Executive Summary

The Long Range Educational Facilities Plan (LREFP) outlines options for providing educational facilities to meet its new educational specifications. The plan was developed in a joint effort between Alexandria City Public Schools (ACPS) and the City of Alexandria to forecast changes in student enrollment, to identify the types of facilities that can best meet educational needs over the next 25 years, and to identify options to make those facilities available when they are needed as enrollment changes over time.

RAPID ENROLLMENT GROWTH

Since 2007, ACPS has faced rapid increases in enrollment, averaging nearly 4% per year from 2007 through 2014. This is a 35% growth in K-12 enrollment from a low of 10,246 in 2006 to the 2014 fall enrollment of 13,385, a level not previously exceeded since 1975. *(Figure 1.1)*

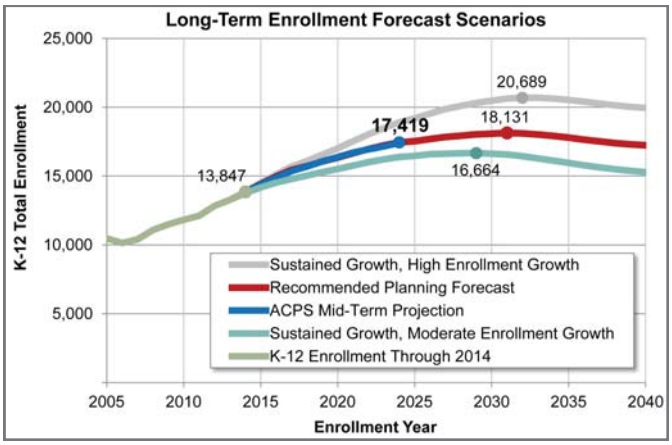


Figure 1.1

The engine of this enrollment growth was not new development. Nearly all recent growth in enrollment came from an increase in the number of students living in housing that had been built prior to the enrollment spurt. While much of this enrollment growth seems to have resulted from temporary economic conditions, many of the families whose children attend Alexandria public schools, do so because those conditions are expected to keep them there through graduation.

Over the longer term, the increase in seniors as a share of population, and a nationwide trend to reduced birth rates among those ethnic and racial groups that currently have the highest birth rates, are expected to bring the city's enrollment growth rate down to 1% per year or less by 2030, and ultimately to a slow decline in enrollment each year. While the first wave of this growth was absorbed by growing into space that had been underutilized during the enrollment decline from 2000 to 2006, the increase has required construction of additional classrooms at some schools. Class size targets were also increased by two students per classroom, which added to the nominal capacity of the system for students.

INADEQUATE EXISTING SCHOOL FACILITIES

With exception of Samuel L. Tucker Elementary School, built in 2000, T.C. Williams High School, built in 2007, and the newest, Jefferson Houston PreK-8 school, built in 2014, the City's public schools were constructed well before the city's baby-boom enrollment peak in 1970 (or maybe just say most were built prior to 1960—or half built before 1950), and currently require a relatively high level of maintenance and repair expenses just to keep basic systems operating and structures safe and sound.

In order to identify the scale of the problem, an analysis of the ability of existing school facilities to meet newly defined educational specifications was conducted. Based on the anticipated 2020 enrollment forecast for each school, the analysis determined that meeting those standards would require substantial additional investment at many of these schools even without increases in enrollment beyond 2020. Mini-Master Plans were prepared for each school to illustrate a means of meeting these standards and accommodating the mid-range increase in enrollment anticipated on the current school sites.

ACPS is pursuing a modernization plan in order to address capacity and building conditions. In some cases, replacement may be a better long-term option than expanding or reconstructing existing buildings. Because space is tight in a nearly fully built-out city like Alexandria, reconstruction on some school sites is likely to require temporarily housing students at other locations

while buildings are rebuilt.

While some schools can be enlarged to provide more capacity, some of the City's schools have already grown well beyond the size considered optimal for the grade levels they serve, and more are expected to have enrollment above that number by 2020. **New sites, or construction of additional schools on existing or expanded school sites, will be needed if recommended school size is to be maintained.**

SITES FOR NEW FACILITIES

Other than two small sites set aside in North Potomac Yard and near Simpson Stadium Park, there are no designated sites for new schools in Alexandria. A combination of new school sites, enlargement of existing schools, and construction of additional schools on some existing school sites is likely to be required. The plan includes recommendations for the best locations to pursue each of these options and provides guidelines for adapting schools to the smaller sites likely to be available for urban schools.

RECOMMENDATIONS

This plan provides a range of options for providing educational facilities that meet the needs of future enrollment in 21st century learning environments. This document is fiscally unconstrained and is intended that the plan be used for both long range planning and for making short term decisions as part of the annual Capital Improvement Program process. It is also intended that the plan be updated with new enrollment data and revised enrollment forecasts on a yearly basis.

ACPS and the City of Alexandria have determined the following eleven items as overall recommendations:

1. Set maximum school size
   a. Elementary schools - 850 students for new schools with School Board flexibility for expanding an existing facility beyond 850 students
   b. Middle Schools - 1200 students for new schools with School Board flexibility for expanding an existing facility beyond 1200 students
2. Locate a new elementary school on the west side of the City as four of the elementary schools on the west side are expected to be over 850 by 2020. A second new elementary school should be considered if growth continues to increase and in absence of pursuing other options to address capacity.
3. Locate a new middle school in the center of the city as Francis C. Hammond is expected to be over 1,800 students in 2020 and George Washington will be over 1,350 students in 2020.
4. Consider options for new school sites:
   a. On the east side of city –
      - Retain two existing elementary sites for future determination – one near Simpson Stadium Park and one in North Potomac Yard.

        This plan does not call for a school on either site in the near-term. This Plan supports the continued use of the Simpson Stadium Park site as open space utilized for active recreation purposes.
   b. On the west side of city –
      - Reserve a site in the Eisenhower West Small Area Plan
      - Consider the Lower Hammond site
   c. Consider retrofitting an existing commercial building and continue to consider a K-8 model as a facility solution when the programmatic instruction is appropriate
   d. New schools should consider an urban school model
5. Renovate and/or replace Douglas MacArthur Elementary School to alleviate failing infrastructure and capacity issues, allowing the new building to house up to 850 students as the zoning, site and educational program allows. Additional information can be found on page *** in Chapter 5.
6. Renovate interior East side schools to meet the Educational Specifications (Ed Specs) and allow Cora Kelly and Jefferson-Houston Schools to absorb overages from Matthew Maury and Mount Vernon

schools. Short and mid-term recommendations are shown, by site, in Chapter 5.

7. Continue to renovate all schools to meet the Ed Specs through the Capital Improvement Plan. Short and mid-term recommendations are shown, by site, in Chapter 5.

8. Recalculation of enrollment projections and capacity utilization annually. Schools that are projected to be at or above 120% utilization within three years should be considered for portable classrooms, a capacity project and/or a boundary study or other policy considerations.

9. Consider schools in future small area planning efforts as outlined in Chapter 2.

10. Consider schools in the development review process as outlined in Chapter 2.

11. Implement a joint City/Schools Transportation Demand Management Program to encourage use of alternative modes of transportation as outlined in Chapter 2.

NEXT STEPS

This report does not include an analysis on high school. Given the current and projected growth at the high school level, additional analysis should be undertaken to develop recommendations for addressing future high school enrollment.

Discussions between the City and ACPS should continue regarding the delivery of pre-k instruction. Programs housed in neighborhood schools and centralized locations impact future educational facilities and capacity.

CHAPTER 2

PLANNING AND IMPLEMENTATION POLICIES

CITY OF ALEXANDRIA MASTER PLAN

The City of Alexandria's comprehensive Master Plan is comprised of individual Small Area Plans developed for neighborhoods throughout the City and contains chapters on topics of citywide relevancy including, Transportation and Open Space *(See Figure 2.1)*.

The Alexandria Master Plan was first adopted by the City Council on June 13, 1992. Chapters within the document are updated on a regular basis with new chapters added as needed through Master Plan amendments. Many Small Area Plans, such as Taylor Run/Duke Street, Seminary Hill/Strawberry Hill and North Ridge/Rosemont (see Figure X), are still based largely on the 1992 Plan with few amendments. Since 1992, a few areas have been divided with new plans prepared, including Beauregard and Eisenhower East. In addition, many overlay plans, which are supplemental plans and amendments to existing Small Area Plans, have been adopted over the years. Examples of overlay plans include the Landmark/Van Dorn Corridor Plan, the Arlandria Neighborhood Plan, and the Hunting Creek Area Plan.

