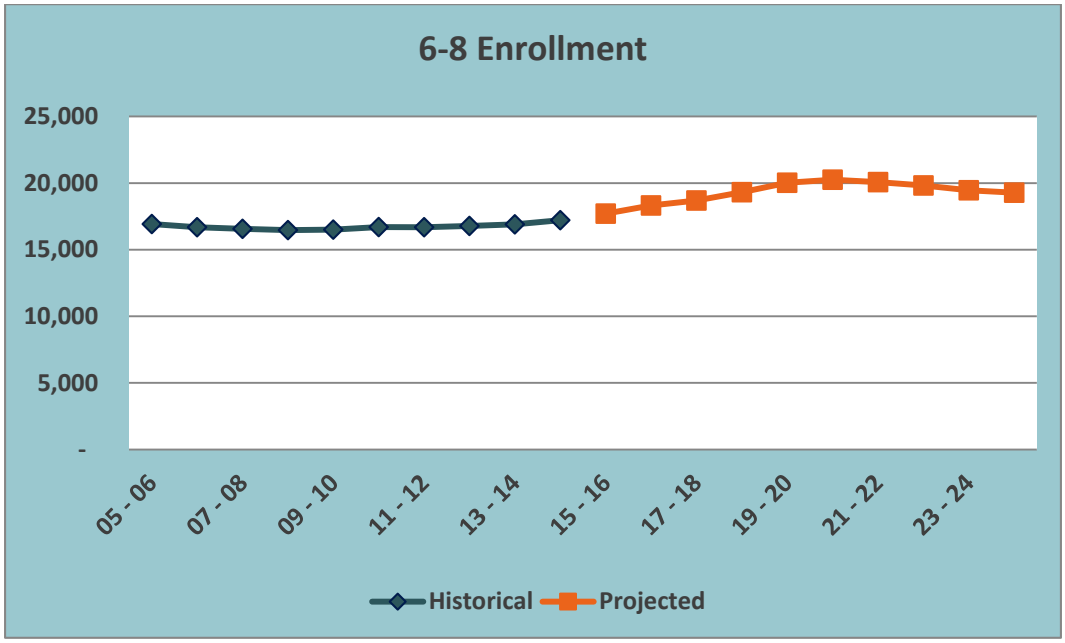
The District is strongly encouraged to continue revisiting these projections on an annual basis and update them to reflect current trends and data. The following **Exhibits 7-18** through **7-20** illustrate the historical and projected enrollment at each grade band.

EXHIBIT 7-18
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – K-5



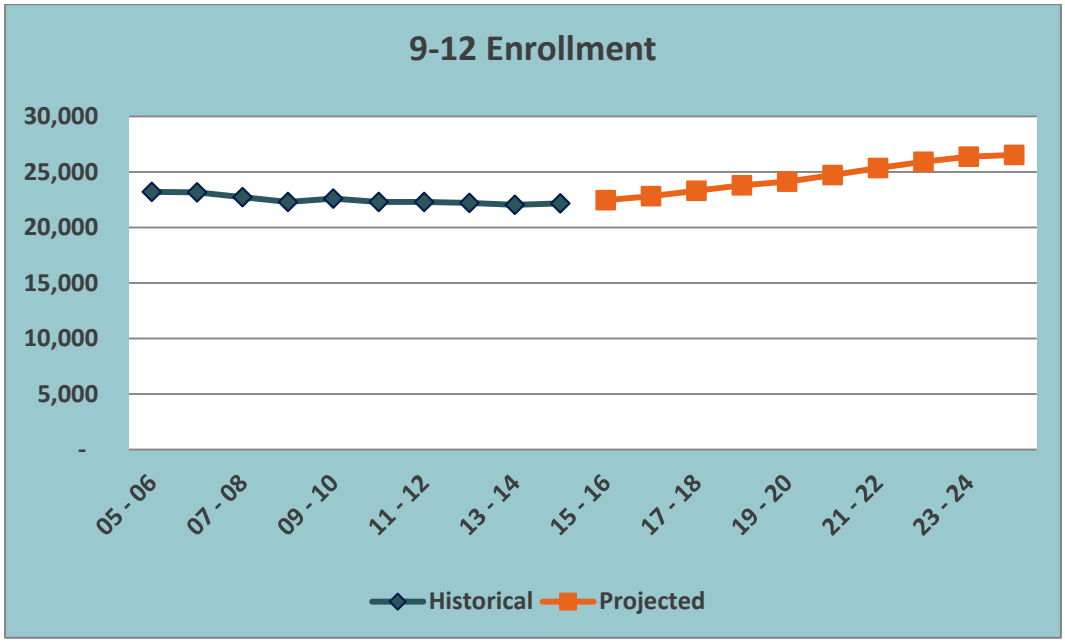
SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

EXHIBIT 7-19
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – 6-8



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

EXHIBIT 7-20
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
HISTORICAL AND PROJECTED ENROLLMENT – 9-12



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCHOOLS, 2015.

In **Section 9.0** on Capacity and Utilization, we will utilize these enrollment projections to measure the future utilization rates in Anne Arundel schools and determine whether there will be excess space or a need for additional space.

8.0 FACILITIES ASSESSMENTS

This section presents the results of the facilities assessments that were conducted by MGT and staff from Anne Arundel County Public Schools. The assessments were conducted using BASYS®, MGT's facility assessment software program. There are four types of assessments, including:

- Building condition
- Educational suitability
- Grounds condition
- Technology readiness

BUILDING CONDITION ASSESSMENT

The BASYS® building condition score measures the amount of deferred maintenance in the building's major systems. The weighted condition score of a school is the average condition score (weighted by building square footage) of all the buildings at a school (excluding portables). The scores are interpreted as follows:

90+	**New or Like New:** The building and/or a majority of its systems are in good condition, less than three years old, and only require preventive maintenance.
80-89	**Good:** The building and/or a majority of its systems are in good condition and only require routine maintenance.
70-79	**Fair:** The building and/or some of its systems are in fair condition and require minor to moderate repair.
60-69	**Poor:** The building and/or a significant number of its systems are in poor condition and require major repair, renovation, or replacement.
BELOW 60	**Unsatisfactory:** The building and/or a majority of its systems should be replaced.

The condition assessment rates each system in a building as "new", "good", "fair", "poor", or "unsatisfactory" based on a detailed description of each rating for the particular system. The possible score for each system is based on that system's contribution to the overall cost of building construction. Therefore, the condition score is a measure of that portion of the value of the building which is in good condition. The capital needs score (100 minus the condition score) is a measure of the capital needs or deferred maintenance. This score, when presented as a percent, is also referred to as the facility condition index or FCI. For example, a building which has a condition score of 80, has a capital needs score of 20 (100 – 80 = 20). A capital needs score of 20 indicates that 20 percent of the value of the building can be reinvested in the building in order to attain a score of 100 and put the building in a "like new" condition. The condition score and resulting calculations do not include the costs of additions, site improvements, improvements for educational suitability, or technology readiness improvements.

Exhibit 8-1 presents the range of the weighted average condition scores (weighted by GSF) by type of facility for AACPS. As the exhibit shows, there is a range of condition scores, from 59 to 100, with the average condition scores in the "Good" to "Fair" range.

EXHIBIT 8-1
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
WEIGHTED AVERAGE BUILDING CONDITION SCORE RANGES

SITE TYPE	BUILDING CONDITION SCORE RANGE		AVERAGE CONDITION SCORE
	LOW	HIGH	
Elementary Schools	58.97	100.00	85.33
Middle Schools	64.02	96.58	79.98
High Schools	60.07	100.00	82.69
County-Wide Schools	63.95	92.52	80.09
Other Facilities	75.38	79.85	77.61

Source: AACPS and MGT of America, Inc., 2015.

Exhibit 8-2 presents the weighted average condition score for each school that was assessed. As the exhibit shows, condition scores are in the "Unsatisfactory" to "New or Like New" categories which indicates that the facilities range in need from preventive maintenance to replacement.

EXHIBIT 8-2
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CONDITION SCORES – BY SITE

SITE NAME	GSF*	WEIGHTED AVERAGE CONDITION SCORE*
Elementary Schools		
Annapolis ES	69,546	93.69
Arnold ES	84,372	100.00
Belle Grove ES	59,928	93.20
Belvedere ES	68,476	81.69
Benfield ES	82,775	100.00
Bodkin ES	78,469	84.17
Broadneck ES	84,111	82.55
Brock Bridge ES	73,113	76.26
Brooklyn Park ES	74,540	79.62
Cape St Claire ES	84,647	90.31
Central ES	83,381	78.32
Crofton ES	81,739	100.00
Crofton Meadows ES	78,618	84.61
Crofton Woods ES	81,879	74.36
Davidsonville ES	78,725	85.85
Deale ES	53,444	88.08
Eastport ES	43,640	84.54
Edgewater ES	52,326	58.97
Ferndale EEC	24,076	87.82
Folger McKinsey ES	83,175	99.77
Fort Smallwood ES	64,907	79.15
Four Seasons ES	83,703	83.52
Frank Hebron-Harman ES	84,835	88.15
Freetown ES	82,460	88.15
George Cromwell ES	63,125	100.00
Georgetown East ES	77,856	83.88
Germantown ES	89,998	97.94
Glen Burnie Park ES	51,414	85.80
Glendale ES	75,065	85.18
High Point ES	90,781	100.00
Hillsmere ES	49,130	66.20
Hilltop ES	82,903	78.37
Jacobsville ES	77,193	88.24

EXHIBIT 8-2 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CONDITION SCORES – BY SITE

SITE NAME	GSF*	WEIGHTED AVERAGE CONDITION SCORE*
Elementary Schools		
Jessup ES	84,372	100.00
Jones ES	48,772	85.06
Lake Shore ES	63,422	90.00
Linthicum ES	71,682	83.88
Lothian ES	84,588	100.00
Manor View ES	75,928	100.00
Marley ES	76,967	86.30
Maryland City ES	52,519	69.05
Mayo ES	60,648	87.57
Meade Heights ES	74,000	84.76
Millersville ES	45,994	75.41
Mills-Parole ES	87,081	100.00
Nantucket ES	86,273	88.21
North Glen ES	49,749	85.57
Oak Hill ES	80,482	82.98
Oakwood ES	55,674	84.19
Odenton ES	71,302	87.05
Overlook ES	62,129	91.45
Park ES	68,779	84.32
Pasadena ES	68,023	89.08
Pershing Hill ES	87,160	91.23
Piney Orchard ES	76,448	88.36
Point Pleasant ES	95,925	97.51
Quarterfield ES	49,130	64.37
Richard Henry Lee ES	61,000	67.16
Ridgeway ES	77,659	83.41
Rippling Woods ES	76,500	68.34
Riviera Beach ES	50,916	82.15
Rolling Knolls ES	84,588	100.00
Seven Oaks ES	81,209	88.15
Severn ES	62,964	80.26
Severna Park ES	56,345	77.91
Shady Side ES	73,113	75.84
Shipley's Choice ES	68,119	83.68
Solley ES	83,336	84.52
South Shore ES	52,503	84.59
Southgate ES	87,165	90.00

EXHIBIT 8-2 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CONDITION SCORES – BY SITE

SITE NAME	GSF*	WEIGHTED AVERAGE CONDITION SCORE*
Elementary Schools		
Sunset ES	73,113	80.74
Tracey's ES	56,640	88.91
Tyler Heights ES	47,544	66.77
Van Bokkelen ES	70,525	82.20
Waugh Chapel ES	62,101	86.56
West Annapolis ES	53,885	100.00
West Meade EEC	45,677	67.89
Windsor Farm ES	77,432	86.17
Woodside ES	51,946	70.91
ELEMENTARY SCHOOL TOTAL/AVERAGE	**5,525,677**	**85.33**
Middle Schools		
Annapolis MS	216,000	70.66
Arundel MS	140,032	83.87
Bates MS	145,520	68.18
Brooklyn Park MS	159,812	84.80
Central MS	158,125	79.52
Chesapeake Bay MS	343,446	79.24
Corkran MS	151,790	80.90
Crofton MS	131,577	81.36
George Fox MS	164,393	83.44
Lindale MS	191,583	78.76
MacArthur MS	211,620	87.90
Magothy River MS	170,000	78.48
Marley MS	154,293	88.06
Meade MS	150,000	84.77
Old Mill MS North	159,635	64.02
Old Mill MS South	159,635	64.02
Severn River MS	170,000	80.84
Severna Park MS	205,905	96.58
Southern MS	200,102	84.20
MIDDLE SCHOOL TOTAL/AVERAGE	**3,383,468**	**79.98**

EXHIBIT 8-2 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CONDITION SCORES – BY SITE

SITE NAME	GSF*	WEIGHTED AVERAGE CONDITION SCORE*
High Schools		
Annapolis HS	281,500	86.03
Arundel HS	292,177	84.34
Broadneck HS	297,740	85.28
Chesapeake HS	322,400	83.62
Glen Burnie HS	401,580	77.69
Meade HS	351,142	83.25
North County HS	331,764	83.45
Northeast HS	308,211	92.95
Old Mill HS	283,194	60.07
Severna Park HS	353,610	100.00
South River HS	295,900	76.18
Southern HS	226,206	79.45
HIGH SCHOOL TOTAL/AVERAGE	**3,745,424**	**82.69**
County-Wide Schools		
CAT-North	148,634	83.71
CAT-South	91,507	82.99
Carrie Weedon	11,100	63.95
Phoenix Academy	71,000	92.52
Ruth Parker Eason	54,526	84.42
Central Special	53,333	78.87
J Albert Adams Academy	39,257	73.75
Marley Glen SP	50,318	80.47
COUNTY-WIDE SCHOOLS TOTAL/AVERAGE	**519,675**	**80.09**
Other Facilities		
Arlington Echo	23,587	79.85
Chesapeake Science Point Charter School	50,820	N/A
Monarch Academy Public Charter School	55,367	N/A
Monarch Global Academy Contract School	63,327	N/A
Studio 39	36,000	75.38
OTHER TOTAL/AVERAGE	**229,101**	**77.61**
DISTRICT TOTAL/AVERAGE	**13,403,345**	**83.74**

Source: AACPS and MGT of America, Inc., 2015.
*Excludes portables

EDUCATIONAL SUITABILITY ASSESSMENT

The educational suitability assessment evaluates how well the facility supports the educational program that it houses. Each school receives one suitability score which applies to all the buildings at the facility. The educational suitability of each school was assessed with BASYS® using the following categories:

ENVIRONMENT	The overall environment of the schools with respect to creating a safe and positive learning environment.
CIRCULATION	Pedestrian/vehicular circulation and the appropriateness of site facilities and signage.
SUPPORT SPACE	The existence of facilities and spaces to support the educational program being offered. These include general classrooms, special learning spaces (e.g. music rooms, libraries, science labs), and support spaces (e.g. administrative offices, counseling offices, reception areas, kitchens, health clinics).
SIZE	The adequacy of the size of the program spaces.
LOCATION	The appropriateness of adjacencies (e.g., physical education space separated from quiet spaces).
STORAGE & FIXED EQUIPMENT	The appropriateness of utilities, fixed equipment, storage, and room surfaces (e.g. flooring, ceiling materials, and wall coverings).

Suitability scores are interpreted as follows:

90+	**Excellent:** The facility is designed to provide for and support the educational program offered. It may have a minor suitability issues but overall it meets the needs of the educational program.
80-89	**Good:** The facility is designed to provide for and support a majority of the educational program offered. It may have minor suitability issues but generally meets the needs of the educational program.
70-79	**Fair:** The facility has some problems meeting the needs of the educational program and will require remodeling/renovation.
60-69	**Poor:** The facility has numerous problems meeting the needs of the educational program and needs significant remodeling, additions, or replacement.
BELOW 60	**Unsatisfactory:** The facility is unsuitable in support of the educational program.

Exhibit 8-3 presents the range and average of suitability scores by facility type. The suitability scores range from 53 to 100. The average scores fall within the "Good" to "Fair" range:

EXHIBIT 8-3
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
SUITABILITY SCORE RANGES

SITE TYPE	SUITABILITY SCORE RANGE		AVERAGE SUITABILITY SCORE
	LOW	HIGH	
Elementary Schools	53.45	100.00	82.96
Middle Schools	65.37	91.32	78.67
High Schools	65.19	100.00	77.24
County-Wide Schools	59.27	86.51	73.63
Other Facilities	75.26	80.54	77.90

Source: MGT of America, Inc., 2015.

Exhibit 8-4 presents the educational suitability score for each school. As the scores indicate, some schools have significant suitability deficiencies.

EXHIBIT 8-4
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
SUITABILITY SCORES – BY SITE

SITE NAME	SUITABILITY SCORE
Elementary Schools	
Annapolis ES	96.10
Arnold ES	100.00
Belle Grove ES	92.91
Belvedere ES	88.14
Benfield ES	100.00
Bodkin ES	76.85
Broadneck ES	73.52
Brock Bridge ES	62.39
Brooklyn Park ES	86.55
Cape St Claire ES	81.10
Central ES	75.91
Crofton ES	100.00
Crofton Meadows ES	78.91
Crofton Woods ES	78.84
Davidsonville ES	91.41
Deale ES	92.73
Eastport ES	55.73
Edgewater ES	66.81

EXHIBIT 8-4 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
SUITABILITY SCORES – BY SITE

SITE NAME	SUITABILITY SCORE
Elementary Schools	
Ferndale EEC	88.79
Folger McKinsey ES	95.24
Fort Smallwood ES	83.33
Four Seasons ES	86.34
Frank Hebron-Harman ES	89.52
Freetown ES	89.63
George Cromwell ES	100.00
Georgetown East ES	79.42
Germantown ES	90.03
Glen Burnie Park ES	53.45
Glendale ES	92.49
High Point ES	100.00
Hillsmere ES	61.85
Hilltop ES	58.27
Jacobsville ES	88.83
Jessup ES	100.00
Jones ES	85.07
Lake Shore ES	98.45
Linthicum ES	77.93
Lothian ES	100.00
Manor View ES	100.00
Marley ES	87.11
Maryland City ES	74.31
Mayo ES	91.40
Meade Heights ES	84.82
Millersville ES	71.09
Mills-Parole ES	100.00
Nantucket ES	89.96
North Glen ES	71.95
Oak Hill ES	78.66
Oakwood ES	77.99
Odenton ES	72.74
Overlook ES	93.27
Park ES	86.92
Pasadena ES	90.69
Pershing Hill ES	95.65
Piney Orchard ES	88.54
Point Pleasant ES	92.92
Quarterfield ES	62.33

EXHIBIT 8-4 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
SUITABILITY SCORES – BY SITE

SITE NAME	SUITABILITY SCORE
Elementary Schools	
Richard Henry Lee ES	58.49
Ridgeway ES	79.58
Rippling Woods ES	62.71
Riviera Beach ES	72.56
Rolling Knolls ES	100.00
Seven Oaks ES	91.37
Severn ES	71.87
Severna Park ES	85.73
Shady Side ES	65.27
Shipley's Choice ES	78.15
Solley ES	78.09
South Shore ES	80.48
Southgate ES	90.16
Sunset ES	74.53
Tracey's ES	95.76
Tyler Heights ES	56.34
Van Bokkelen ES	73.00
Waugh Chapel ES	77.33
West Annapolis ES	100.00
West Meade EEC	78.26
Windsor Farm ES	83.29
Woodside ES	74.30
ELEMENTARY SCHOOL AVERAGE	**82.96**
Middle Schools	
Annapolis MS	81.34
Arundel MS	82.93
Bates MS	67.75
Brooklyn Park MS	81.36
Central MS	76.50
Chesapeake Bay MS	71.69
Corkran MS	77.91
Crofton MS	75.91
George Fox MS	75.22
Lindale MS	88.52
MacArthur MS	78.30
Magothy River MS	75.97
Marley MS	91.32
Meade MS	86.14

EXHIBIT 8-4 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
SUITABILITY SCORES – BY SITE

SITE NAME	SUITABILITY SCORE
Middle Schools	
Old Mill MS North	65.37
Old Mill MS South	75.96
Severn River MS	75.33
Severna Park MS	90.38
Southern MS	76.78
MIDDLE SCHOOL AVERAGE	**78.67**
High Schools	
Annapolis HS	82.64
Arundel HS	69.99
Broadneck HS	73.05
Chesapeake HS	76.85
Glen Burnie HS	68.23
Meade HS	78.49
North County HS	70.82
Northeast HS	98.05
Old Mill HS	65.19
Severna Park HS	100.00
South River HS	71.91
Southern HS	71.67
HIGH SCHOOL AVERAGE	**77.24**
County-Wide Schools	
CAT-North	82.71
CAT-South	65.40
Carrie Weedon	N/A
Phoenix Academy	86.51
Ruth Parker Eason	76.53
Central Special	78.50
J Albert Adams Academy	66.50
Marley Glen SP	59.27
COUNTY-WIDE SCHOOLS AVERAGE	**73.63**

EXHIBIT 8-4 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
SUITABILITY SCORES – BY SITE

SITE NAME	SUITABILITY SCORE
Other Facilities	
Arlington Echo	80.54
Chesapeake Science Point Charter School	N/A
Monarch Academy Public Charter School	N/A
Monarch Global Academy Contract School	N/A
Studio 39	75.26
OTHER SCHOOL AVERAGE	**77.90**
DISTRICT AVERAGE	**81.07**

Source: MGT of America, Inc., 2015.

GROUNDS CONDITION ASSESSMENT

The grounds condition assessment score is a measure of the amount of capital needs or deferred maintenance at the site, which includes the driveways and walkways, the parking lots, the playfields, the utilities, and fencing, etc. The scores are interpreted as follows:

90+	**New or Like New:** The site and/or a majority of its systems are in good condition, less than three years old, and only require preventive maintenance.
80-89	**Good:** The site and/or a majority of its systems are in good condition and only require routine maintenance.
70-79	**Fair:** The site and/or some of its systems are in fair condition and require minor to moderate repair.
60-69	**Poor:** The site and/or a significant number of its systems are in poor condition and will require major repair or renovation.
BELOW 60	**Unsatisfactory:** The site and/or a majority of its systems should be renovated.

The grounds assessment scores were calculated in the same manner as the building condition scores. **Exhibit 8-5** presents the range of grounds assessment scores and the average grounds assessment scores by facility type. The grounds assessment scores averaged in the "Good" to "Fair" range.

EXHIBIT 8-5
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
GROUNDS ASSESSMENT SCORE RANGES

SITE TYPE	GROUNDS ASSESSMENT SCORE RANGE		AVERAGE GROUNDS SCORE
	LOW	HIGH	
Elementary Schools	63.04	100.00	89.57
Middle Schools	61.03	92.70	81.06
High Schools	69.71	100.00	83.52
County-Wide Schools	52.77	99.67	79.30
Other Facilities	80.39	86.27	83.33

Source: AACPS and MGT of America, Inc., 2015.

Exhibit 8-6 presents the grounds assessment score by each school site. Each school site receives a single grounds assessment score.

EXHIBIT 8-6
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
GROUNDS SCORES – BY SITE

SITE NAME	GROUNDS SCORE
Elementary Schools	
Annapolis ES	100.00
Arnold ES	100.00
Belle Grove ES	91.48
Belvedere ES	90.00
Benfield ES	100.00
Bodkin ES	86.02
Broadneck ES	86.97
Brock Bridge ES	89.34
Brooklyn Park ES	88.69
Cape St Claire ES	85.27
Central ES	92.48
Crofton ES	100.00
Crofton Meadows ES	92.14
Crofton Woods ES	82.58
Davidsonville ES	89.53
Deale ES	90.00
Eastport ES	90.00
Edgewater ES	85.49
Ferndale EEC	90.00
Folger McKinsey ES	99.51
Fort Smallwood ES	83.61
Four Seasons ES	80.49
Frank Hebron-Harman ES	90.00
Freetown ES	90.00
George Cromwell ES	100.00
Georgetown East ES	79.88
Germantown ES	98.31
Glen Burnie Park ES	90.00
Glendale ES	90.00
High Point ES	100.00
Hillsmere ES	84.39
Hilltop ES	89.34
Jacobsville ES	90.00
Jessup ES	100.00
Jones ES	90.00
Lake Shore ES	90.00

EXHIBIT 8-6 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
GROUNDS SCORES – BY SITE

SITE NAME	GROUNDS SCORE
Elementary Schools	
Linthicum ES	89.92
Lothian ES	100.00
Manor View ES	100.00
Marley ES	90.00
Maryland City ES	90.00
Mayo ES	90.00
Meade Heights ES	84.39
Millersville ES	90.00
Mills-Parole ES	100.00
Nantucket ES	90.00
North Glen ES	69.31
Oak Hill ES	88.69
Oakwood ES	90.00
Odenton ES	71.16
Overlook ES	90.00
Park ES	86.24
Pasadena ES	90.00
Pershing Hill ES	90.00
Piney Orchard ES	84.39
Point Pleasant ES	98.31
Quarterfield ES	79.66
Richard Henry Lee ES	85.37
Ridgeway ES	90.00
Rippling Woods ES	83.95
Riviera Beach ES	88.69
Rolling Knolls ES	100.00
Seven Oaks ES	90.00
Severn ES	90.00
Severna Park ES	90.78
Shady Side ES	63.04
Shipley's Choice ES	79.66
Solley ES	92.14
South Shore ES	89.10
Southgate ES	90.00
Sunset ES	84.93
Tracey's ES	90.00
Tyler Heights ES	87.22
Van Bokkelen ES	88.69
Waugh Chapel ES	88.69

EXHIBIT 8-6 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
GROUNDS SCORES – BY SITE

SITE NAME	GROUNDS SCORE
Elementary Schools	
West Annapolis ES	100.00
West Meade EEC	88.28
Windsor Farm ES	88.28
Woodside ES	90.00
ELEMENTARY SCHOOL AVERAGE	**89.57**
Middle Schools	
Annapolis MS	89.14
Arundel MS	67.18
Bates MS	75.09
Brooklyn Park MS	90.00
Central MS	88.16
Chesapeake Bay MS	71.43
Corkran MS	88.98
Crofton MS	87.19
George Fox MS	62.81
Lindale MS	87.25
MacArthur MS	92.70
Magothy River MS	88.98
Marley MS	90.00
Meade MS	76.03
Old Mill MS North	75.01
Old Mill MS South	61.03
Severn River MS	88.98
Severna Park MS	90.34
Southern MS	69.89
MIDDLE SCHOOL AVERAGE	**81.06**

EXHIBIT 8-6 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
GROUNDS SCORES – BY SITE

SITE NAME	GROUNDS SCORE
High Schools	
Annapolis HS	69.71
Arundel HS	77.27
Broadneck HS	69.96
Chesapeake HS	89.19
Glen Burnie HS	72.45
Meade HS	81.07
North County HS	89.55
Northeast HS	100.00
Old Mill HS	74.13
Severna Park HS	100.00
South River HS	89.48
Southern HS	89.40
HIGH SCHOOL AVERAGE	**83.52**
County-Wide Schools	
CAT-North	89.58
CAT-South	89.58
Carrie Weedon	63.91
Phoenix Academy	99.67
Ruth Parker Eason	89.39
Central Special	84.07
J Albert Adams Academy	65.44
Marley Glen SP	52.77
COUNTY-WIDE SCHOOLS AVERAGE	**79.30**
Other Facilities	
Arlington Echo	86.27
Chesapeake Science Point Charter School	N/A
Monarch Academy Public Charter School	N/A
Monarch Global Academy Contract School	N/A
Studio 39	80.39
OTHER FACILITIES AVERAGE	**83.33**
DISTRICT AVERAGE	**86.83**

Source: AACPS and MGT of America, Inc., 2015.

TECHNOLOGY READINESS

The BASYS® technology readiness score measures the capability of the existing infrastructure to support information technology and associated equipment. The score can be interpreted as follows:

90+	**Excellent:** The facility has excellent infrastructure to support information technology.
80-89	**Good:** The facility has the infrastructure to support information technology.
70-79	**Fair:** The facility is lacking in some infrastructure to support information technology.
60-69	**Poor:** The facility is lacking significant infrastructure to support information technology.
BELOW 60	**Unsatisfactory:** The facility has little or no infrastructure to support information technology.

Exhibit 8-7 presents the range of technology scores and the average technology scores by facility type. Technology readiness scores vary from 48 to 100, with the averages in the "Fair" to "Unsatisfactory" range.

EXHIBIT 8-7
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
TECHNOLOGY SCORE RANGES

SITE TYPE	TECHNOLOGY READINESS SCORE RANGE		AVERAGE TECHNOLOGY SCORE
	Low	High	
Elementary Schools	47.60	100.00	75.00
Middle Schools	57.60	96.70	71.25
High Schools	60.90	100.00	73.18
County-Wide Schools	47.60	85.90	66.27
Other Facilities	50.10	67.60	58.85

Source: MGT of America, Inc., 2015.

Exhibit 8-8 presents the technology readiness score for each school site.