While the 1992 Small Area Plans clearly documented locations of both public and private schools, they contained little guidance on the subject of future school needs and facilities. Recently prepared Small Area Plans have more carefully evaluated educational needs and facilities:

- *The Beauregard Small Area Plan* includes an analysis of existing schools in that area and projections of future students based on redevelopment. Redevelopment within the Beauregard area is expected to reduce the number of public school students. Housing units that are newer with higher density, and/or are more expensive, generate fewer students than older housing units that are less dense and/or are more affordable. While it did not propose a new school in the area, the Beauregard Plan did propose active recreation improvements at William Ramsay Elementary School and recommended open space improvements to the adjoining schools and parks. Additionally, the Plan recommended that the open space within the Adams neighborhood be designed to potentially accommodate school use.
- *The Landmark/Van Dorn Corridor Plan* estimated that total development potential over the 20 year Plan build

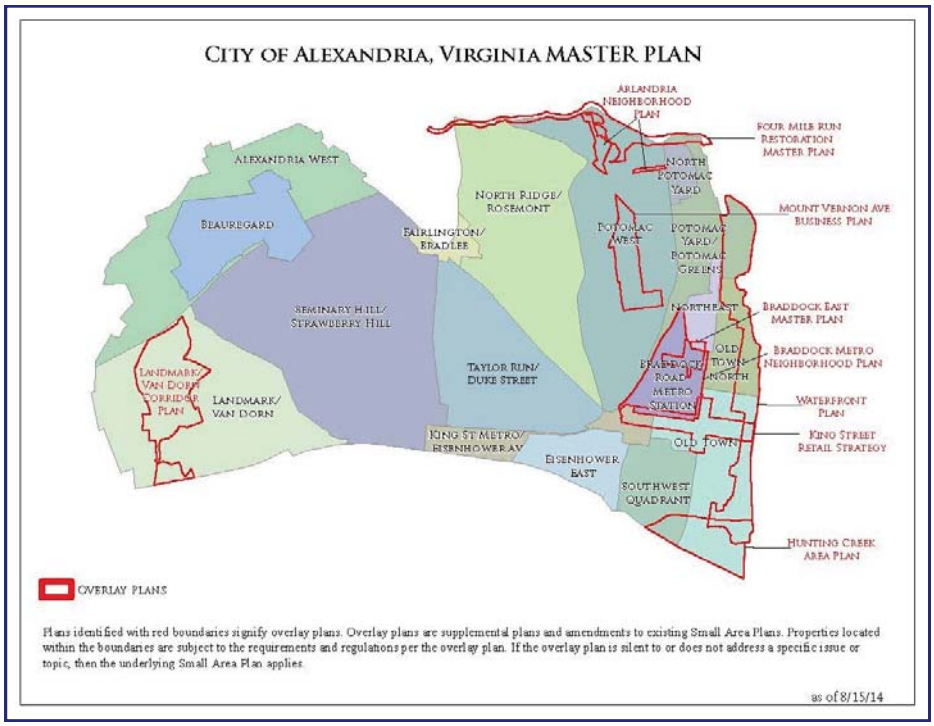


Figure 2.1

-out could generate the need for elementary school space by eight to twelve classrooms—about four elementary school students for every 100 units. The Plan did not identify a school site, but recommended that as the City reviews development applications for major parcels in the area, the Alexandria City Public Schools (ACPS) be involved in evaluating the potential for that project to include a school site or contribute to school facilities. While projects in the catalyst phase of the Plan implementation will have limited ability to contribute to school facilities, for later phases the City will request a pro-rata share of capacity costs as developer contributions and will allocate those funds for school facilities.

- *The North Potomac Yard Small Area Plan* includes a thorough analysis of potential future students and educational needs in North Potomac Yard. The Plan reserves Block 4 for a possible school site in an urban form (see Section X). It also contemplates construction, expansion or reconstruction of a new school at an off-site location. For example, Cora Kelly STEM School could be expanded to accommodate additional students.

For new Small Area Plans, the City of Alexandria's Department of Planning and Zoning is committed to including information and guidance on existing and future schools. The Long Range Educational Facilities Plan will form the basis for this analysis. The public will be actively engaged in all aspects of the planning process including the exploration of new and expanded school sites. Planning and Zoning staff will work closely with ACPS staff on planning for schools in Small Area Plans. New Small Area Plans will analyze the overall city-wide demand for schools, the existing demand for schools in the area, and the demand for schools as a result of new development proposed in the plan. Potential sites for school in the Small Area will be evaluated and the Small Area Plans will include a strategy for funding school acquisitions and construction, potentially through developer contributions as described below.

As part of their implementation measures, recent Small Area Plans include a funding strategy for public benefits necessary to make the area more livable. These public benefits typically include street and pedestrian improvements, enhanced landscaping, parks, and affordable housing. Developers, who benefit from the added value associated with the redevelopment proposed in the plan, are asked to make contributions towards these public benefits. Developer contributions can be financial contributions or contributions of land.

One successful example of this approach was the establishment of the Braddock Metro Neighborhood Plan Open Space Fund and the Community Amenities Fund. Developer contributions in the Braddock area are used to fund the acquisition and construction of a new park, and for streetscape improvements on plan-identified walking streets.

In the Beauregard Plan, developer contributions are targeted toward a variety of public benefits including construction of a new Fire and EMS Station at North Beauregard and Sanger and construction of the Ellipse to replace the Seminary and North Beauregard Intersection. New Small Area Plans will include schools among the public benefits to be evaluated. Each plan will identify the public infrastructure needs in the plan area and prioritize them through the planning process. Identified needs and projects will then become the focus of developer contributions. In future Small Area Plans, where there is an identified need for a new school, a school addition, or a school improvement, the plan would direct developer contributions toward these public improvements.

At this time, the City of Alexandria is actively preparing a plan for the Eisenhower West Area *(See Figure 2.2)*.

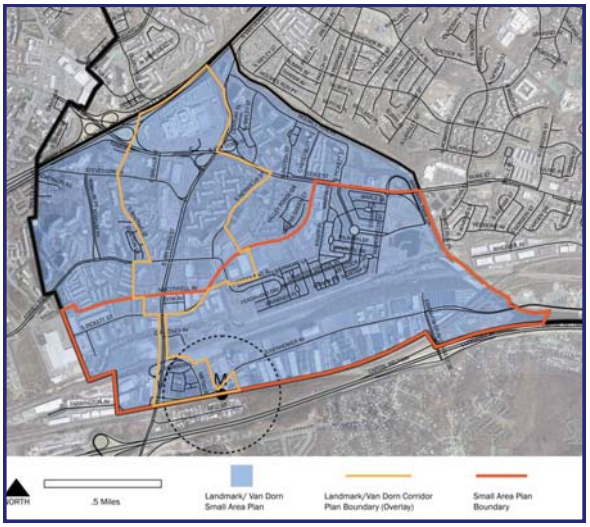


Figure 2.2

This will be a new plan for a portion of the Landmark/Van Dorn Small Area Plan (see Figure X). As the greatest need for elementary school seats is in the west end of the City (see Section X), this Small Area Plan process represents a unique opportunity for the City to secure a school site where it is most needed. As described above, City staff will work closely with ACPS staff to analyze current school needs in the area and future needs due to development proposed in the plan. The Plan will provide criteria for identifying potential school sites in Eisenhower West and will include the school as a public benefit to be funded by developer contributions.

City of Alexandria Development Review Process

All major development projects in the City of Alexandria go through a rigorous review process led by the Department of Planning and Zoning. This process incorporates a high degree of public outreach with active participation from residents and civic groups. Planning and Zoning staff ensure that development proposals are consistent with the Master Plan and Zoning Ordinance, consist of the highest quality building design, urban design and site planning, and provide an overall public benefit.