EXHIBIT 8-8
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
TECHNOLOGY SCORES – BY SITE

SITE NAME	TECHNOLOGY SCORE
Elementary Schools	
Annapolis ES	96.70
Arnold ES	100.00
Belle Grove ES	96.70
Belvedere ES	60.10
Benfield ES	100.00
Bodkin ES	55.10
Broadneck ES	60.10
Brock Bridge ES	52.60
Brooklyn Park ES	73.40
Cape St Claire ES	60.10
Central ES	68.40
Crofton ES	100.00
Crofton Meadows ES	70.90
Crofton Woods ES	68.40
Davidsonville ES	85.90
Deale ES	60.10
Eastport ES	52.60
Edgewater ES	50.10
Ferndale EEC	72.60
Folger McKinsey ES	96.70
Fort Smallwood ES	70.10
Four Seasons ES	77.60
Frank Hebron-Harman ES	90.90
Freetown ES	96.70
George Cromwell ES	100.00
Georgetown East ES	68.40
Germantown ES	93.40
Glen Burnie Park ES	73.40
Glendale ES	60.10
High Point ES	100.00
Hillsmere ES	54.25
Hilltop ES	70.90
Jacobsville ES	78.40
Jessup ES	100.00
Jones ES	85.90
Lake Shore ES	96.70
Linthicum ES	55.10

EXHIBIT 8-8 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
TECHNOLOGY SCORES – BY SITE

SITE NAME	TECHNOLOGY SCORE
Elementary Schools	
Lothian ES	100.00
Manor View ES	100.00
Marley ES	93.40
Maryland City ES	62.60
Mayo ES	77.60
Meade Heights ES	57.60
Millersville ES	60.90
Mills-Parole ES	100.00
Nantucket ES	96.70
North Glen ES	68.40
Oak Hill ES	80.90
Oakwood ES	50.10
Odenton ES	63.40
Overlook ES	80.10
Park ES	78.40
Pasadena ES	90.90
Pershing Hill ES	83.40
Piney Orchard ES	86.70
Point Pleasant ES	83.40
Quarterfield ES	60.90
Richard Henry Lee ES	47.60
Ridgeway ES	85.90
Rippling Woods ES	50.10
Riviera Beach ES	50.10
Rolling Knolls ES	100.00
Seven Oaks ES	80.10
Severn ES	65.10
Severna Park ES	73.40
Shady Side ES	55.10
Shipley's Choice ES	73.40
Solley ES	65.10
South Shore ES	80.90
Southgate ES	83.40
Sunset ES	55.10
Tracey's ES	90.90
Tyler Heights ES	50.10
Van Bokkelen ES	52.60
Waugh Chapel ES	55.10
West Annapolis ES	100.00

EXHIBIT 8-8 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
TECHNOLOGY SCORES – BY SITE

SITE NAME	TECHNOLOGY SCORE
Elementary Schools	
West Meade EEC	62.60
Windsor Farm ES	55.10
Woodside ES	65.90
ELEMENTARY SCHOOL AVERAGE	**75.00**
Middle Schools	
Annapolis MS	65.90
Arundel MS	65.90
Bates MS	63.40
Brooklyn Park MS	78.40
Central MS	70.90
Chesapeake Bay MS	68.40
Corkran MS	68.40
Crofton MS	73.40
George Fox MS	65.90
Lindale MS	57.60
MacArthur MS	65.90
Magothy River MS	65.10
Marley MS	83.40
Meade MS	73.40
Old Mill MS North	73.40
Old Mill MS South	70.90
Severn River MS	80.90
Severna Park MS	96.70
Southern MS	65.90
MIDDLE SCHOOL AVERAGE	**71.25**

EXHIBIT 5-8 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
TECHNOLOGY SCORES – BY SITE

SITE NAME	TECHNOLOGY SCORE
High Schools	
Annapolis HS	65.90
Arundel HS	65.90
Broadneck HS	70.90
Chesapeake HS	73.40
Glen Burnie HS	60.90
Meade HS	63.40
North County HS	73.40
Northeast HS	96.70
Old Mill HS	70.90
Severna Park HS	100.00
South River HS	70.90
Southern HS	65.90
HIGH SCHOOL AVERAGE	**73.18**
County-Wide Schools	
CAT-North	68.40
CAT-South	73.40
Carrie Weedon	N/A
Phoenix Academy	83.40
Ruth Parker Eason	47.60
Central Special	55.10
J Albert Adams Academy	85.90
Marley Glen SP	50.10
COUNTY-WIDE SCHOOLS AVERAGE	**66.27**
Other Facilities	
Arlington Echo	50.10
Chesapeake Science Point Charter School	N/A
Monarch Academy Public Charter School	N/A
Monarch Global Academy Contract School	N/A
Studio 39	67.60
OTHER FACILITIES AVERAGE	**58.85**
DISTRICT AVERAGE	**73.44**

Source: MGT of America, Inc., 2015.

COMBINED SCORES

The building condition, educational suitability, grounds condition, and technology readiness scores are combined into one score for each school to assist in the task of prioritizing projects. Since the building condition score is a measure of the maintenance needs (e.g. leaky roofs, etc.) and the educational suitability score is a measure of how well the building design and configuration supports the educational program, it is possible to have a high score for one assessment and a low score for another assessment. It is the combined score that attempts to give a comprehensive picture of the conditions that exist at each school and how each school compares relative to the other schools in the district.

To create the combined score, the four scores are weighted, based on which deficiencies the district wants to emphasize and the relative impact on capital costs. For Anne Arundel County Public Schools, the building condition score was weighted 55 percent, the educational suitability score was weighted 35 percent, the grounds condition score was weighted 5 percent, and the technology readiness score was weighted 5 percent. **Exhibit 8-9** presents the range of the combined scores and the average combined scores by facility type. The combined scores vary from 63 to 100, with the averages in the "Good" to "Fair" range.

Exhibit 8-10 presents all the scores for each facility and the resulting combined score using this weighting formula.

EXHIBIT 8-9
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
COMBINED SCORE RANGES

SITE TYPE	COMBINED SCORES RANGE		AVERAGE TECHNOLOGY SCORE **Average**
	Min	Max	
ES	62.59	100.00	84.20
MS	65.51	94.10	79.14
HS	63.10	100.00	80.35
County-Wide Schools	70.15	90.32	78.47
Other	75.20	78.93	77.06

EXHIBIT 8-10
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SCORES	DESCRIPTION
> 90	Excellent/Like New
80 - 89.99	Good
70 - 79.99	Fair
60 - 69.99	Poor
< 59.99	Unsatisfactory

EXHIBIT 8-10 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE*	SUITABILITY SCORE	GROUNDS CONDITION SCORE	TECH READINESS SCORE	COMBINED SCORE 55/35/5/5
Elementary Schools					
Annapolis ES	93.69	96.10	100.00	96.70	95.00
Arnold ES	100.00	100.00	100.00	100.00	100.00
Belle Grove ES	93.20	92.91	91.48	96.70	93.19
Belvedere ES	81.69	88.14	90.00	60.10	83.28
Benfield ES	100.00	100.00	100.00	100.00	100.00
Bodkin ES	84.17	76.85	86.02	55.10	80.25
Broadneck ES	82.55	73.52	86.97	60.10	78.49
Brock Bridge ES	76.26	62.39	89.34	52.60	70.88
Brooklyn Park ES	79.62	86.55	88.69	73.40	82.19
Cape St Claire ES	90.31	81.10	85.27	60.10	85.32
Central ES	78.32	75.91	92.48	68.40	77.69
Crofton ES	100.00	100.00	100.00	100.00	100.00
Crofton Meadows ES	84.61	78.91	92.14	70.90	82.30
Crofton Woods ES	74.36	78.84	82.58	68.40	76.04
Davidsonville ES	85.85	91.41	89.53	85.90	87.98
Deale ES	88.08	92.73	90.00	60.10	88.41
Eastport ES	84.54	55.73	90.00	52.60	73.13
Edgewater ES	58.97	66.81	85.49	50.10	62.59
Ferndale EEC	87.82	88.79	90.00	72.60	87.51
Folger McKinsey ES	99.77	95.24	99.51	96.70	98.02
Fort Smallwood ES	79.15	83.33	83.61	70.10	80.39
Four Seasons ES	83.52	86.34	80.49	77.60	84.06
Frank Hebron-Harman ES	88.15	89.52	90.00	90.90	88.86
Freetown ES	88.15	89.63	90.00	96.70	89.19
George Cromwell ES	100.00	100.00	100.00	100.00	100.00
Georgetown East ES	83.88	79.42	79.88	68.40	81.34
Germantown ES	97.94	90.03	98.31	93.40	94.96
Glen Burnie Park ES	85.80	53.45	90.00	73.40	74.07
Glendale ES	85.18	92.49	90.00	60.10	86.72
High Point ES	100.00	100.00	100.00	100.00	100.00
Hillsmere ES	66.20	61.85	84.39	54.25	64.99
Hilltop ES	78.37	58.27	89.34	70.90	71.51
Jacobsville ES	88.24	88.83	90.00	78.40	88.04
Jessup ES	100.00	100.00	100.00	100.00	100.00
Jones ES	85.06	85.07	90.00	85.90	85.35
Lake Shore ES	90.00	98.45	90.00	96.70	93.29

EXHIBIT 8-10 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE*	SUITABILITY SCORE	GROUNDS CONDITION SCORE	TECH READINESS SCORE	COMBINED SCORE 55/35/5/5
Elementary Schools					
Linthicum ES	83.88	77.93	89.92	55.10	80.66
Lothian ES	100.00	100.00	100.00	100.00	100.00
Manor View ES	100.00	100.00	100.00	100.00	100.00
Marley ES	86.30	87.11	90.00	93.40	87.13
Maryland City ES	69.05	74.31	90.00	62.60	71.62
Mayo ES	87.57	91.40	90.00	77.60	88.53
Meade Heights ES	84.76	84.82	84.39	57.60	83.40
Millersville ES	75.41	71.09	90.00	60.90	73.90
Mills-Parole ES	100.00	100.00	100.00	100.00	100.00
Nantucket ES	88.21	89.96	90.00	96.70	89.34
North Glen ES	85.57	71.95	69.31	68.40	79.13
Oak Hill ES	82.98	78.66	88.69	80.90	81.65
Oakwood ES	84.19	77.99	90.00	50.10	80.61
Odenton ES	87.05	72.74	71.16	63.40	80.06
Overlook ES	91.45	93.27	90.00	80.10	91.45
Park ES	84.32	86.92	86.24	78.40	85.03
Pasadena ES	89.08	90.69	90.00	90.90	89.78
Pershing Hill ES	91.23	95.65	90.00	83.40	92.32
Piney Orchard ES	88.36	88.54	84.39	86.70	88.14
Point Pleasant ES	97.51	92.92	98.31	83.40	95.24
Quarterfield ES	64.37	62.33	79.66	60.90	64.25
Richard Henry Lee ES	67.16	58.49	85.37	47.60	64.06
Ridgeway ES	83.41	79.58	90.00	85.90	82.52
Rippling Woods ES	68.34	62.71	83.95	50.10	66.24
Riviera Beach ES	82.15	72.56	88.69	50.10	77.52
Rolling Knolls ES	100.00	100.00	100.00	100.00	100.00
Seven Oaks ES	88.15	91.37	90.00	80.10	88.97
Severn ES	80.26	71.87	90.00	65.10	77.05
Severna Park ES	77.91	85.73	90.78	73.40	81.07
Shady Side ES	75.84	65.27	63.04	55.10	70.46
Shipley's Choice ES	83.68	78.15	79.66	73.40	81.03
Solley ES	84.52	78.09	92.14	65.10	81.68
South Shore ES	84.59	80.48	89.10	80.90	83.19
Southgate ES	90.00	90.16	90.00	83.40	89.73
Sunset ES	80.74	74.53	84.93	55.10	77.50
Tracey's ES	88.91	95.76	90.00	90.90	91.46

EXHIBIT 8-10 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE*	SUITABILITY SCORE	GROUNDS CONDITION SCORE	TECH READINESS SCORE	COMBINED SCORE 55/35/5/5
Elementary Schools					
Tyler Heights ES	66.77	56.34	87.22	50.10	63.31
Van Bokkelen ES	82.20	73.00	88.69	52.60	77.82
Waugh Chapel ES	86.56	77.33	88.69	55.10	81.86
West Annapolis ES	100.00	100.00	100.00	100.00	100.00
West Meade EEC	67.89	78.26	88.28	62.60	72.27
Windsor Farm ES	86.17	83.29	88.28	55.10	83.71
Woodside ES	70.91	74.30	90.00	65.90	72.80
ELEMENTARY SCHOOL AVERAGE	**85.33**	**82.96**	**89.57**	**75.00**	**84.20**
Middle Schools					
Annapolis MS	70.66	81.34	89.14	65.90	75.08
Arundel MS	83.87	82.93	67.18	65.90	81.81
Bates MS	68.18	67.75	75.09	63.40	68.14
Brooklyn Park MS	84.80	81.36	90.00	78.40	83.54
Central MS	79.52	76.50	88.16	70.90	78.46
Chesapeake Bay MS	79.24	71.69	71.43	68.40	75.67
Corkran MS	80.90	77.91	88.98	68.40	79.63
Crofton MS	81.36	75.91	87.19	73.40	79.35
George Fox MS	83.44	75.22	62.81	65.90	78.66
Lindale MS	78.76	88.52	87.25	57.60	81.54
MacArthur MS	87.90	78.30	92.70	65.90	83.68
Magothy River MS	78.48	75.97	88.98	65.10	77.46
Marley MS	88.06	91.32	90.00	83.40	89.07
Meade MS	84.77	86.14	76.03	73.40	84.24
Old Mill MS North	64.02	65.37	75.01	73.40	65.51
Old Mill MS South	64.02	75.96	61.03	70.90	68.40
Severn River MS	80.84	75.33	88.98	80.90	79.32
Severna Park MS	96.58	90.38	90.34	96.70	94.10
Southern MS	84.20	76.78	69.89	65.90	79.97
MIDDLE SCHOOL AVERAGE	**79.98**	**78.67**	**81.06**	**71.25**	**79.14**

EXHIBIT 8-10 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
COMBINED SCORES – BY SITE

SITE NAME	WEIGHTED BUILDING CONDITION SCORE*	SUITABILITY SCORE	GROUNDS CONDITION SCORE	TECH READINESS SCORE	COMBINED SCORE 55/35/5/5
High Schools					
Annapolis HS	86.03	82.64	69.71	65.90	83.02
Arundel HS	84.34	69.99	77.27	65.90	78.04
Broadneck HS	85.28	73.05	69.96	70.90	79.51
Chesapeake HS	83.62	76.85	89.19	73.40	81.02
Glen Burnie HS	77.69	68.23	72.45	60.90	73.28
Meade HS	83.25	78.49	81.07	63.40	80.48
North County HS	83.45	70.82	89.55	73.40	78.83
Northeast HS	92.95	98.05	100.00	96.70	95.27
Old Mill HS	60.07	65.19	74.13	70.90	63.10
Severna Park HS	100.00	100.00	100.00	100.00	100.00
South River HS	76.18	71.91	89.48	70.90	75.08
Southern HS	79.45	71.67	89.40	65.90	76.55
HIGH SCHOOL AVERAGE	**82.69**	**77.24**	**83.52**	**73.18**	**80.35**
County-Side Schools					
CAT-North	83.71	82.71	89.58	68.40	82.89
CAT-South	82.99	65.40	89.58	73.40	76.68
Carrie Weedon	63.95	N/A	63.91	N/A	N/A
Phoenix Academy	92.52	86.51	99.67	83.40	90.32
Ruth Parker Eason	84.42	76.53	89.39	47.60	80.07
Central Special	78.87	78.50	84.07	55.10	77.81
J Albert Adams Academy	73.75	66.50	65.44	85.90	71.41
Marley Glen SP	80.47	59.27	52.77	50.10	70.15
COUNTY-WIDE SCHOOLSAVERAGE	**80.09**	**73.63**	**79.30**	**66.27**	**78.47**
Other Facilities					
Arlington Echo	79.85	80.54	86.27	50.10	78.93
Chesapeake Science Point Charter School	N/A	N/A	N/A	N/A	N/A
Monarch Academy Public Charter School	N/A	N/A	N/A	N/A	N/A
Monarch Global Academy Contract School	N/A	N/A	N/A	N/A	N/A
Studio 39	75.38	75.26	80.39	67.60	75.20
OTHER FACILITIES AVERAGE	**77.61**	**77.90**	**83.33**	**58.85**	**77.06**
DISTRICT AVERAGE	**83.74**	**81.07**	**86.83**	**73.44**	**82.54**

Source: MGT of America, Inc., 2015.
*Excludes portables

FINDINGS

Overall, AACPS's facilities are in good condition. The district's capital improvement program has been effective in addressing many, but not all, of its facility needs. Unfortunately, facilities continually age and develop new deficiencies on an on-going basis. In addition, educational programs change to meet the needs of students in a changing society and put new requirements on the school buildings. AACPS must continue an aggressive capital improvement program to maintain the educational facilities necessary to provide a 21st century educational program.

The facility assessments provide the data to prioritize projects based on the overall facility needs of the district. This data combined with the capacity and utilization analysis, the educational goals and programs, capital improvement budgets, and the district's school size goals, will be used to make specific recommendations in **Section 10.0**.

9.0 CAPACITY & UTILIZATION

This section examines and compares the capacity and utilization rates of Anne Arundel County Public Schools facilities as calculated over the ten year master plan.

CAPACITY

The capacity of each school is determined using the state rated capacity (SRC) formula of the Maryland State Department of Education. The SRC is defined as;

> *"Maximum number of students that reasonably can be accommodated in a facility without significantly hampering delivery of the educational program."*[1]

The SRC formula assigns a capacity, or number of students to each type of classroom, for instance, a kindergarten room is assigned 22 students, while a grade 1-3 classroom is assigned 23. The number of classrooms for each grade is multiplied by the approved capacity for that grade. The resulting products are added to determine the capacity. This capacity is the SRC for elementary schools. In the case of secondary schools, the capacity is multiplied by 85% per state guidelines, to account for class scheduling in determining the SRC.

Exhibit 9-1 lists the SRC's of the schools in AACPS. The exhibit shows both the 2014 SRC and the 2024 SRC. In most cases the SRC does not change, however some schools which are already scheduled and funded for additions or expansions will show an increase in the SRC from 2014 to 2024.

[1] Source: Public Schools Construction Program Administrative Procedures Guide.

EXHIBIT 9-1
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
STATE-RATED CAPACITIES

SCHOOLS	2014 SRC	2024 SRC
Elementary Schools		
Annapolis ES	314	314
Arnold ES	456	565
Belle Grove ES	304	304
Belvedere ES	526	526
Benfield ES	552	552
Bodkin ES	663	663
Broadneck ES	717	717
Brock Bridge ES	609	609
Brooklyn Park ES	546	546
Cape St Claire ES	800	800
Central ES	678	678
Crofton ES	656	656
Crofton Meadows ES	613	613
Crofton Woods ES	639	639
Davidsonville ES	695	695
Deale ES	342	342
Eastport ES	281	339
Edgewater ES	455	455
Ferndale EEC	158	158
Folger McKinsey ES	640	640
Fort Smallwood ES	533	533
Four Seasons ES	680	680
Frank Hebron-Harman ES	796	796
Freetown ES	539	539
George Cromwell ES	322	451
Georgetown East ES	537	669
Germantown ES	718	718
Glen Burnie Park ES	495	495
Glendale ES	569	569
High Point ES	574	747
Hillsmere ES	509	509
Hilltop ES	676	676
Jacobsville ES	692	692

EXHIBIT 9-1 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
STATE RATED CAPACITIES

SCHOOLS	2014 SRC	2024 SRC
Elementary Schools		
Jessup ES	435	598
Jones ES	363	363
Lake Shore ES	342	342
Linthicum ES	489	489
Lothian ES	552	552
Manor View ES	529	454
Marley ES	687	687
Maryland City ES	392	392
Mayo ES	388	388
Meade Heights ES	517	517
Millersville ES	430	430
Mills-Parole ES	673	673
Nantucket ES	772	772
North Glen ES	280	280
Oak Hill ES	692	692
Oakwood ES	395	395
Odenton ES	444	444
Overlook ES	319	319
Park ES	493	493
Pasadena ES	408	408
Pershing Hill ES	710	710
Piney Orchard ES	684	684
Point Pleasant ES	666	666
Quarterfield ES	441	441
Richard Henry Lee ES	479	479
Ridgeway ES	636	636
Rippling Woods ES	622	622
Riviera Beach ES	329	329
Rolling Knolls ES	598	598
Seven Oaks ES	655	655
Severn ES	499	499
Severna Park ES	434	434
Shady Side ES	476	476
Shipley's Choice ES	421	421

EXHIBIT 9-1 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
STATE RATED CAPACITIES

SCHOOLS	2014 SRC	2024 SRC
Elementary Schools		
Solley ES	635	635
South Shore ES	365	365
Southgate ES	659	659
Sunset ES	519	519
Tracey's ES	397	397
Tyler Heights ES	442	442
Van Bokkelen ES	585	585
Waugh Chapel ES	565	565
West Annapolis ES	274	314
West Meade EEC	292	292
Windsor Farm ES	639	639
Woodside ES	336	336
ELEMENTARY TOTAL	**41,242**	**41,971**
Middle Schools		
Annapolis MS	1,495	1,495
Arundel MS	1,071	1,071
Bates MS	1,030	1,030
Brooklyn Park MS	1,020	1,020
Central MS	1,295	1,295
Chesapeake Bay MS	2,058	2,058
Corkran MS	1,030	1,030
Crofton MS	1,274	1,274
George Fox MS	1,051	1,051
Lindale MS	1,228	1,228
MacArthur MS	1,388	1,388
Magothy River MS	1,050	1,050
Marley MS	1,253	1,253
Meade MS	1,009	1,009
Old Mill MS North	1,060	1,060
Old Mill MS South	1,072	1,072
Severn River MS	1,041	1,041
Severna Park MS	1,478	1,478
Southern MS	1,091	1,091
MIDDLE SCHOOL TOTAL	**22,994**	**22,994**

EXHIBIT 9-1 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
STATE RATED CAPACITIES

SCHOOLS	2014 SRC	2024 SRC
High Schools		
Annapolis HS	1,888	1,888
Arundel HS	2,039	2,039
Broadneck HS	2,209	2,209
Chesapeake HS	2,088	2,088
Glen Burnie HS	2,269	2,269
Meade HS	2,208	2,208
North County HS	2,314	2,314
Northeast HS	1,621	1,621
Old Mill HS	2,440	2,440
Severna Park HS	2,141	2,141
South River HS	2,230	2,230
Southern HS	1,441	1,441
HIGH SCHOOL TOTAL	**24,888**	**24,888**
PK-12 TOTAL	**89,124**	**89,853**
County-wide Schools		
CAT-North	625	625
CAT-South	700	700
Carrie Weedon	N/A	N/A
Phoenix Academy	279	279
Ruth Parker Eason	200	200
Central Special	170	170
J Albert Adams Academy	150	255
Marley Glen SP	130	130
COUNTY-WIDE SCHOOL TOTAL	**2,254**	**2,359**
Other		
Arlington Echo	N/A	N/A
Chesapeake Science Point Charter School	553	553
Monarch Academy Public Charter School	618	618
Monarch Global Academy Contract School	757	757
Studio 39	N/A	N/A
OTHER FACILITIES TOTAL	**1,928**	**1,928**
DISTRICT TOTAL	**93,306**	**94,140**

SOURCE: AACPS, 2015.

UTILIZATION RATES

The effective management of school facilities requires a school's capacity and enrollment to be aligned. When capacity exceeds enrollment (underutilization), operational costs are higher than necessary and facilities may need to be repurposed or the facilities may need to be removed from inventory. When enrollment exceeds capacity (overutilization), the school may be overcrowded and may require capital expenditures or redistricting (adjustment to attendance boundaries) to alleviate the crowding.

Exhibit 9-2 shows the corresponding utilization rates calculated using the *Maryland State Department of Education (MDSE) State Rated Capacity Model (SRC)* and the current and projected FTE at each school. It should be noted that the FTE counts used in these calculations may not always agree with the student counts shown in the enrollment projections. The utilization calculation uses FTE's while the enrollment projections use number of students.

EXHIBIT 9-2[2]
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT AND PROJECTED UTILIZATION RATES

UTILIZATION	DESCRIPTION
> 110	Inadequate
101 - 110	Approaching Inadequate
85 - 100.9	Adequate
75 - 84.99	Approaching Inefficient
< 74.99	Inefficient

SCHOOLS	2014 SRC	2014-15 FTE	2024 SRC	2024-25 PROJECTED FTE	2014-15 CURRENT UTILIZATION	2024-25 PROJECTED UTILIZATION
Elementary Schools						
Annapolis ES	314	259	314	291	82%	93%
Arnold ES	456	408	565	399	89%	71%
Belle Grove ES	304	261	304	265	86%	87%
Belvedere ES	526	463	526	471	88%	90%
Benfield ES	552	460	552	400	83%	72%
Bodkin ES	663	588	663	501	89%	76%
Broadneck ES	717	772	717	743	108%	104%
Brock Bridge ES	609	427	609	376	70%	62%
Brooklyn Park ES	546	382	546	352	70%	64%
Cape St Claire ES	800	646	800	665	81%	83%
Central ES	678	656	678	665	97%	98%
Crofton ES	656	569	656	744	87%	113%

[2] Utilization percentages are rounded, they may appear higher or lower than actual.

EXHIBIT 9-2 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT AND PROJECTED UTILIZATION RATES

SCHOOLS	2014 SRC	2014-15 FTE	2024 SRC	2024-25 PROJECTED FTE	2014-15 CURRENT UTILIZATION	2024-25 PROJECTED UTILIZATION
Elementary Schools						
Crofton Meadows ES	613	589	613	557	96%	91%
Crofton Woods ES	639	655	639	627	103%	98%
Davidsonville ES	695	680	695	605	98%	87%
Deale ES	342	283	342	259	83%	76%
Eastport ES	281	273	339	263	97%	78%
Edgewater ES	455	525	455	501	115%	110%
Ferndale EEC	158	137	158	137	87%	87%
Folger McKinsey ES	640	603	640	538	94%	84%
Fort Smallwood ES	533	407	533	405	76%	76%
Four Seasons ES	680	565	680	590	83%	87%
Frank Hebron-Harman ES	796	760	796	828	95%	104%
Freetown ES	539	456	539	514	85%	95%
George Cromwell ES	322	309	451	313	96%	69%
Georgetown East ES	537	365	669	391	68%	58%
Germantown ES	718	749	718	849	104%	118%
Glen Burnie Park ES	495	503	495	501	102%	101%
Glendale ES	569	388	569	399	68%	70%
High Point ES	574	652	747	654	114%	88%
Hillsmere ES	509	541	509	543	106%	107%
Hilltop ES	676	699	676	709	103%	105%
Jacobsville ES	692	536	692	532	77%	77%
Jessup ES	435	451	598	550	104%	92%
Jones ES	363	276	363	271	76%	75%
Lake Shore ES	342	308	342	264	90%	77%
Linthicum ES	489	468	489	470	96%	96%
Lothian ES	552	412	552	402	75%	73%
Manor View ES	529	304	454	319	57%	70%
Marley ES	687	694	687	918	101%	134%
Maryland City ES	392	356	392	446	91%	114%
Mayo ES	388	317	388	283	82%	73%
Meade Heights ES	517	324	517	396	63%	77%
Millersville ES	430	374	430	423	87%	98%
Mills-Parole ES	673	618	673	654	92%	97%
Nantucket ES	772	746	772	713	97%	92%
North Glen ES	280	247	280	283	88%	101%

EXHIBIT 9-2 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT AND PROJECTED UTILIZATION RATES

SCHOOLS	2014 SRC	2014-15 FTE	2024 SRC	2024-25 PROJECTED FTE	2014-15 CURRENT UTILIZATION	2024-25 PROJECTED UTILIZATION
Elementary Schools						
Oak Hill ES	692	631	692	567	91%	82%
Oakwood ES	395	287	395	310	73%	78%
Odenton ES	444	411	444	508	93%	114%
Overlook ES	319	280	319	279	88%	87%
Park ES	493	468	493	494	95%	100%
Pasadena ES	408	342	408	332	84%	81%
Pershing Hill ES	710	616	710	746	87%	105%
Piney Orchard ES	684	675	684	635	99%	93%
Point Pleasant ES	666	527	666	527	79%	79%
Quarterfield ES	441	396	441	389	90%	88%
Richard Henry Lee ES	479	533	479	525	111%	110%
Ridgeway ES	636	601	636	599	94%	94%
Rippling Woods ES	622	649	622	700	104%	113%
Riviera Beach ES	329	293	329	315	89%	96%
Rolling Knolls ES	598	424	598	472	71%	79%
Seven Oaks ES	655	704	655	704	107%	107%
Severn ES	499	410	499	425	82%	85%
Severna Park ES	434	387	434	338	89%	78%
Shady Side ES	476	463	476	462	97%	97%
Shipley's Choice ES	421	354	421	320	84%	76%
Solley ES	635	720	635	763	113%	120%
South Shore ES	365	316	365	314	87%	86%
Southgate ES	659	696	659	706	106%	107%
Sunset ES	519	485	519	486	93%	94%
Tracey's ES	397	382	397	356	96%	90%
Tyler Heights ES	442	602	442	647	136%	146%
Van Bokkelen ES	585	468	585	497	80%	85%
Waugh Chapel ES	565	570	565	566	101%	100%
West Annapolis ES	274	181	314	283	66%	90%
West Meade EEC	292	263	292	260	90%	89%
Windsor Farm ES	639	608	639	538	95%	84%
Woodside ES	336	325	336	329	97%	98%
ELEMENTARY TOTAL	**41,242**	**37,528**	**41,971**	**38,371**	**91%**	**91%**

EXHIBIT 9-2 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT AND PROJECTED UTILIZATION RATES

SCHOOLS	2014 SRC	2014-15 FTE	2024 SRC	2024-25 PROJECTED FTE	2014-15 CURRENT UTILIZATION	2024-25 PROJECTED UTILIZATION
Middle Schools						
Annapolis MS	1,495	706	1,495	902	47%	60%
Arundel MS	1,071	941	1,071	1,102	88%	103%
Bates MS	1,030	850	1,030	1,126	83%	109%
Brooklyn Park MS	1,020	742	1,020	731	73%	72%
Central MS	1,295	1,056	1,295	1,147	82%	89%
Chesapeake Bay MS	2,058	1,048	2,058	1,010	51%	49%
Corkran MS	1,030	588	1,030	714	57%	69%
Crofton MS	1,274	1,104	1,274	1,250	87%	98%
George Fox MS	1,051	930	1,051	1,040	88%	99%
Lindale MS	1,228	896	1,228	1,160	73%	94%
MacArthur MS	1,388	1,025	1,388	1,472	74%	106%
Magothy River MS	1,050	731	1,050	703	70%	67%
Marley MS	1,253	758	1,253	1,101	60%	88%
Meade MS	1,009	678	1,009	660	67%	65%
Old Mill MS North	1,060	921	1,060	883	87%	83%
Old Mill MS South	1,072	762	1,072	932	71%	87%
Severn River MS	1,041	778	1,041	731	75%	70%
Severna Park MS	1,478	1,442	1,478	1,184	98%	80%
Southern MS	1,091	764	1,091	720	70%	66%
MIDDLE SCHOOL TOTAL	**22,994**	**16,720**	**22,994**	**18,568**	**73%**	**81%**
High Schools						
Annapolis HS	1,888	1,813	1,888	2,399	96%	127%
Arundel HS	2,039	2,021	2,039	2,469	99%	121%
Broadneck HS	2,209	2,104	2,209	2,061	95%	93%
Chesapeake HS	2,088	1,434	2,088	1,525	69%	73%
Glen Burnie HS	2,269	1,931	2,269	2,555	85%	113%
Meade HS	2,208	2,070	2,208	2,838	94%	129%
North County HS	2,314	2,013	2,314	2,717	87%	117%
Northeast HS	1,621	1,335	1,621	1,557	82%	96%
Old Mill HS	2,440	2,105	2,440	2,660	86%	109%
Severna Park HS	2,141	1,872	2,141	1,788	87%	84%
South River HS	2,230	2,210	2,230	2,641	99%	118%
Southern HS	1,441	1,071	1,441	1,065	74%	74%
HIGH SCHOOL TOTAL	**24,888**	**21,979**	**24,888**	**26,275**	**88%**	**106%**