Developments which require a Rezoning or a Development Special Use Permit with Site Plan (DSUP), receive the highest level of scrutiny, which includes discretionary review standards. The Planning Commission hears requests for Rezoning and DSUPs during public hearings before forwarding its recommendation to the City Council. The City Council holds an additional public hearing on these applications prior to taking final action.

Much of the new development proposed in the City is supported by Small Area Plans. See section X The more recent SAPs include an evaluation of educational needs. When a relevant SAP directly addresses educational needs, it becomes part of the evaluation of future development application. For example, in the Landmark/Van Dorn Corridor Plan, and more specifically, projects in later phases, the City will be requesting a pro-rata share of school capacity costs as developer contributions and allocating these funds for school facilities where appropriate.

In cases where major development projects are proposed in areas where the Small Area Plan does not include a review of educational needs, Planning and Zoning staff will first quantify the effects of any proposed residential development on school facilities, examining the number of students generated and the capital costs per student for school facilities. City staff will work with ACPS staff to review the recommendations of the Long Range Educational Facilities Plan, specifically any improvements proposed in the area of the proposed development. The City may seek a proportional share of the costs associated with planned educational facility improvements, balancing this against other community benefits sought in the area.

In limited situations, development applications have directly provided educational facilities as in the case of the Coordinated Development District (CDD) for Potomac Yards/Greens CDD #10. In this CDD, a portion of the Potomac Yard Park, not to exceed three acres, was reserved and made available for the construction of a new public school. Depending on future needs, up to two acres of adjacent land will be made available for this new school. Although this Long Range Educational Facilities Plan does not call for a school on this site (Simpson Stadium Park) at present, it may be needed in the future. This Plan supports the continued use of the site as open space utilized for active recreation purposes. CDD#10 also provided improvements to Braddock Fields, which includes land that is part of George Washington Middle School.

Zoning

The City of Alexandria Zoning Ordinance divides the City into zoning districts and regulates the use, density, height, setbacks, floor area ratio (FAR) and other building and site characteristics of all properties in the City. As part of the process of creating the Mini-Master Plans, the ACPS school sites were analyzed for conformance with the Zoning Ordinance. A number of zoning issues were revealed and these are highlighted below:

- **The following schools exceed their allowable FAR per their existing zoning district and site.** Any additions or significant renovations will require either an exception to the requirements of the Zoning Ordinance or a rezoning to a different zoning district:
  - Mount Vernon
  - John Adams
  - Samuel Tucker
- **The following schools would likely exceed their allowable FAR should an expansion or addition be considered:**
  - Douglas MacArthur – the size of the proposed new/renovated school shown in the Mini-Master Plan would significantly exceed the allowable FAR.
  - William Ramsay
  - Matthew Maury – exceeding the allowable FAR may be offset by consolidating lots owned by ACPS. Further study would be required.
- **The following school buildings currently overlap an adjacent property that is in the Public Open Space (POS) zone:**
  - Cora Kelly
  - Douglas MacArthur

- George Washington – a portion of the existing eastern recreational field is within the Coordinated Development District (CDD) #10 for Potomac Yard - an upcoming dedication and rezoning action may be required.

- **Further information is needed for several school sites** as additional non-school buildings are located on the same site and have not been accounted for in the Mini-Master Plan FAR calculations. These include Mount Vernon, Cora Kelly, and William Ramsay.

The individual school solutions in the Mini-Master Plans have been provided at a very conceptual level. As planning and design work continues, addition or renovation projects may exceed the allowable FAR at a later stage in the process. Evaluating the projects for compliance with the zoning requirements will be necessary.

Options for addressing these zoning issues include:

- Individual zoning district map amendments for each school site to be considered at the same time as the Development Special Use Permit (DSUP) for that school improvement
- One or more zoning ordinance text amendments to make existing zones more accommodating to school expansions
- Or the creation of a new zone in the zoning ordinance specifically for public schools.

A new zone specifically for public schools would provide for appropriate attention to neighborhood issues while also providing flexibility not available in the various zoning districts in which the schools are currently located.

Transportation Demand Management

Transportation Demand Management (TDM) is a set of low cost policies, strategies, or programs that promote the more efficient use of existing transportation systems (i.e. roadways, bridges) and have an ultimate goal of reducing drive alone travel. Alexandria has a long-range city-wide TDM Plan with a broad set of strategies to reduce the number of cars on the City's roads.

Establishing TDM Plans within Alexandria City Public Schools

ACPS and the City share the same vision of creating a transportation system that encourage use of alternative modes of transportation, thus reducing dependence on the private automobile. This system will lead to the establishment of transit-oriented, pedestrian friendly village centers, focused on neighborhood preservation and increased community cohesion, forming a more urban, vibrant and sustainable Alexandria.

The City promotes a balance between travel efficiency and quality of life, providing Alexandrians with transportation choice, continued economic growth and a healthy environment. TDM programs are an important tool for implementing this vision, and ACPS facilities would benefit greatly from reducing single occupancy vehicle (SOV) travel in terms of parking capacity and congestion. As such, TDM initiatives are an integral component of this long range facility planning effort, and ACPS seeks to collaborate with the City's *Local Motion* initiative to advance these programs in Alexandria's schools. This partnership between ACPS and *Local Motion* aims to promote existing TDM programs offered in the City and the Region, and expand their presence throughout the school system.

The establishment of TDM programs in Alexandria school facilities will occur on a rolling basis, and ACPS will create a process to identify which schools are in need of these programs. Items that may warrant the creation of a TDM program include, but are not limited to:

- An increase in staff or student enrollment
- Identified parking or circulation issues
- Changes in parking capacity

Once a school has been identified as needing a TDM program, ACPS will work with the City's Transportation & Environmental Services Department (T&ES) to tailor program options specific to that particular school. A wide-range of TDM program options exist, some examples that could be implemented at Alexandria schools include, but are not limited to:

- Safe Routes to School initiatives
- Incentives and prizes for walking, biking, or using transit

- Marketing local or regional commuting programs
- Transit fare subsidies
- Walk/bike to work subsidy program
- Information Dissemination
- TDM/Environmental integration into curriculum

A TDM program coordinator will be assigned to each school by ACPS. The coordinator will be responsible for administration and execution of the TDM programs at the school, and will serve as the point of contact for students, employees, and parents on questions related to those programs. The coordinator will produce annual reports and transportation surveys in collaboration with T&ES to track progress and collect information on which programs are in demand.

The transportation surveys are an important tool that can provide valuable information relating to the commuting behaviors of employees, parents, and students. These surveys will help inform the TDM program selection and also facilitate ride-matching and car-pooling opportunities. T&ES will provide the survey questions, access to the platform (software), and analyze the results. ACPS will be responsible for distribution of the surveys within the schools.

LREFP Annual Implementation Process

The timeline in *Figure 2.3* summarizes the proposed annual implementation process for the Long Range Educational Facilities Plan.

September — January	City creates long-term, population and housing forecasts which input into new development projections. Demographic data also informs long range forecast.
October	ACPS enrollment numbers received.
October— January	ACPS develops short– and mid-term projections (informed by City data on development). City/ACPS staff works on long-term enrollment forecast based on city's population changes and new development data.
December	New birth data received.
December— January	City/ACPS staff meet to review/analyze data as it relates to enrollment.
February	Work group (and/or City/ACPS Subcommittee) meets with staff to determine any adjustments, at which time ACPS can report on other issues with facilities that relate to the LREFP. Recommendations can inform ACPS and City CIP processes.
March	ACPS March enrollment figures are released. Staff and work groups can monitor as they may be a precursor to upcoming fall enrollment.

Figure 2.3

Chapter 3
Enrollment Trends and Forecasting

Background

Current Rapid Growth in Enrollment

Enrollment in Alexandria City Public Schools (ACPS) is currently in a period of rapid growth of approximately 4% per year that began in 2006 and has produced a 35% increase in enrollment over eight years. This growth was preceded by a period of slowly declining enrollment at all grade levels from 2000 to 2006. Growth began when the crisis in housing finance in 2006 abruptly reduced the ability of growing families to move to new housing with more space in the outer suburbs. Although this bump in births and enrollment will gradually work its way through to graduation, a share of this growth is expected to be supported and sustained by more families choosing to live in smaller housing units at higher densities in inner suburbs and central cities. Anecdotal evidence supports the idea that families are choosing urban living for its convenience, cultural richness and lower transportation cost compared to more distant suburbs.

Long-term Enrollment Forecast

Three potential long-term enrollment scenarios, together with the 2014 ACPS mid-term enrollment projection are shown in Figure 3.1 below. The scenario recommended for use in long-range planning is termed the Recommended Planning Forecast. All three scenarios are based on the city's and the region's current population growth assumptions of the regional cooperative forecasting program through 2040. The birth rate and other assumptions of the recommended planning forecast result in a decline from the recent rapid enrollment

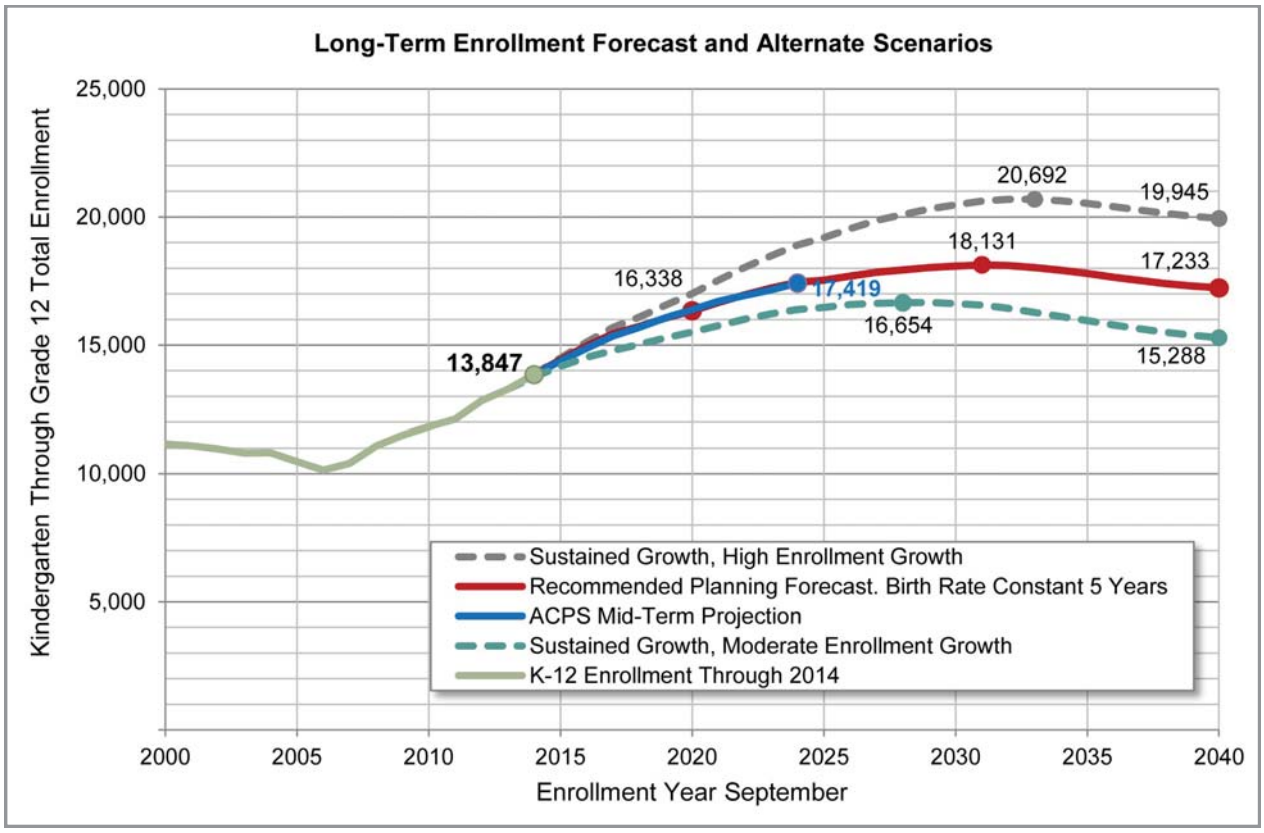


Figure 3.1. Three long-term enrollment scenarios are shown with the 2014 ACPS mid-term enrollment projection. The recommended forecast for use in long-range planning is shown in red.

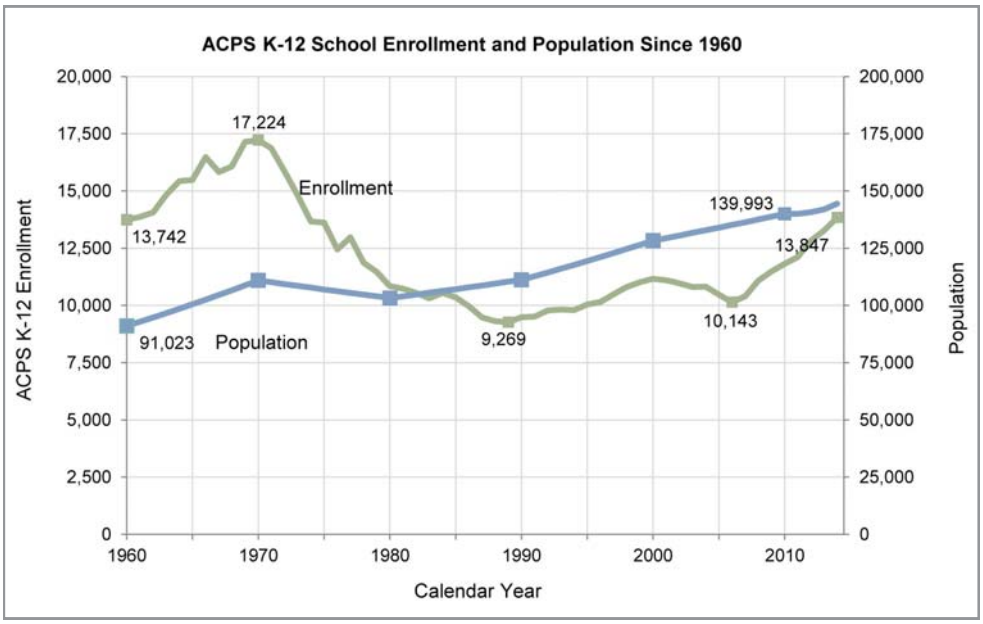


Figure 3.2. Alexandria population and public school enrollment since 1960. School enrollment peaked at over 17,000 students in 1970 as the last of the baby boomers enrolled in first grade.

growth rate over the next 10 to 15 years to a rate that approximates the 1% per year growth of the city's population as a whole. Enrollment is then expected to fall below the city's growth rate, and potentially to decline in absolute numbers slightly each year. In spite of the expected slowing rate of enrollment growth, enrollment is expected to continue to rise to peak at between 18,000 and 19,000 ACPS students in the next 15 to 20 years before declining.

The remainder of this chapter provides background on the history of enrollment in ACPS, the key contributing factors that determine ACPS enrollment each year, and how ACPS short-term projections and the long-term forecasts used to estimate future facilities needs were developed.

ACPS Enrollment History

Figure 3.2 above shows ACPS enrollment since 1960 together with city population. School enrollment peaked in 1970 as the last of the baby boomers reached school age and the earliest baby boomers had recently graduated from college. In spite of a 15% increase in the number of households from 1970 to 1980, the city's population fell that decade by 7%, and enrollment in city schools dropped by nearly 37% as Alexandria's households sent their children off into the world. Some came back to fill a rapidly growing inventory of new apartments in the city, convenient to serve the offices and industries of the region. The city's average household size declined from 2.57 in 1970 to 2.07 in 1980, 2.04 in 1990, and 2.03 people per household in 2000 and 2010, among the lowest of all cities in the U.S.