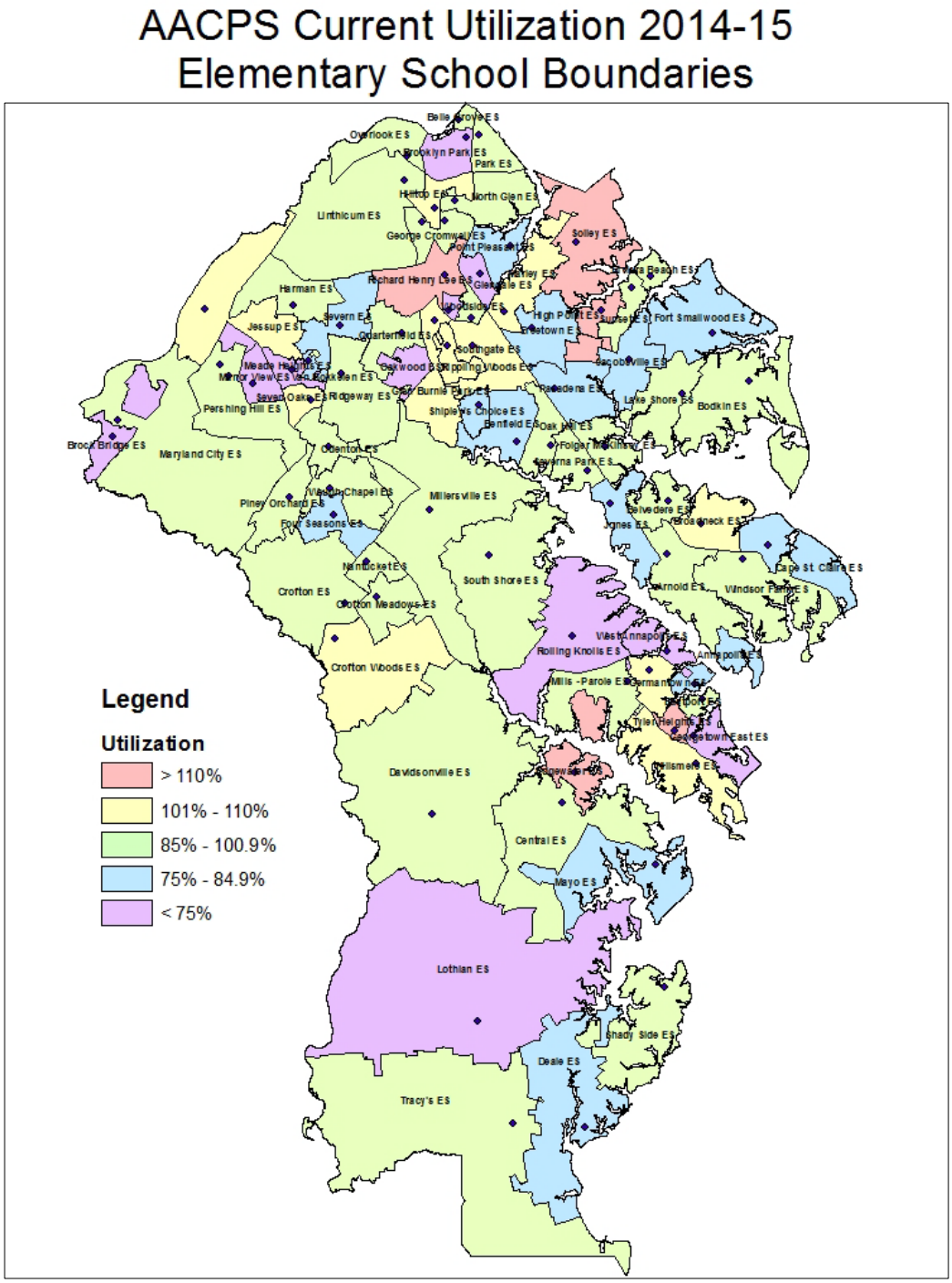
EXHIBIT 9-2 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT AND PROJECTED UTILIZATION RATES

SCHOOLS	2014 SRC	2014-15 FTE	2024 SRC	2024-25 PROJECTED FTE	2014-15 CURRENT UTILIZATION	2024-25 PROJECTED UTILIZATION
PK-12 TOTAL	**89,124**	**76,227**	**89,902**	**83,214**	**86%**	**93%**
County-wide Schools						
CAT-North	625	N/A	625	N/A	N/A	N/A
CAT-South	700	N/A	700	N/A	N/A	N/A
Carrie Weedon	N/A	N/A	N/A	N/A	N/A	N/A
Phoenix Academy	279	357	279	362	128%	130%
Ruth Parker Eason	200	106	200	106	53%	53%
Central Special	170	130	170	130	76%	76%
J Albert Adams Academy	150	63	255	180	42%	71%
Marley Glen SP	130	77	130	77	59%	59%
COUNTY-WIDE SCHOOL TOTAL	**2,254**	**733**	**2,359**	**855**	**33%**	**36%**
Other						
Arlington Echo	N/A	N/A	N/A	N/A	N/A	N/A
Chesapeake Science Point Charter School	553	462	553	463	84%	84%
Monarch Academy Public Charter School	618	676	618	652	109%	106%
Monarch Global Academy Contract School	757	527	757	825	70%	109%
Studio 39	N/A	N/A	N/A	N/A	N/A	N/A
OTHER FACILITIES TOTAL	**1,928**	**1,665**	**1,928**	**1,940**	**86%**	**101%**
DISTRICT TOTAL	**93,306**	**78,625**	**94,140**	**86,009**	**84%**	**91%**

SOURCE: AACPS, 2015.

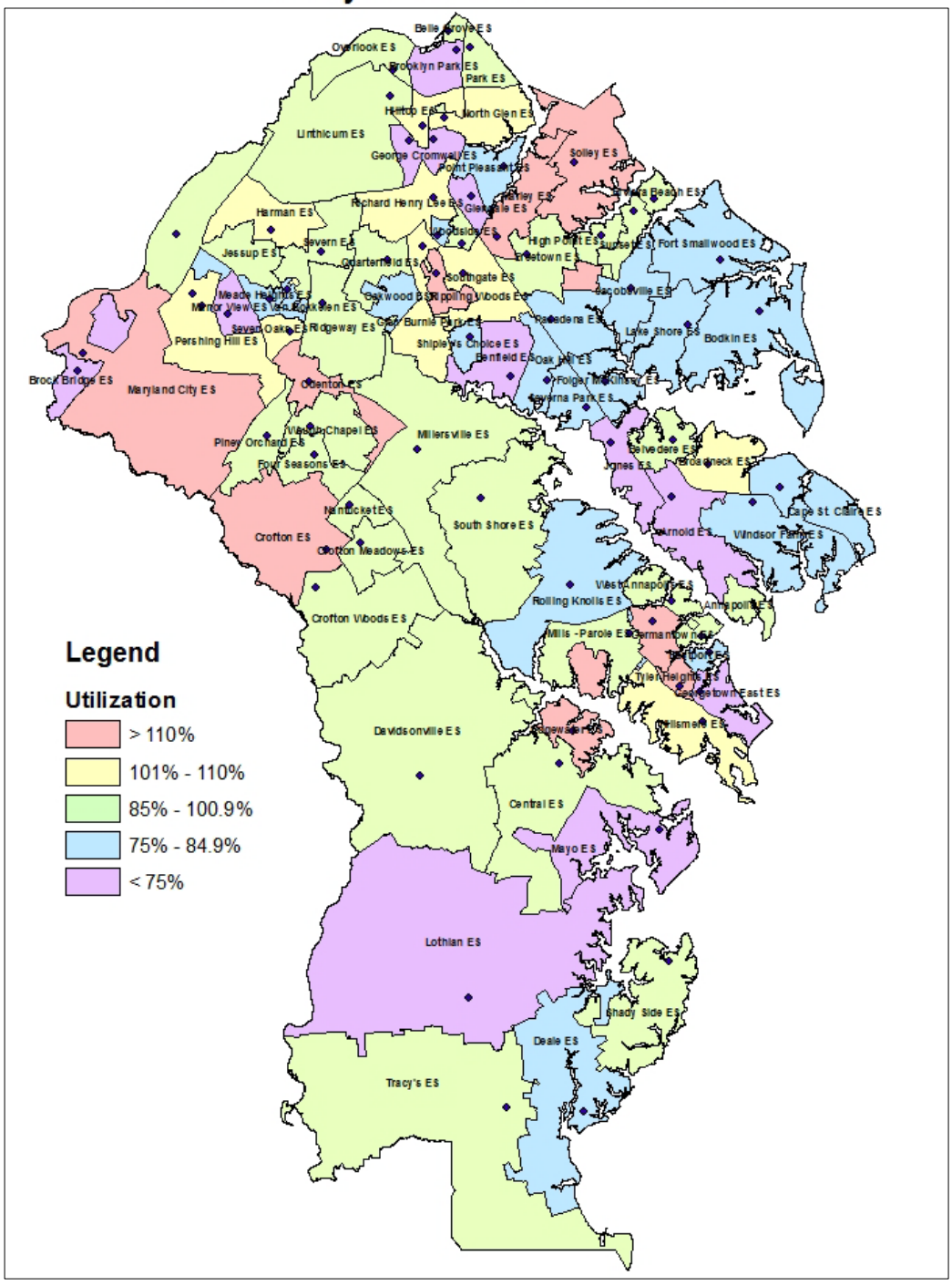
The following maps chart the current and projected utilization by attendance zone for the elementary schools, middle schools, and high schools.

EXHIBIT 9-3
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT ELEMENTARY SCHOOL UTILIZATION RATES



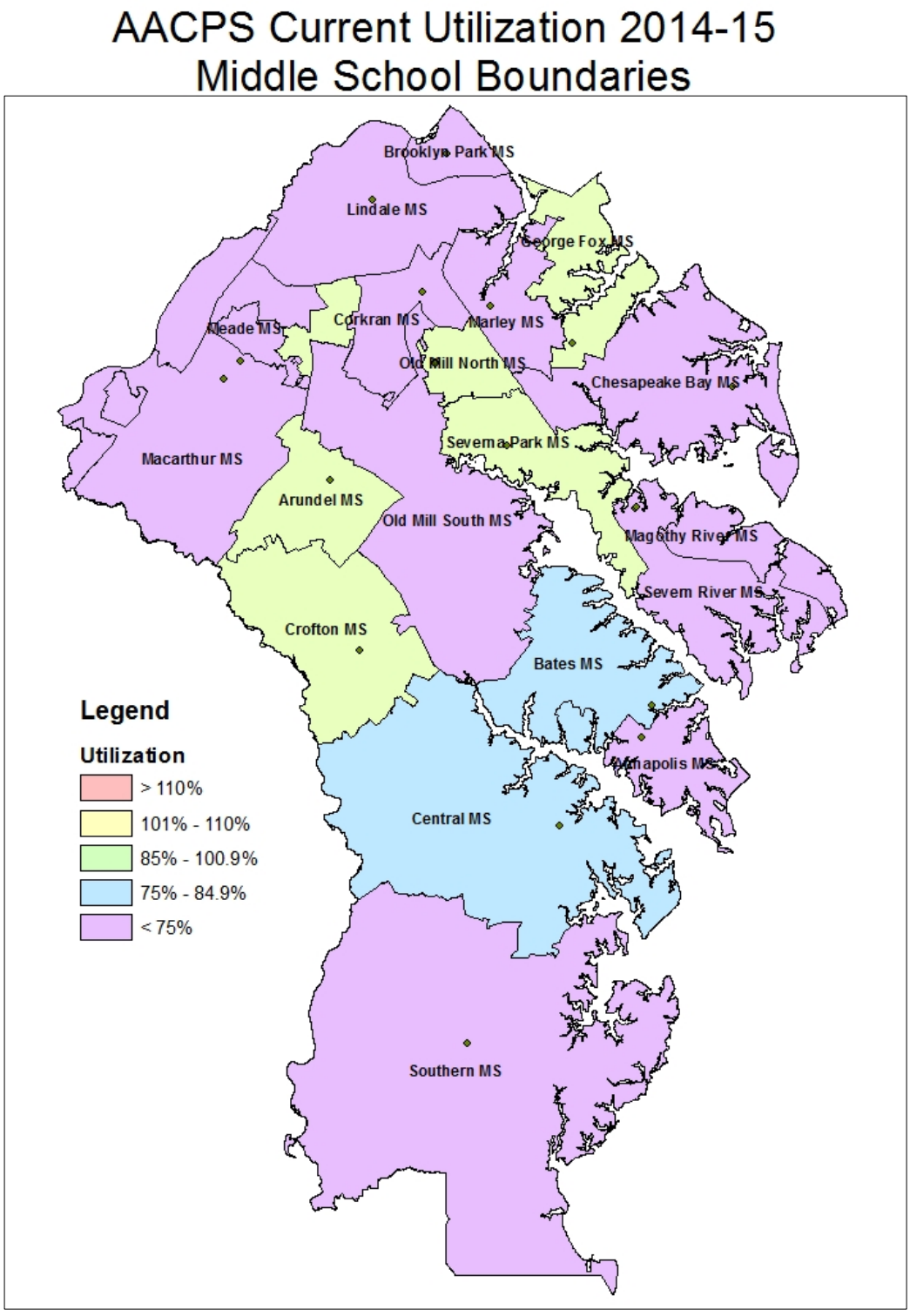
SOURCE: MGT OF AMERICA, INC., 2015.

EXHIBIT 9-4
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
PROJECTED 2024 ELEMENTARY SCHOOL UTILIZATION RATES



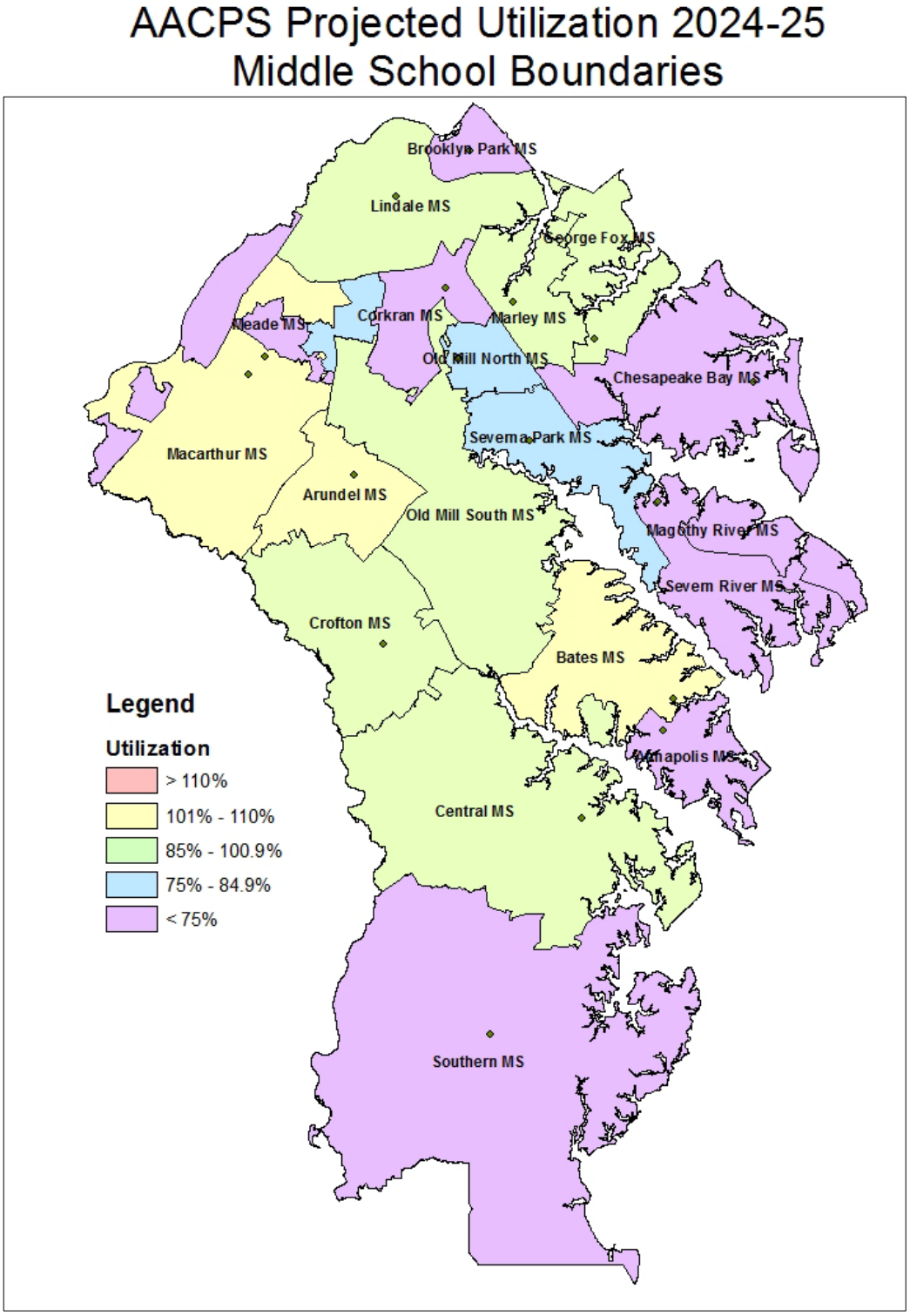
SOURCE: MGT OF AMERICA, INC., 2015.