Forecasting Future Enrollment

Enrollment Dynamics

The basic mechanism by which births in Alexandria become students in school, and how those students

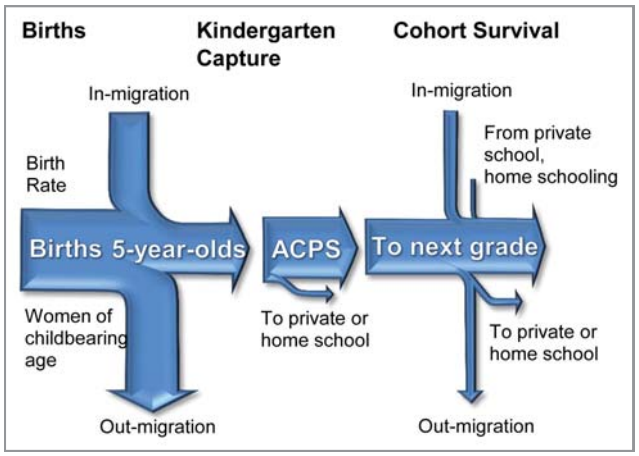


Figure 3.3. Enrollment factors. Because of substantial and variable migration by young families in and out of Alexandria, kindergarten capture is difficult to predict reliably. Once children are in ACPS schools, migration effects are generally lower than between birth and age 5.

progress through the grades is illustrated in Figure 3.3. Enrollment forecasting involves modeling this process mathematically, beginning with the recorded number of births each year. Information on in-migration and out-migration is poor in Alexandria, so these numbers are not modeled directly. Instead, the kindergarten capture rate (the number of kindergarten students each year per birth five years before) is used, with that figure averaged to smooth out random variations from year to year to estimate the future capture rate. Since 1975, that rate has averaged 56% per year, indicating a net loss to out-migration of about 7% to 8% of children born in Alexandria each year before they reach kindergarten. While about 10% to 12% of children attend private school or are home schooled, net out-migration plays a much larger role in the low rate of kindergarten capture.

Similarly, the ratio of the number of students enrolled in each grade to the number enrolled the prior year in the earlier grade, termed the cohort survival rate, is used to estimate the enrollment in each grade in the future. Net loss grade-to-grade currently varies significantly by grade, but averages 2% to 3% per grade over all grades. 9th and 10th grades gain students shifting from private school to ACPS, and show a cohort survival rate of greater than 100%.

Outside factors such as the recent housing market crisis, job prospects, transportation costs, and changes in public perception of the quality of local schools can all change people's decisions on where to live, public vs. private school, and whether or not to have children from year to year. Modeling based on past trends in kindergarten capture and cohort survival does not anticipate such changes. Such modeling also does not reflect changes in the rate or type of new development. In Alexandria's enrollment forecasts, a separate calculation is made of where changes in enrollment are expected based on expected new units to be constructed and existing units to be demolished.

The year 2014-15 enrollment statistics indicate that the total ACPS student enrollment has increased 4.4% compared to school year 2013-14. The average annual growth between September 2006 (FY 2007) and September 2014 (FY 2015) for the division is 4.13%. The highest percentage increase is seen in middle school at 6% followed by high school at 5.8% and elementary school at 3.2%. The lower rate of increase in elementary enrollment is a change from the initial years of the recent enrollment increase, and is seen as a confirmation that the recent growth in enrollment is likely to slow over the next few years, first presaged by a 6.5% drop in kindergarten enrollment in 2013.

Uncertainty in Enrollment Forecasting

Alexandria's close-in urban location, demographics and housing stock combine to make future changes in enrollment difficult to anticipate. The drop in enrollment from 2000 to 2006 was not anticipated by school planners, and while the effects of the housing finance crisis and recession on delaying families' moving plans could have been expected, the depth and duration of the economic disruptions resulted in a more significant and longer term effect than was initially foreseen. Because Alexandria has only about 3% of the region's population and about 20% of Alexandrians move each year, the annual rate of change in school-age population can change quickly as economic conditions change.

In addition, there is at least anecdotal evidence that more families are choosing an urban environment in which to bring up their children, and walkable places like Alexandria with good public transportation and a wide range of local cultural activities and nearby jobs are the kind of places many of them seek. Sorting this effect out from recession effects will take more time.

School enrollment statistics are accurate, 100% data, and a leading indicator often used to estimate how population is changing. There are no comparably complete, reliable predictive data that can be used to anticipate changes in direction of

school enrollment trends with the precision needed to identify school needs 3 to 4 years in advance, the minimum notice needed to design and build new permanent school facilities.

While the number of births five years ago is used to predict kindergarten enrollment each year, the share of births that become kindergarten students varies widely from year to year in Alexandria because of the high mobility of couples and families throughout the region and the dependence of this mobility on economic conditions. Data on geographic mobility that would be useful in anticipating enrollment is available from the Census Bureau as a 1% sample survey with a large margin of error; however, even that data is not available until approximately one year after the families surveyed have already enrolled their children in school.

Long-Term Enrollment Forecast Scenarios

While we can have some confidence that this growth spurt will not last forever, estimating precisely when the turnaround will take place remains difficult. For this reason, multiple scenarios with different birth rate, cohort survival and kindergarten capture assumptions over time were used to help guide the long-range plan. All the scenarios assume the same background of sustained economic growth in the city and the region over the long term. Scenarios assuming different economic conditions could result in a wider range of enrollment outcomes.

Recommended Planning Forecast Scenario

In the recommended planning forecast scenario we assume that the birth rate in the city will remain at its 2012 level for five years and then begin to decline at 0.3 percentage points per year to the sustained rate that was experienced over the 10 years before the recent rapid increase. Once the birth rate reaches that previous rate, it is assumed to decline more slowly, at the same rate the national birth rate is projected to decline. The kindergarten capture rate and cohort survival rate are assumed to fall slightly each year from their current 2-year or 3-year average rates. The birth rate per 1,000 residents fell in 2013 for the first time since 2006, so the initial year of data is a first indication that the birth rate may have peaked.

High Enrollment Growth Scenario

The high enrollment growth scenario assumes that the birth rate will continue to rise to peak in 2017, then begin to decline at 0.3 percentage points per year until it reaches the previous sustained rate, followed by slower decline at the rate the national rate declines. Kindergarten capture and cohort survival are assumed to continue at relatively high rates, but lower than the rates experienced from 2006 to 2010.

Moderate Enrollment Growth Scenario

The moderate enrollment growth scenario assumes the birth rate scenario of the recommended forecast, with a constant birth rate for five years, but assumes the kindergarten capture rate and cohort survival rate will fall faster than in the recommended planning forecast scenario.

Each birth rate assumption in the three principal scenarios is combined with slightly different kindergarten capture and cohort survival assumptions that increase the differences between the scenarios that would result from the birth rate

From Kindergarten to Senior Year in ACPS

assumptions alone. The kindergarten capture rate in the two lower enrollment cases is assumed to fall to the historic average rate of 56% and not below. The cohort survival rate is assumed to remain relatively high, on the assumption that students who enter the Alexandria schools will tend to stay in them at a higher rate than they did during the decline in

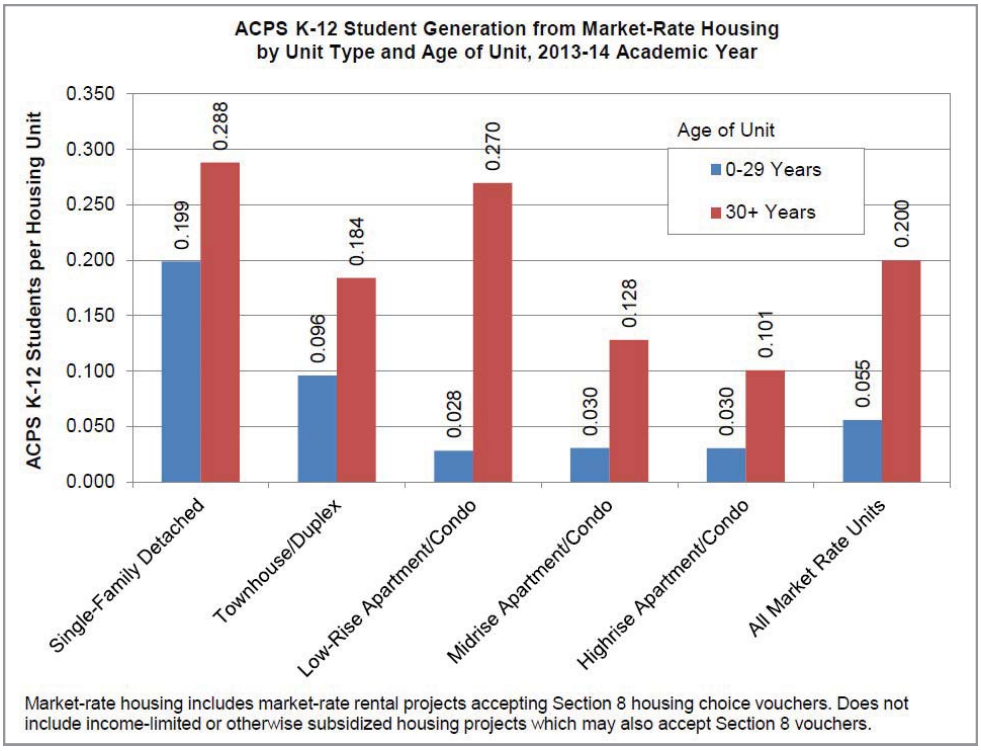


Figure 3.4. Student generation by unit type and age of unit for market-rate housing units Older units generate more students per unit regardless of the type of housing. New single -family detached homes have the most students per dwelling unit, but very few additional single-family detached homes are likely to be built in Alexandria. For older units, single-family homes generated only slightly more students per unit than the city's many low-rise or garden apartments. New apartments and condominiums generate fewer than one student per 30 units until they reach 30 to 40 years old.

enrollment from 2000 to 2006, but at a lower rate than that experienced from 2006 to 2010.

Long-term Enrollment Forecast Assumptions

The forces expected to turn around the recent spurt in enrollment growth include local limitations on the ability of Alexandria's housing stock to meet family needs given other choices in the region, and expected national demographic changes. Alexandria's housing stock is dominated by multifamily units with fewer rooms than housing in most surrounding areas, and this stock is not expected to continue to turn over to growing families without running into limits in competition with singles and childless couples. Some growth can be expected to continue through turnover to more families in neighborhoods that fed the baby boom in the 1960s.

The first and most important national demographic factor driving this long-term decline is an expected continued decline in birth rates among all population groups, particularly among those groups with high current birth rates, including recent immigrants and the Hispanic population (*Methodology and Assumptions for the 2012 National Projections*, U.S. Census Bureau, undated). The strength of this effect will depend to some extent on the rate of growth in the Hispanic population in the city. The growth in the Hispanic population could outweigh a drop in birth rate in generating ACPS students.

The second factor is the approximate doubling of seniors as a proportion of the total population that will take place between 2015 and 2040 as all those in the baby boom generation pass age 75, and the

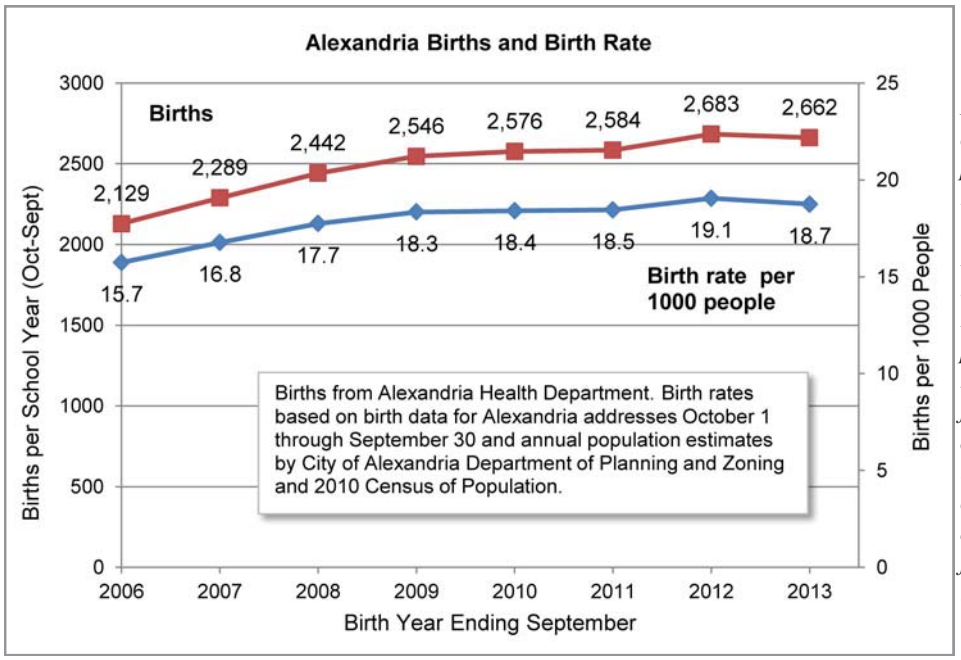


Figure 3.5. Alexandria Births and Birth Rate. After a 10-year period of relatively constant birth rate averaging 16.3 per 1000 people from 1996 to 2006, Alexandria's birth rate began to rise substantially in 2007, reaching 19.1 per 1,000 people in 2012. In 2013 the number of births fell slightly from 2012, resulting in a 1.6% decline in the birth rate. It will take at least a year or two of additional observations to determine whether this is a fundamental change in direction or a temporary variation.

oldest of them replace those in the low birth years of 1925 to 1940 as the oldest members of the population.

Enrollment from New Development and Re-development

In the current COG Round 8.4 long-term development forecast, the city estimates that the number of housing units in the city will increase by about 25% between 2015 and 2040. While most of this increase is in apartments and condominiums, a significant growth in the number of townhouses is also expected. New townhouses generate approximately three times as many students per unit as new apartments or condominiums in the same age range.

The enrollment forecast includes an estimate of student enrollment from new development as well as reductions in enrollment that may result from demolition of existing housing units. Because new development each year is typically on the order of 1% of the number of existing housing units, and because most new units result in a smaller number of students per unit than older housing, new development has a relatively small impact on enrollment each year. However, new development can have a disproportionate effect on specific schools as major projects such as Potomac Yard and the Beauregard Small Area Plan areas develop over a number of years, so new development is an important consideration in developing the long-term forecast by geographic area of the city. Including new or rehabilitated income-restricted or subsidized affordable family housing in new development can result in substantially more students per unit than market-rate housing.

The current average number of students per unit by type of housing and age of unit for market-rate housing is shown in Figure 3.4 above. New single-family detached housing units currently average about one student for every five units. For townhouses, it's one student for every 10 units. For apartments and condominiums, the number is one student for every 30 units or more for new units, while older units have three to 10 times as many students per unit depending on the type of housing.

Some of the current housing stock that currently produces students at these low rates will age past the 30-year mark during the forecast period, and is assumed in the forecast to produce ACPS students at the rate of these older buildings. The age effect observed in the current housing stock is closely linked to affordability of older units. As the current housing stock ages, it will be important to track whether this aging effect on student generation

remains the same for the current generation of housing.

Background for Forecasting

This section briefly summarizes data reviewed by staff and the Demographics and Forecasting Subcommittee in developing assumptions for the long-term enrollment forecast.

Births and Birth Rates

Births recorded to Alexandria mothers each year are the first data element needed to anticipate future enrollment. Birth data is one of very few statistics available well in advance of the time students appear at fall registration. Changes in the number of births, and the ratio of births to population, can provide early warning of possible future changes in enrollment. Alexandria's birth rate increased significantly from 2006 to 2009 when the housing market placed substantial constraints on people's ability to move, and grew much more slowly from 2009 to 2012. In 2013, the number of births grew only slightly from 2012, and the birth rate fell for the fist time since 2006.

Analysis of birth rates included comparing Alexandria's birth rate trend to that of neighboring jurisdictions and the nation as a whole. Potential factors possibly impacting the number of births and the size of the school-aged population were considered including changes in the:

- Crude birth rate (births per 1,000 population);
- Total fertility rate (average number of births a woman has in her lifetime);
- Age composition affecting the relative size of the female population 15 to 44 years of age; and
- Racial and ethnic composition of the population of women of child-bearing age in the city.

Birth Rate Findings

While the crude birth rate for the U.S. as a whole is declining and is expected to continue to do so for the next 30-40 years, Alexandria's birth rate has recently been increasing until a moderate drop in 2013. From 2006 to 2012, the City of Alexandria's number of births increased 26%, substantially faster than its population as a whole, which grew by an estimated 4.1% over the same period.

Alexandria's birth rate is higher than that of Northern Virginia and the nation as a whole.

On a national scale, the aging of the population will result in a reduction in the percentage of childbearing-aged women, consequently, reducing the crude birth rate. Alexandria, however, has an unusually large proportion of residents aged 20-35 years (prime family-forming and childbearing years), and a somewhat smaller proportion of seniors – so the effect of the aging population in reducing the crude birth rate is expected to be less in the city than in the nation.