EXHIBIT 9-5
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT MIDDLE SCHOOL UTILIZATION RATES



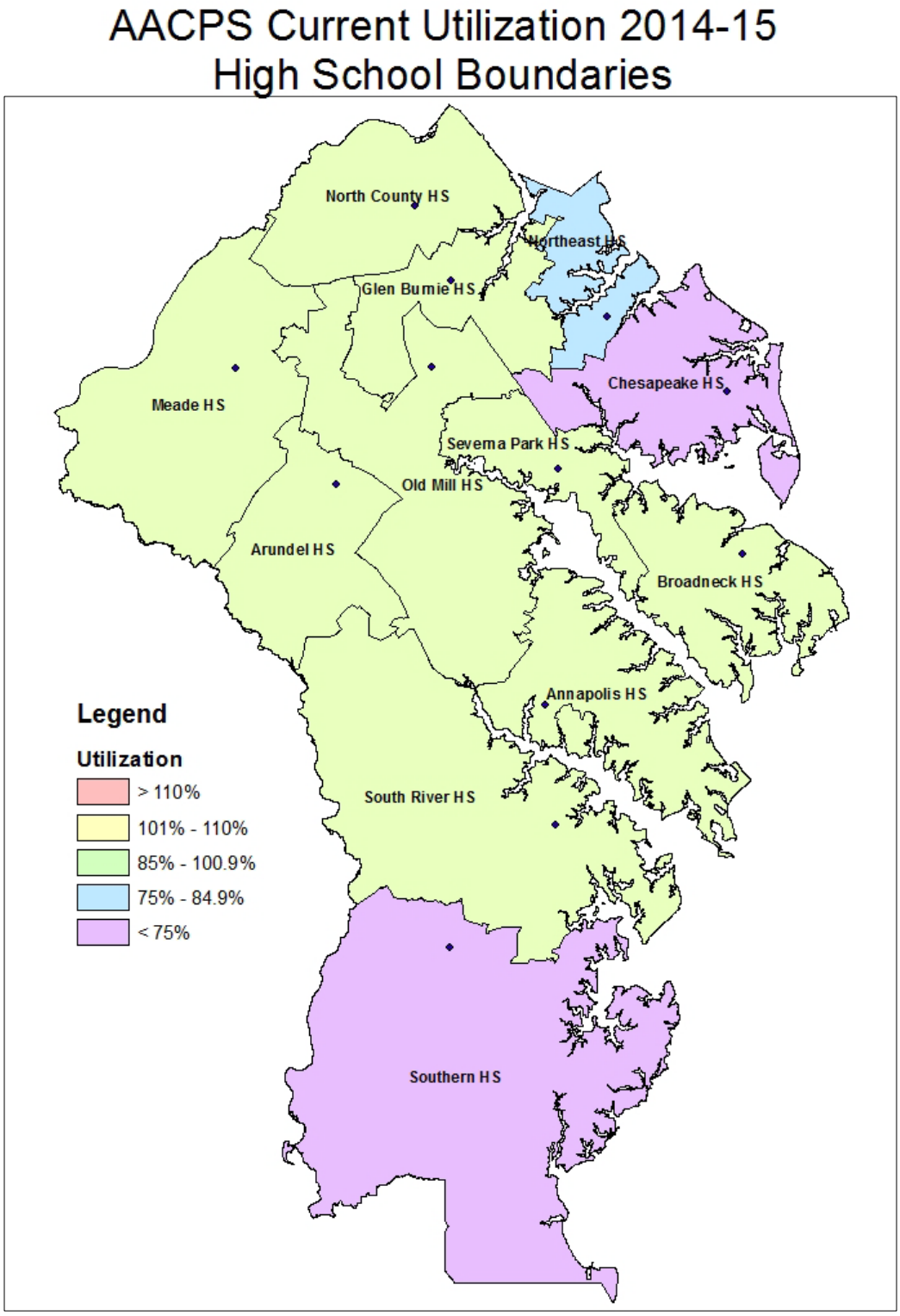
SOURCE: MGT OF AMERICA, INC., 2015.

EXHIBIT 9-6
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
PROJECTED MIDDLE SCHOOL UTILIZATION RATES



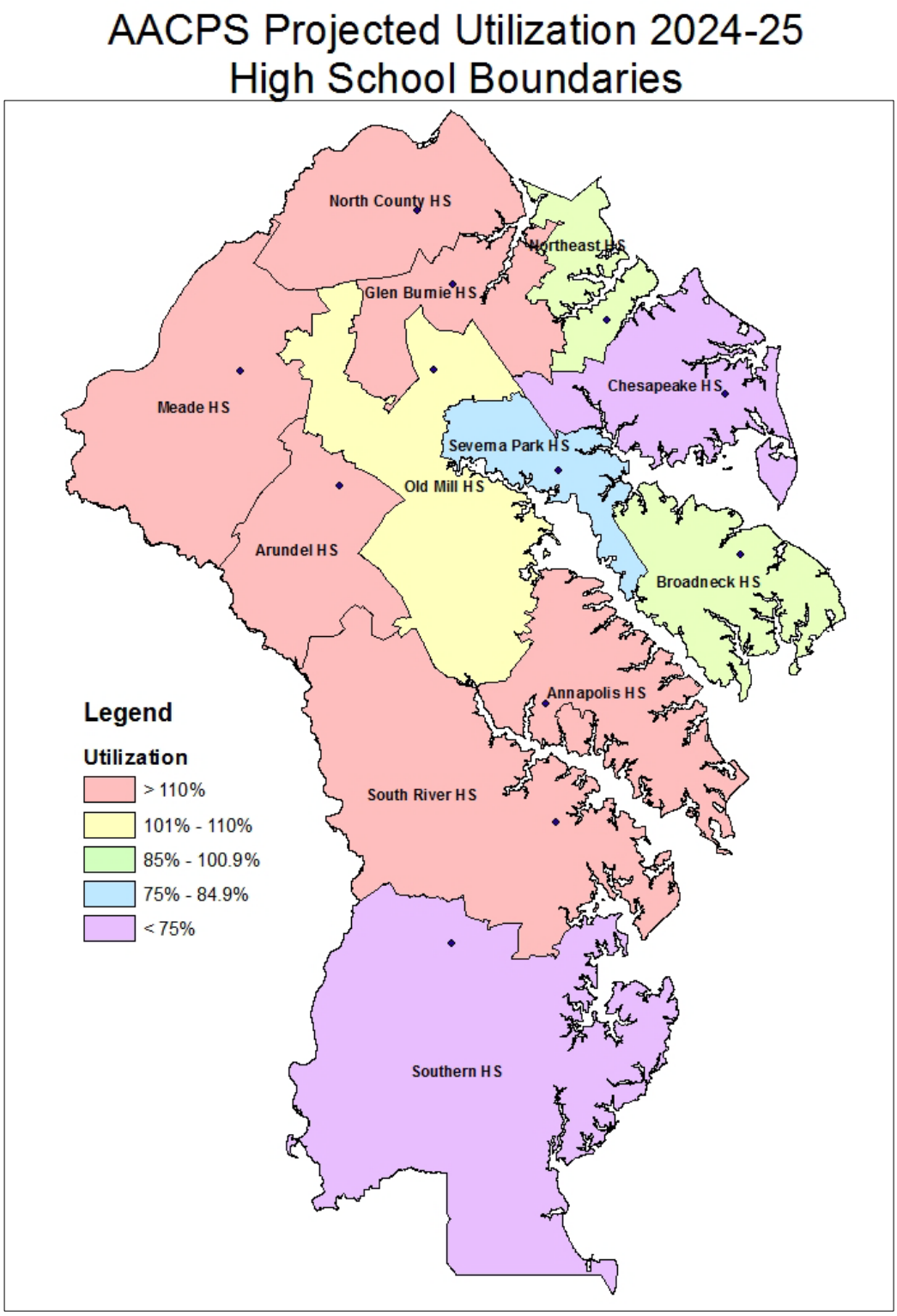
SOURCE: MGT OF AMERICA, INC., 2015.

EXHIBIT 9-7
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
CURRENT HIGH SCHOOL UTILIZATION RATES



SOURCE: MGT OF AMERICA, INC., 2015.

EXHIBIT 9-8
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
PROJECTED HIGH SCHOOL UTILIZATION RATES



SOURCE: MGT OF AMERICA, INC., 2015.

CAPACITY AND UTILIZATION CONCLUSIONS

ELEMENTARY SCHOOLS

The SRC for the elementary schools varies from a low of 158 to a high of 800. The district's elementary schools are being utilized at an "adequate" rate on a district-wide basis of 91%. The projected district-wide utilization for 2024 will remain constant at 91%. However some schools are overcrowded and some schools are underutilized. There are nine schools projected to have a utilization rate of over 110% or in the "Inadequate" range. There are also eleven schools projected to have a utilization rate of under 75% or in the "Inefficient" range.

The district should examine the specific situation for the schools that are projected to have "inadequate" or "inefficient" utilization rates to determine if action is required, and whether the approach will require capital improvements or redistricting. Specific recommendations will be presented in **Section 10.0** of the Master Plan.

MIDDLE SCHOOLS

The SRC for the middle schools varies from a low of 1,009 to a high of 2,058. The district's middle schools are presently being utilized at an "inefficient" rate of 73% overall, however the overall utilization will increase to 81% by 2024-25.

The district does have excess capacity at the middle school level, and could examine repurposing some of this space.

HIGH SCHOOLS

The SRC for the high schools varies from a low of 625 to a high of 2,440. The two schools with capacities below 1,000 are the two Career and Technology schools. The district's high school are currently being utilized at an "Adequate" rate of 88%, however, this rate will increase to 106% overall by 2024-25, with six of the high schools at rates over 110%.

The district should examine adding additional capacity at the high school level. Specific recommendations will be presented in **Section 10.0** of the Master Plan.

10.0 FINDINGS AND RECOMMENDATIONS

This section presents the findings reported in earlier sections, the process for prioritization of the findings, the methodology for calculation project budgets, and the master plan recommendations. In addition, supporting recommendations are offered to promote an effective implementation of the master plan.

FINDINGS

SCHOOL SIZE

As a result of the school size research cited above, MGT has reached the following conclusions:

- There is no consistent definition regarding "small" and "large" schools.
- Results of school size research vary widely. One study determined the optimal high school size at 300 while another concluded the optimal size to be between 1,200 and 1,600.
- In general, smaller schools tend to show an advantage in regard to academic achievement and student behavior but there is a good deal of discussion regarding the reason. Many studies conclude that leadership structure, program offerings, extra-curricular offerings, etc. often go hand in hand with school size and contribute to the achievement gains.
- School size is only one factor to consider in evaluating academic performance.
- The advantage gained through smaller schools may not be great enough to advocate for widespread school construction in light of other factors that may produce similar gains.

As a result of the school size research cited above, along with the specific needs in Anne Arundel County, MGT offers the following recommendations for consideration by the District.

- Anne Arundel County Schools should adopt a school size policy to guide further master planning. The guidelines listed are intended to provide district planners with the preferred school size based on both the research and conditions in Anne Arundel County. It is understood that there will be exceptions based on maintaining appropriate feeder patterns, current school capacities, and other circumstances particular to a specific school.

  Preferred school sizes are:

High School	1,600
Middle School	1,200
Elementary	600

- School size policy should be a factor in determining master plan priorities.
- As the master plan is implemented, the school size policy should be implemented on an on-going basis.
- School size reduction should be one of the priorities in the development and implementation of the current master plan.
- Monitor the progress toward the proposed State small schools grant program in order to develop a favorable position to apply for funds.

COMMUNITY ENGAGEMENT

In order to gather community input and feedback, MGT used a variety of tools throughout the process of development of this Strategic Facilities Utilization Master Plan. The goal for community engagement was to ensure that all interested members of the community had multiple opportunities for both input and feedback.

Anne Arundel County has an involved and interested populace. They attended community sessions even when it was hot and humid, even at schools that were not near their homes, and even when there were other events in competition. Many more community members used the online tools so that they could provide input and feedback at a time convenient for them.

From these data, it is clear that the AACPS community wants the district to focus their efforts on the following issues over the next 10 year plan:

- Fixing identified building deficiencies – including roofs and HVAC.
- General classroom issues – including fixing the open concept schools.
- Size of schools – focusing initially on the size of high schools, but including all grade levels as new schools and additions are planned.
- New schools in growing area(s) of the county – focusing on the north and central county areas for middle schools and high schools.

DEMOGRAPHICS AND ENROLLMENT PROJECTIONS

Enrollment across the district is expected to fluctuate slightly in the next few years and then show a marginal increase near the end of the ten year planning period. This is a reasonable projection given the following:

- Live births are projected to decrease.
- While there is a strong correlation between the live birth rate and the kindergarten capture rate, the capture rate has historically been less than 100 percent indicating some level of exodus of students out the district.
- The census data from 2000 to 2010 has shown a decrease in elementary age children.
- While the slowing economy has negatively affected the rate of construction of homes, there is a general consensus among stakeholders that the rates of building and migration into the county will increase as the economy improves.

FACILITY ASSESSMENTS

Overall, the majority of AACPS's facilities are in good or better condition. The district's capital improvement program has been effective in addressing many, but not all, of its facility needs. Unfortunately, facilities continually age and develop new deficiencies on an on-going basis. In addition, educational programs change to meet the needs of students in a changing society and put new requirements on the school buildings. AACPS must continue an aggressive capital improvement program to maintain the educational facilities necessary to provide a 21st century educational program.

As reported earlier, the combined facility assessment score is an indicator of the overall facility status. The following **Exhibit 10-1** details how AACPS's schools scored by rating for the combined score.

EXHIBIT 10-1
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
NUMBER OF SCHOOLS BY COMBINED SCORE

RATING DESCRIPTION	RATING SCORE	ELEMENTARY SCHOOLS	MIDDLE SCHOOLS	HIGH SCHOOLS	COUNTY-WIDE SCHOOLS	OTHER FACILITIES	TOTAL
Excellent/ Like New	>90	20	1	2	1		24
Good	80 -89.99	36	6	3	1	1	47
Fair	70 – 79.99	17	9	6	4	2	38
Poor	60 – 69.99	6	3	1	0	0	10
Unsatisfactory	<59.99	0	0	0	0	0	0

CAPACITY AND UTILIZATION

ELEMENTARY SCHOOLS

The SRC for the elementary schools varies from a low of 158 to a high of 800. The district's elementary schools are being utilized at an "adequate" rate on a district-wide basis of 91%. The projected district-wide utilization for 2024 will remain constant at 91%. However some schools are overcrowded and some schools are underutilized. There are ten schools projected to have a utilization rate of over 110% or in the "Inadequate" range. There are also ten schools projected to have a utilization rate of under 75% or in the "Inefficient" range.