Birth rates vary widely in the U.S. among racial and ethnic groups because of differences in age distribution and cultural factors. Nationally, birth rates of racial and ethnic groups currently above the average rate are decreasing. Alexandria's population is comprised of many racial and ethnic groups. The Hispanic population in the U.S. has a relatively high birth rate, and Alexandria has a growing Hispanic population with many young families.

Virginia Department of Education data shows that the Hispanic share of ACPS students has increased from 26.8% in 2002 to 34.6% in 2014, making Hispanic students the largest single racial or ethnic group of students in the division. Over the same period, the non-Hispanic White share of students rose from 22.9% to 26.8% of all students, and the Black or African American share fell from 43.6% to 31.0%. Asians and other or mixed-race students make up the remainder of the student body with shares less than 5% each.

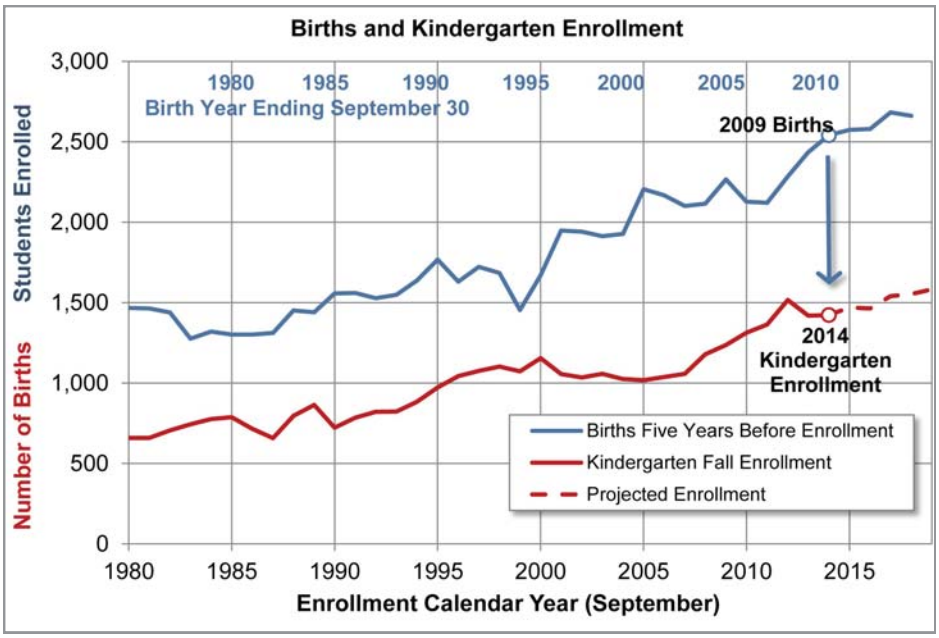


Figure 3.6. Births and kindergarten enrollment. This graph illustrates the concept of kindergarten capture rate showing the kindergarten enrollment since 1980 in Alexandria plotted against the number of births 5 years earlier that would be eligible to enroll in kindergarten that year. Alexandria has an unusually low kindergarten capture rate, based primarily on the age structure of its population, which includes only about 60% as many 5-year-olds as those less than one year old according to 2000 and 2010 Census data.

The increasing share of the population in Alexandria that is Hispanic, and the declining birth rate among Hispanics, work in opposite directions to change long-term enrollment, so tracking this factor over time will be important in updating the long-range enrollment forecast.

Birth Rate Summary

Based on the findings, the long-term assumption is that declining national birth rate trends could be somewhat offset in Alexandria by its unique urban profile with a smaller share of seniors, an unusually large proportion of residents of prime childbearing-age (20-35 years), and an increasing Hispanic population. The current assumption in all scenarios is that the city's birth rate will ultimately stop increasing and then drop below its current level, resulting in a declining rate of growth in kindergarten enrollment in the long term.

Kindergarten Capture Rate

Kindergarten capture rate refers to the share of births that become Alexandria City Public Schools (ACPS) kindergarten students five years later. As part of its work to forecast the future enrollment of ACPS, the subcommittee analyzed Alexandria's kindergarten capture rate and evaluated how this rate could inform the both ACPS short-term projections and the long-term enrollment forecast.

Kindergarten Capture Background

In Alexandria, the capture rate for ACPS kindergarten students since 2008 has ranged between 54.3% in 2009 and 66.2% in 2012. As we move away from the years affected by the housing finance crisis which substantially altered people's ability to move, the rate has started to fall, and long -term kindergarten capture rate on the order of 55% to 60% seems likely based on historic data. A large increase in kindergarten capture for one year has a big effect on kindergarten enrollment for that year and on that class over the following years, but the effect of such a one-year event on total enrollment is small. If the increase in kindergarten capture is sustained over time, total enrollment will ultimately increase by the percentage increase in kindergarten capture by the time that class reaches 12th grade in 13 years.

A long-term trend of families choosing urban living could increase this rate. The rate is carefully monitored by ACPS, and the expected future rate is adjusted each year based on the immediate prior years in making school enrollment projections.

Methodology

Analysis included comparing kindergarten capture rate over time within Alexandria and neighboring districts using data from the Virginia Department of

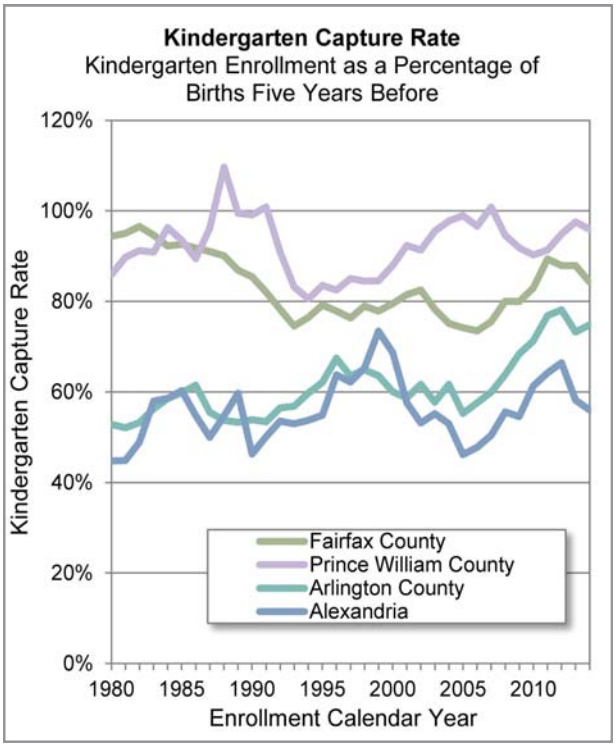


Figure 3.7. Kindergarten capture rate for Alexandria compared to that of other northern Virginia public school systems. Alexandria's capture rate is lower than the others in nearly all years since 1980.

Health-Division of Health Statistics and data obtained directly from other school districts.

Alexandria has traditionally had a lower kindergarten capture rate than neighboring jurisdictions. In an effort to understand why families may or may not chose to stay in Alexandria – and if they do, enroll their 5-year old children in ACPS – the subcommittee explored potential factors that could influence parents' enrollment decisions including ACPS facility condition and reputation; availability of preferred alternatives; economic factors impacting migration patterns; the city's available housing stock; and household demographics.

Findings

From 2005 to 2012, the ACPS kindergarten capture rate rose substantially, indicating that more families were remaining in Alexandria until their children reached kindergarten age and chose to enroll in their kindergarten-aged children in ACPS. From 2012 to 2014, the rate fell substantially, and in 2014 fell to the estimated 30-year average of 56%.

While it is difficult to analyze and quantify why families move in and out of Alexandria, it appears that ACPS reputation, economic factors, and Alexandria's housing stock (smaller percentage attractive to families as compared to surrounding jurisdictions) have each played a role, the effects of which can be seen in the capture rate and its changes over time.