MIDDLE SCHOOLS

The SRC for the middle schools varies from a low of 1,009 to a high of 2,058. The district's middle schools are being utilized at an "inefficient" rate of 73% overall, however the overall utilization is projected to increase to 81% by 2024-25.

HIGH SCHOOLS

The SRC for the high schools varies from a low of 625 to a high of 2,440. The two schools with capacities below 1,000 are the two Career and Technology schools. The district's high school are currently being utilized at an "Adequate" rate of 88%, however, this rate is projected to increase to 106% ("Approaching Inadequate") overall by 2024-25, with six of the high schools at rates over 110%.

PRIORITIZATION

One of the goals of this Strategic Facilities Utilization Master Plan is to provide an objective prioritization of the district's facility needs. **Exhibit 10-2** provides the scoring matrix and description rating for both utilization and combined score. Therefore, schools that are projected to be over 110% utilization are classified as inadequate and most in need of a proposed solution to alleviate the problem. The solution could be addressed in a variety of ways including additions, boundary changes, new facilities, etc. In regard to the combined score, schools that score less than 70 are classified as unsatisfactory or poor and most in need of a proposed solution. Again, the solution could be addressed in a variety of ways including replacement schools, renovations, etc.

EXHIBIT 10-2
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
UTILIZATION AND SCORE DESCRIPTIONS

UTILIZATION	DESCRIPTION
> 110	**Inadequate**
101 - 110	Approaching Inadequate
85 - 100.9	Adequate
75 - 84.99	Approaching Inefficient
< 74.99	Inefficient

COMBINED SCORES	DESCRIPTION
> 90	Excellent/Like New
80 - 89.99	Good
70 - 79.99	Fair
60 - 69.99	Poor
< 59.99	**Unsatisfactory**

BUDGET DEVELOPMENT

Budgets for the projects identified in the master plan have been developed by MGT and AACPS staff using the latest construction cost data. The budgets were developed using recent construction costs appropriate for each project type, and then adding factors such as soft costs, furnishings, and contingencies. The budgets are developed for today's costs and then inflated annually for the appropriate number of years depending on when the project is scheduled in the master plan. While inflation rates can vary, an annual rate of 4% was used throughout the master plan time period.

The following **Exhibit 10-3** shows the construction per square foot costs used and the factors applied to create project budgets.

EXHIBIT 10-3
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
DEFICIENCY BUDGET FORMULA

AACPS DEFICIENCY BUDGET FORMULA								
Project Type	**Cost Basis**	**Cost per GSF for new const.**	**Furniture Fixtures & Equipment @10%**	**Contingency @5%**	**A&E, permit, testing, etc. @15%**	**New Construction Project Cost/GSF**	**Renovation factor @10%**	**Renovation Project Cost per GSF**
School Building Condition Deficiencies	Bldg. construction cost as established by State of Maryland at $282/SF	$282.00	$28.20	$15.51	$48.86	$374.57	$37.46	$412.02
Educational Suitability Deficiencies	35% of building cost/GSF	$98.70	$9.87	$5.43	$17.10	$131.10	$13.11	$144.21
Technology Readiness Deficiencies	30% of electrical system cost/GSF	$4.58	NA	$0.23	$0.72	$5.53	$0.55	$6.08
Site Condition Deficiencies	20% of building cost/GSF	$56.40	NA	$2.82	$8.88	$68.10	$6.81	$74.91

SOURCE: MGT OF AMERICA, INC., 2015.

Project budgets for new schools were developed using the construction costs above and the size factors shown in **Exhibit 10-4** below. The cost per SF shown in the chart is the sum of the building and site Project Cost/SF from the previous exhibit.

EXHIBIT 10-4
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
NEW SCHOOL BUDGET FORMULAS

NEW SCHOOL BUDGET FORMULAS				
School Type	**FTE**	**$/SF**	**SF/FTE**	**Total**
ES	600	$442.67	140	$37,184,000
MS	1,200	$442.67	150	$79,681,000
HS	1,600	$442.67	160	$113,323,000

MASTER PLAN RECOMMENDATION

Exhibit 10-5 on the following pages provides the recommended master plan projects. Phase 1 provides the recommended projects included in the 10 year master plan period. The data includes each recommended project in priority order, the combined score, projected utilization, projected budget, and recommended redistricting (if needed). The criteria for including a project in the master plan is:

PHASE 1: (10-YEAR MASTER PLAN)

- Combined score of less than 75, and/or
- Projected utilization of over 110%, or
- New schools to provide solutions to overcrowding and to accommodate projected development.

Projects shown as phase 1 provide solutions to all schools meeting the above criteria. Those shown in phase 1-A show how the overcrowded conditions will be addressed for those schools that are projected to be over 110% utilization but are not in need of master plan condition improvements.

For informational purposes, phase 2 includes those schools with a combined score of less than 80 and phase 3 includes the data for all remaining schools.

EXHIBIT 10-5
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
MASTER PLAN PRIORITIES
PHASES 1-3

SITE NAME	GRADE CONFIG	COMBINED SCORE 55/35/5/5	2024-25 PROJECTED UTILIZATION	ADDITION BUDGET	RENOVATE BUDGET	REPLACE BUDGET	REDISTRICTING	TOTAL
PHASE ONE PROJECTS								
Edgewater ES	PK-5*	62.59	110%			$37,184,000		
Tyler Heights ES	PK-5	63.31	146%			$37,184,000	Review school attendance boundaries	
Richard Henry Lee ES	PK-5*	64.06	110%			$37,184,000		
Quarterfield ES	PK-5/ECI	64.25	88%			$37,184,000		
Hillsmere ES	PK-5	64.99	107%			$37,184,000	Review school attendance boundaries	
Crofton Area HS (New)	9-12					$113,323,000	Redistrict from Arundel HS and South River HS	
Old Mill West HS (New)	9-12					$113,323,000		
Rippling Woods ES (Replacement)	PK-5	66.24	113%			$37,184,000	Redistrict with Quarterfield ES	
Old Mill MS North (Replacement)	6-8	65.51	83%			$79,681,000		
Old Mill MS South (Replacement)	6-8	68.40	87%			$79,681,000		
Old Mill HS (Replacement)	9-12	63.10	109%			$113,323,000		
Northeast ES (New)	PK-5					$37,184,000		
Bates MS	6-8	68.14	109%		$28,886,000		Redistrict long term to not receive students from Mills-Parole ES and naval station students from Annapolis ES	
West Co Area HS (New)	9-12					$113,323,000		
West Co Area ES (Arundel MS/HS) (New)	PK-5					$37,184,000		
Marley Glen SP	Ages 3-21	70.15	59%		$8,938,000			
Shady Side ES	PK-5	70.46	97%		$13,164,000			
Brock Bridge ES	PK-5	70.88	62%		$11,910,000			
J Albert Adams Academy	6-8 (9)	71.41	71%		$7,192,000			
Hilltop ES	PK-5	71.51	105%		$13,187,000			
Odenton ES	K-5 (PK)	80.06	114%	$1,648,100	$8,307,000			
Maryland City ES	PK-5	71.62	114%		$9,156,000		Redistrict with Brock Bridge ES	
West Meade EEC	PK-K/ECI	72.27	89%		$7,981,000			
Woodside ES	PK-5	72.80	98%		$8,648,000			
Eastport ES	PK-5	73.13	78%		$6,019,000			
Glen Burnie HS	9-12	73.28	113%		$64,551,000		Redistrict to receive from Marley MS only	
Millersville ES	PK-5*	73.90	98%		$7,031,000			
Glen Burnie Park ES	PK-5	74.07	101%		$6,928,000			
PHASE 1 TOTAL				**$1,648,100**	**$201,898,000**	**$910,126,000**		**$1,113,672,100**

*THIS SCHOOL IS CURRENTLY K-5 BUT WILL BE EXPANDED TO PK-5 AFTER RENOVATION.

EXHIBIT 10-5 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
MASTER PLAN PRIORITIES
PHASES 1-3

SITE NAME	GRADE CONFIG	COMBINED SCORE 55/35/5/5	2024-25 PROJECTED UTILIZATION	ADDITION BUDGET	RENOVATE BUDGET	REPLACE BUDGET	REDISTRICTING	TOTAL
PHASE ONE-A PROJECTS								
South River HS			118%				Redistrict with Southern HS	
Arundel HS			121%				Redistrict to receive from Arundel MS only	
North County HS			117%				Redistrict George Cromwell ES	
Meade HS			115%				Redistrict to receive from MacArthur MS only	
Solley ES			120%				Redistrict with New ES	
Annapolis HS			127%				Redistrict long term to not receive students from Mills-Parole ES and Naval Station students from Annapolis ES	
Germantown ES			118%				Redistrict with Rolling Knolls ES	
Marley ES			134%				Redistrict with New ES	
Crofton ES			113%				Redistrict with New ES	
PHASE 1-A TOTAL				**$0**	**$0**	**$0**		**$0**
PHASE TWO PROJECTS								
South River HS	9-12	75.08	118%		$43,888,000			
Annapolis MS	6-8	75.08	60%		$34,134,000			
Studio 39	9-12	75.20	N/A		$5,536,000			
Chesapeake Bay MS	6-8	75.67	49%		$51,406,000		Redistrict to accept new ES	
Crofton Woods ES	K-5	76.04	98%		$12,373,000			
Southern HS	9-12	76.55	74%		$30,658,000			
CAT-South	9-12	76.68	N/A		$11,842,000			
Severn ES	K-5 (PK)	77.05	85%		$8,281,000			
Magothy River MS	6-8	77.46	67%		$22,726,000			
Sunset ES	PK-5	77.50	94%		$9,511,000			
Riviera Beach ES	K-5 (PK)	77.52	96%		$6,346,000			
Central ES	K-5	77.69	98%		$10,976,000			
Central Special	Ages3-21	77.81	76%		$7,079,000			
Van Bokkelen ES	PK-5	77.82	85%		$8,719,000			
Arundel HS	9-12	78.04	121%		$37,075,000			
Central MS	6-8	78.46	89%		$20,387,000		Redistrict to not receive from Davidsonville ES	
Broadneck ES	K-5	78.49	104%		$10,284,000			
George Fox MS	6-8	78.66	99%		$22,010,000			
North County HS	9-12	78.83	117%		$39,711,000			
Arlington Echo	K-12	78.93	N/A		$2,934,000			
North Glen ES	PK-5/ECI	79.13	101%		$6,209,000			
Severn River MS	6-8	79.32	70%		$21,068,000			

EXHIBIT 10-5 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
MASTER PLAN PRIORITIES
PHASES 1-3

SITE NAME	GRADE CONFIG	COMBINED SCORE 55/35/5/5	2024-25 PROJECTED UTILIZATION	ADDITION BUDGET	RENOVATE BUDGET	REPLACE BUDGET	REDISTRICTING	TOTAL
PHASE TWO PROJECTS								
Crofton MS	6-8	79.35	98%		$16,149,000		Redistrict to new Crofton Area HS	
Broadneck HS	9-12	79.51	93%		$36,860,000			
Corkran MS	6-8	79.63	69%		$18,324,000		Redistrict to new West County HS	
Southern MS	6-8	79.97	66%		$24,656,000		Redistrict to receive from Davidsonville ES	
PHASE 2 TOTAL				**$0**	**$519,142,000**	**$0**		**$519,142,000**
PHASE THREE PROJECTS								
Ruth Parker Eason	Ages3-21	80.07	53%		$5,952,000			
Bodkin ES	K-5	80.25	76%		$8,775,000			
Fort Smallwood ES	PK-5/ECI	80.39	76%		$8,051,000			
Meade HS	9-12	80.48	115%		$40,882,000			
Oakwood ES	PK-5/ECI	80.61	78%		$5,979,000			
Linthicum ES	K-5	80.66	96%		$7,779,000			
Chesapeake HS	9-12	81.02	73%		$35,654,000			
Shipley's Choice ES	K-5	81.03	76%		$7,877,000			
Severna Park ES	K-5	81.07	78%		$6,768,000			
Georgetown East ES	PK-5/ECI	81.34	58%		$8,806,000			
Lindale MS	6-8	81.54	94%		$22,260,000			
Oak Hill ES	PK-5/ECI	81.65	82%		$8,896,000			
Solley ES	PK-5	81.68	120%		$8,617,000			
Arundel MS	6-8	81.81	103%		$16,487,000			
Waugh Chapel ES	PK-5	81.86	100%		$6,164,000			
Brooklyn Park ES	PK-5	82.19	64%		$8,456,000			
Crofton Meadows ES	K-5	82.30	91%		$7,979,000			
Ridgeway ES	K-5	82.52	94%		$8,245,000			
CAT-North	9-12	82.89	N/A		$15,128,000			
Annapolis HS	9-12	83.02	127%		$30,219,000			
South Shore ES	K-5	83.19	86%		$5,301,000			
Belvedere ES	PK-5/ECI	83.28	90%		$7,017,000			
Meade Heights ES	PK-5/ECI	83.40	77%		$7,323,000			
Brooklyn Park MS	6-8	83.54	72%		$15,711,000			
MacArthur MS	6-8	83.68	106%		$18,766,000			
Windsor Farm ES	K-5	83.71	84%		$7,170,000			
Four Seasons ES	PK-5/ECI	84.06	87%		$8,671,000			

EXHIBIT 10-5 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
MASTER PLAN PRIORITIES
PHASES 1-3

SITE NAME	GRADE CONFIG	COMBINED SCORE 55/35/5/5	2024-25 PROJECTED UTILIZATION	ADDITION BUDGET	RENOVATE BUDGET	REPLACE BUDGET	REDISTRICTING	TOTAL
PHASE THREE PROJECTS								
Meade MS	6-8	84.24	65%		$15,349,000		Redistrict to new West County HS	
Park ES	PK-5	85.03	100%		$6,539,000			
Cape St Claire ES	K-5	85.32	83%		$6,826,000			
Jones ES	K-5	85.35	75%		$4,459,000			
Glendale ES	PK-5	86.72	70%		$6,142,000			
Marley ES	PK-5	87.13	134%		$6,381,000			
Ferndale EEC	PK-K/ECI	87.51	87%		$1,818,000			
Davidsonville ES	K-5	87.98	87%		$6,250,000		Redistrict to Southern MS	
Jacobsville ES	K-5	88.04	77%		$5,664,000			
Piney Orchard ES	K-5	88.14	93%		$5,886,000			
Deale ES	K-5	88.41	76%		$3,715,000			
Mayo ES	K-5	88.53	73%		$4,395,000			
Frank Hebron-Harman	PK-5	88.86	104%		$6,106,000			
Seven Oaks ES	PK-5	88.97	107%		$5,681,000			
Marley MS	6-8	89.07	88%		$10,832,000			
Freetown ES	PK-5/ECI	89.19	95%		$5,892,000			
Nantucket ES	K-5	89.34	92%		$6,102,000			
Southgate ES	PK-5	89.73	107%		$5,569,000			
Pasadena ES	K-5	89.78	81%		$4,522,000			
Phoenix Academy	K-12	90.32	130%		$3,658,000			
Overlook ES	K-5 (PK)	91.45	87%		$3,331,000			
Tracey's ES	K-5	91.46	90%		$3,390,000			
Pershing Hill ES	1-5	92.32	105%		$4,437,000			
Belle Grove ES	PK-5	93.19	87%		$2,686,000			
Lake Shore ES	K-5	93.29	77%		$3,243,000			
Severna Park MS	6-8	94.10	80%		$7,289,000			
Germantown ES	PK-5	94.96	118%		$2,210,000			
Annapolis ES	PK-5	95.00	93%		$2,214,000		Redistrict students north of river into Arnold ES.	
Point Pleasant ES	PK-5	95.24	79%		$2,183,000			
Northeast HS	9-12	95.27	96%		$9,885,000			
Folger McKinsey ES	K-5	98.02	84%		$698,000			
Arnold ES	K-5	100.00	71%		$0		Redistrict to receive naval station students from Annapolis ES	
Benfield ES	K-5/ECI	100.00	72%		$0			

EXHIBIT 10-5 (CONTINUED)
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
MASTER PLAN PRIORITIES
PHASES 1-3

SITE NAME	GRADE CONFIG	COMBINED SCORE 55/35/5/5	2024-25 PROJECTED UTILIZATION	ADDITION BUDGET	RENOVATE BUDGET	REPLACE BUDGET	REDISTRICTING	TOTAL
PHASE THREE PROJECTS								
Crofton ES	K-5	100.00	113%		$0			
George Cromwell ES	1-5	100.00	86%		$0		Redistrict to new Old Mill South MS	
High Point ES	PK-5	100.00	88%		$0			
Jessup ES	PK-5/ECI	100.00	92%		$0			
Lothian ES	PK-5/ECI	100.00	73%		$0			
Manor View ES	1-5	100.00	70%		$0			
Mills-Parole ES	PK-5	100.00	97%		$0		Redistrict short term into Annapolis MS, long term into Central MS.	
Rolling Knolls ES	PK-5	100.00	79%		$0		Redistrict with Germantown ES	
West Annapolis ES	K-5	100.00	90%		$0			
Severna Park HS	9-12	100.00	84%		$0			
Carrie Weedon ES	1-5	N/A	N/A		$1,949,000			
Chesapeake Science Point Charter School	6-12	N/A	84%		$0			
Monarch Academy Public Charter School	K-8	N/A	106%		$0			
Monarch Global Academy Contract School	1-5 (6,7,8)	N/A	109%		$0			
PHASE 3 TOTAL				**$0**	**$504,234,000**	**$0**		**$504,234,000**
GRAND TOTAL				**$1,648,100**	**$1,225,274,000**	**$910,126,000**		**$2,137,048,100**

SOURCE: MGT OF AMERICA, INC., 2015.

The total estimated budget for the 10-year master plan recommendations is a base of $1,127,153,400. The estimated budget over 10 years including inflation calculated at 4% per year is $1,369,052,740. **Exhibit 10-6** provides the annual estimated budget for each year of the 10-year implementation plan.

EXHIBIT 10-6
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
10 YEAR IMPLEMENTATION PLAN

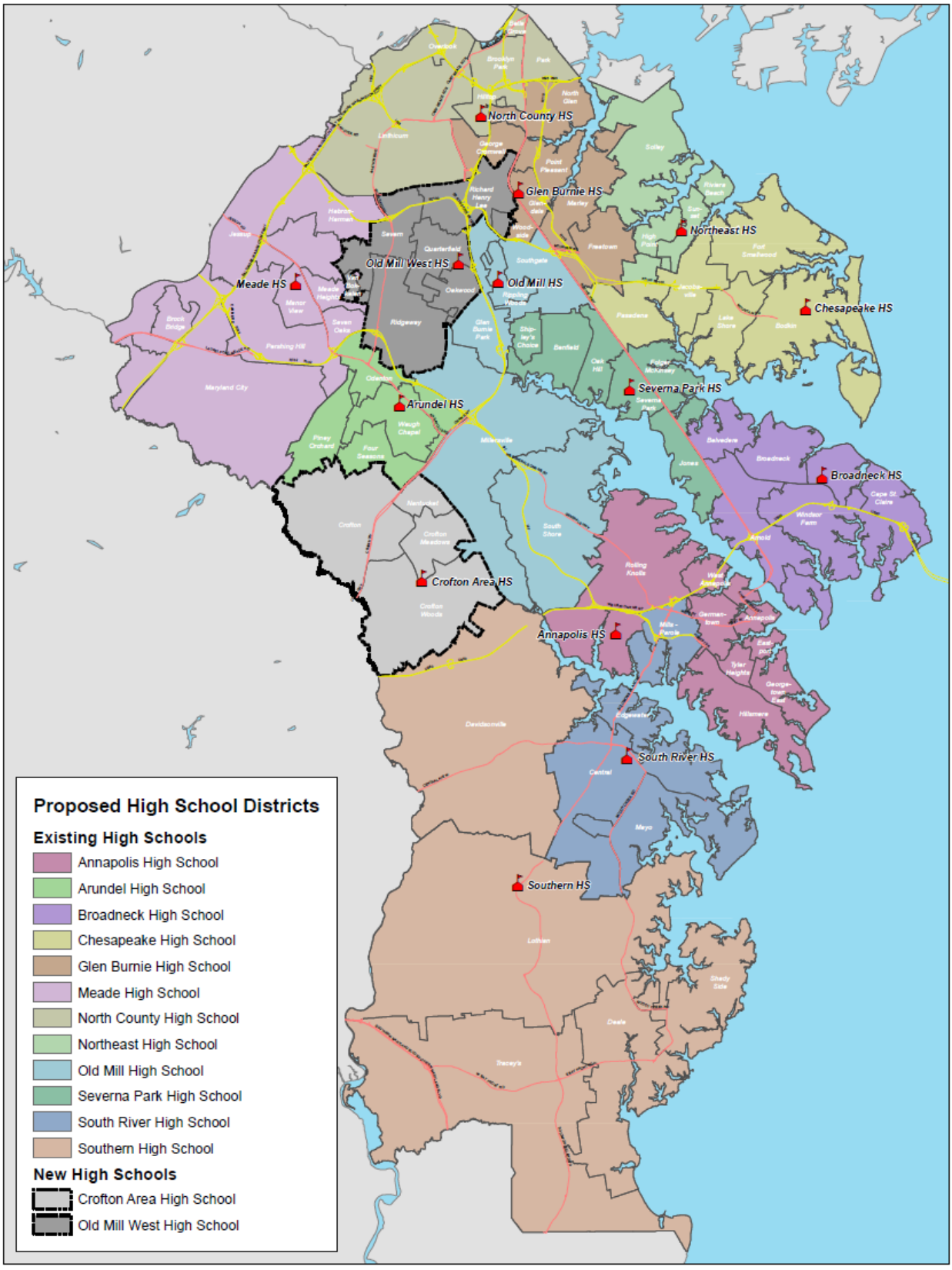
PROJECT	BUDGET	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	TOTAL
New Edgewater ES	$37,184,000	$3,718,400	$14,873,600	$14,873,600	$3,718,400							$37,184,000
New Tyler Heights ES	$37,184,000	$3,718,400	$14,873,600	$14,873,600	$3,718,400							$37,184,000
New Richard Henry Lee ES	$37,184,000	$3,718,400	$14,873,600	$14,873,600	$3,718,400							$37,184,000
New Quarterfield ES	$37,184,000		$3,718,400	$14,873,600	$14,873,600	$3,718,400						$37,184,000
New Hillsmere ES	$37,184,000		$3,718,400	$14,873,600	$14,873,600	$3,718,400						$37,184,000
New Crofton HS	$113,323,000		$11,332,300	$33,996,900	$33,996,900	$33,996,900						$113,323,000
New Old Mill West HS 2	$113,323,000			$11,332,300	$33,996,900	$33,996,900	$33,996,900					$113,323,000
New Rippling Woods ES	$37,184,000		$3,718,400	$14,873,600	$14,873,600	$3,718,400						$37,184,000
New Old Mill MS North	$79,681,000				$7,968,100	$31,872,400	$31,872,400	$7,968,100				$79,681,000
New Old Mill MS South	$79,681,000				$7,968,100	$31,872,400	$31,872,400	$7,968,100				$79,681,000
New Old Mill HS	$113,323,000					$11,332,300	$33,996,900	$33,996,900	$33,996,900			$113,323,000
New ES 1 Northeast	$37,184,000					$3,718,400	$14,873,600	$14,873,600	$3,718,400			$37,184,000
Renovate Bates MS	$28,886,000							$8,665,800	$20,220,200			$28,886,000
New West Co HS 3	$113,323,000								$11,332,300	$33,996,900	$33,996,900	$79,326,100
New West Co ES (Arundel MS/HS)	$37,184,000							$3,718,400	$14,873,600	$14,873,600	$3,718,400	$37,184,000
Renovate Marley Glen SP	$8,938,000							$2,681,400	$6,256,600			$8,938,000
Renovate Shady Side ES	$13,164,000							$3,949,200	$9,214,800			$13,164,000
Renovate Brock Bridge ES	$11,910,000							$3,573,000	$8,337,000			$11,910,000
Renovate J Albert Adams Academy	$7,192,000								$2,157,600	$5,034,400		$7,192,000
Renovate Hilltop ES	$13,187,000								$3,956,100	$9,230,900		$13,187,000
Renovate and Addition for Odenton ES	$9,955,100								$2,986,530	$3,982,040	$2,986,530	$9,955,100
Renovate Maryland City ES	$9,156,000									$2,746,800	$6,409,200	$9,156,000
Renovate West Meade EEC	$7,981,000									$2,394,300	$5,586,700	$7,981,000
Renovate Woodside ES	$8,648,000									$2,594,400	$6,053,600	$8,648,000
Renovate Eastport ES	$6,019,000									$1,805,700	$4,213,300	$6,019,000
Renovate Glen Burnie HS	$64,551,000									$19,365,300	$45,185,700	$64,551,000
Renovate Millersville ES	$7,031,000									$2,109,300	$4,921,700	$7,031,000
Renovate Glen Burnie Park ES	$6,928,000									$2,078,400	$4,849,600	$6,928,000
TOTAL	**$1,113,672,100**	**$11,155,200**	**$67,108,300**	**$134,570,800**	**$139,706,000**	**$157,944,500**	**$146,612,200**	**$87,394,500**	**$117,050,030**	**$100,212,040**	**$117,921,630**	**$1,079,675,200**
TOTAL WITH 4% INFLATION PER YEAR		**$11,601,408**	**$72,584,337**	**$151,373,848**	**$163,436,260**	**$192,163,634**	**$185,511,205**	**$115,005,200**	**$160,191,048**	**$142,632,980**	**$174,552,819**	**$1,369,052,740**

SOURCE: MGT OF AMERICA, INC., 2015.

As the master plan projects are completed and new schools become realities, associated boundary and feeder pattern changes will occur. **Exhibit 10-7** on the following page provides a sample of what the feeder patterns may look for all schools at the completion of the ten year master plan (this assumes the new West County High School is not completed within the 10-year plan). It is important to understand that the final decisions regarding feeder patterns will change over time as new and renovated schools are completed. It is recommended that the following guidelines be considered as the process occurs:

- Interim feeder patterns be implemented with the completion of the long term plan as the goal. While it is inevitable that some feeder schools will need to change during the implementation of the plan, this goal will help to minimize changes.
- Interim feeder patterns be implemented with the goal of no "split" elementary or middle schools. This means that all students from a particular elementary or middle school will feed into the same middle and high school. This may sometimes require variance from the school size recommendations.
- The district continue to regularly communicate and receive input from affected communities, as well as local and state planning and zoning officials.

EXHIBIT 10-7
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
PROPOSED MASTER PLAN FEEDER PATTERNS



SOURCE: ANNE ARUNDEL COUNTY PUBLIC SCOOLS, 2015.

SUPPORTING RECOMMENDATIONS

The following supporting recommendations are presented for the District's consideration.

IMPLEMENT NON-INSTRUCTIONAL FACILITY IMPROVEMENTS IN CONJUNCTION WITH THE 10-YEAR MASTER PLAN.

While developing long term facility needs for instructional facilities, it also became apparent that the improvement of certain support facilities will allow for more efficient operations, thereby enhancing the District's ability to continue to support facility operations. The facilities recommended for improvement, estimated budget, and 10-year implementation plan are included in **Exhibit 10-8** below.

EXHIBIT 10-8
ANNE ARUNDEL COUNTY PUBLIC SCHOOLS
RECOMMENDED SUPPORT FACILITY IMPLEMENTATION PLAN

PROJECT	BUDGET	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	TOTAL
Ft. Smallwood ES Well House	$1,459,983	$437,995	$1,021,988									$1,459,983
Chesapeake MS/HS, Bodkin ES Waste Water Treatment Plant	$4,680,000	$1,404,000	$3,276,000									$4,680,000
Southern MS Waste Water Treatment Plant	$3,120,000	$936,000	$2,184,000									$3,120,000
Southern HS Water Tower	$2,446,579		$733,974	$1,712,605								$2,446,579
Southern HS Well House	$1,459,983				$437,995	$1,021,988						$1,459,983
Student Services Well Room	$1,459,983				$437,995	$1,021,988						$1,459,983
Shady Side ES Well House	$1,776,293									$532,888	$1,243,405	$1,776,293
TOTAL	**$16,402,823**	**$2,777,995**	**$7,215,962**	**$1,712,605**	**$875,990**	**$2,043,977**	**$0**	**$0**	**$0**	**$532,888**	**$1,243,405**	**$16,402,823**
TOTAL WITH 4% INFLATION PER YEAR		**$2,889,115**	**$7,804,785**	**$1,926,448**	**$1,024,785**	**$2,486,810**	**$0**	**$0**	**$0**	**$758,466**	**$1,840,543**	**$18,730,952**

SOURCE: MGT OF AMERICA, INC., 2015.

MONITOR THE IMPLEMENTATION OF A PROPOSED COMPETITIVE GRANT PROGRAM TO SUPPORT THE CONSTRUCTION OF SMALL SCHOOLS AND/OR THE RENOVATION OF LARGE SCHOOL BUILDINGS.

The Maryland equity project report recommends the establishment of a competitive grant program for the construction of small schools and/or renovation of large school buildings. The recommended Anne Arundel master plan includes both types of projects so careful monitoring of the possible grant program will be beneficial in order to position the district favorably.

ANNUALLY REVIEW BOUNDARY ADJUSTMENTS NECESSARY TO IMPLEMENT THE MASTER PLAN.

The recommended master plan provides for a number of new schools and significant changes to existing facilities that in most cases change the capacity of a school. It will be critical to keep ahead of this process by establishing specific boundary changes that will be necessary as new or renovated schools are completed and providing regular communications regarding upcoming changes.

CONTINUE TO REGULARLY UPDATE EDUCATIONAL SPECIFICATIONS.

The master plan calls for a number of new and renovated schools often with revised capacities and programs. It will be critical to update educational specification before the planning is completed for new / renovated schools.

CONTINUE TO UPDATE LONG-RANGE ENROLLMENT PROJECTIONS ON A REGULAR BASIS AND COORDINATE WITH LOCAL AND STATE PLANNING AND ZONING OFFICIALS.

Long-term enrollment projections should continue to be updated as the master plan is implemented. The District has a sound projection methodology that can be regularly utilized to monitor any changes to the projections and make changes to the master plan if deemed necessary. Furthermore, continue routine communication with local and state planning and zoning officials to stay abreast of growth and development trends.

COMMUNICATE THE MASTER PLAN.

The district is commended for its efforts to involve the community in the development of the master plan. MGT recommends that the district continue to communicate clearly and often to all stakeholders regarding the implementation and, when necessary, changes to the master plan in order to ensure community engagement and awareness.