Summary

While the data cannot prove a cause-and-effect relationship, it is reasonable to connect the housing bubble that collapsed in 2006 with an outmigration of families with children from Alexandria that resulted in a reduction in student enrollment in ACPS from 2000 to 2006. During this period, many families chose, enabled and encouraged by rapidly rising prices and equity in their homes, to find larger units in the suburbs before they were priced out of the market. Easy access to loans further facilitated such moves. Conversely, the housing finance crisis of 2006-2009 meant that many families were unable to move to larger units as they had expected to as their children grew older and they had more children, pushing enrollments up from 2007 through 2014 at a rate much higher than the rate of increase in housing stock in the city. Once children enter into ACPS for kindergarten, they are more likely to stay within the system.

Cohort Survival Rate

Background

The cohort survival rate, as the term is used in enrollment forecasting, is the share of students moving from one grade to the next in each grade. In the example in Figure 3.8 below, a school has

Grade	2010	2011
K	118	121
1	110	116
Cohort survival from kindergarten to 1st grade		98%

	Average Cohort Survival		
	Elem.	Middle	High
Pre-2007	93.2%	93.5%	95.1%
Post-2007	97.8%	97.6%	99.8%
Difference	+4.6%	+4.0%	+4.7%

Figure 3.8. Cohort survival diagram. This figure shows the concept of cohort survival. In the illustration, 116 first-grade students in 2011 are compared to 118 kindergarten students in 2010, a cohort survival rate of 98.3%.

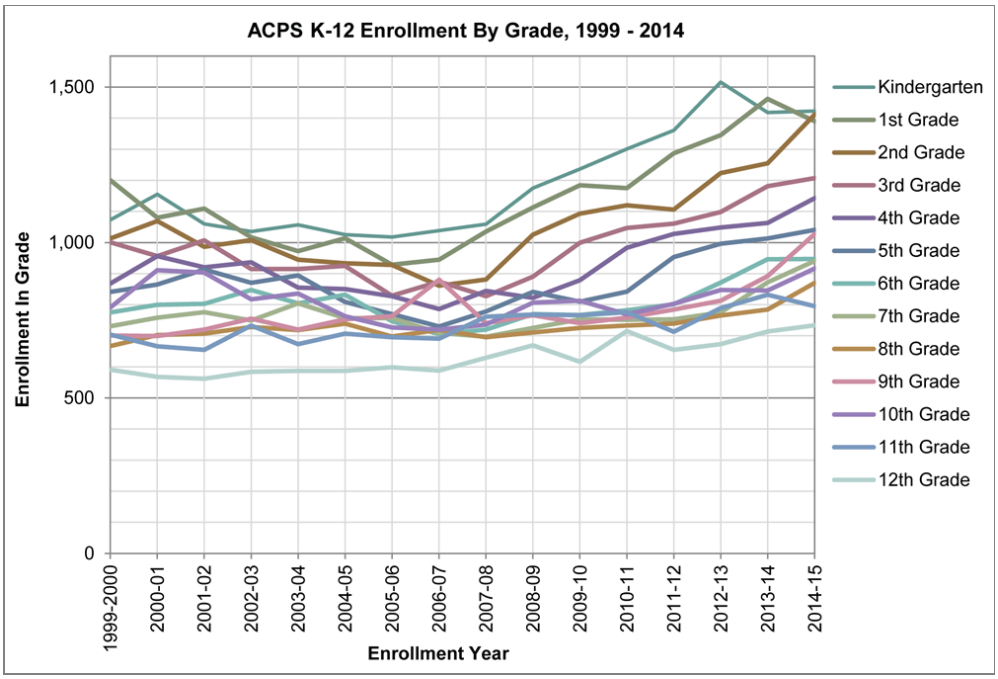


Figure 3.9. ACPS Enrollment by Grade, 1999 through 2014. Kindergarten enrollment grew by nearly 50% from 2006 to its peak in 2012, This increase in kindergarten enrollment has passed to each succeeding grade in turn, and reached 8th grade September, 2014.

118 kindergarten students in 2010. In 2011, 116 students enter first grade, a cohort survival rate of 98% of the previous year's kindergarten class. A rate less than 100% means that more students are leaving Alexandria City Public Schools (ACPS) than coming to ACPS to transition to that next grade. A percent greater than 100% means more are joining APCS than are leaving. During the years of enrollment decline from 2000 to 2006, the average cohort survival rate in primary grades fell from about 96% in 2000 to just over 90% in 2006. If a 90% rate is sustained from second through eighth grade, it means that eighth-grade enrollment will be about 48% of first-grade enrollment. After 2006, the cohort survival rate for primary grades increased to over 100% in 2008, but has since stabilized at about 96% to 97% for lower grades. If sustained at 96.5%, this rate would result in an eighth-grade enrollment about 78% of first-grade enrollment, and about 42% higher overall enrollment in the division as a whole (assuming similar cohort survival ratios for high school) than a 90% cohort survival rate. ACPS typically has a cohort survival rate of greater than 100% into 9th and 10th grades, since many private schools do not continue to high school, and parents move their children to public school at this level. The lowest cohort survival rate of all grades is going into 12th grade. Averaging about 85% historically, this rate has moved closer to 90% in the last three years, and includes factors such as seniors graduating earlier than planned.

A one-percentage-point increase in average cohort survival in all grades from 95% to 96% each year means a little more than a 1% increase in overall enrollment in the first year, but translates to 13% more 12th-graders, and nearly 6% greater total K-12 enrollment if sustained for 12 years until all grades graduate.

The cohort survival rates derived from enrollment statistics include all sources of new students. These rates ignore whether changes in enrollment are due to new development, demolitions of existing

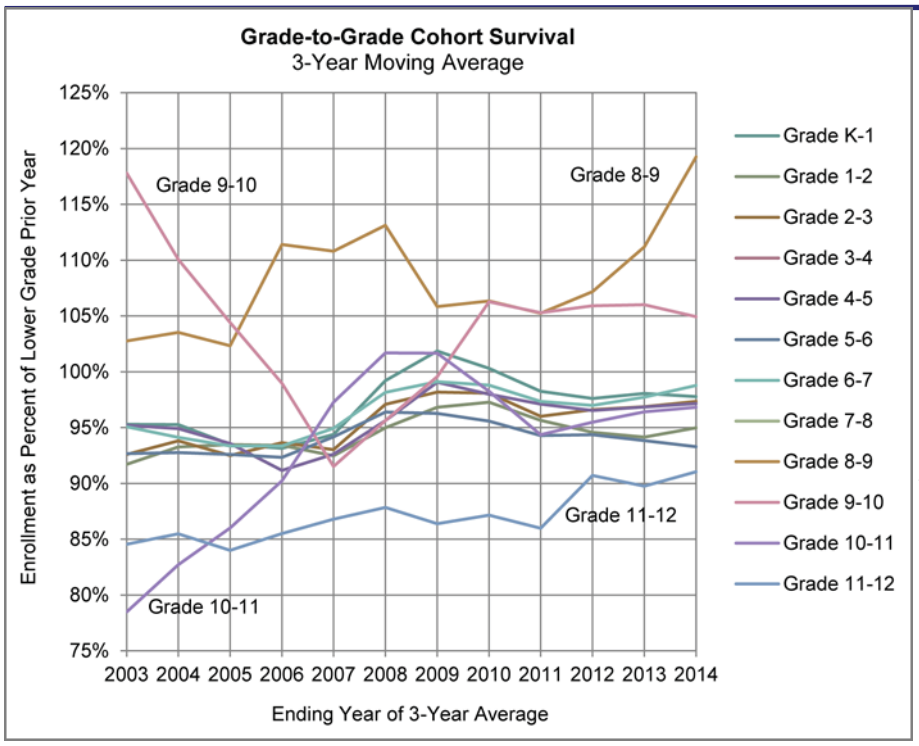


Figure 3.10. Cohort Survival by Grade. This graph shows the changes in the 3-year average of cohort survival from grade to grade from 2003 to 2014. Grades 9, 10 and 12 have unusual cohort survival rates as many students enter ACPS from private schools in 9th grade, and 12th grade enrollment is historically low compared to 11th grade. Most grades are clustered near the center of the graph, with rates between 90 and 95% before 2007 and between 95% and 98% from 2011 to 2014.

housing, change in occupancy of existing housing, or choices between public and private school. Separate analysis of new development, including the type of unit, is conducted in order to anticipate changes in the rate of student generation as rates of new development change, and to anticipate which schools are likely to see enrollment changes from new development.

The graph above shows ACPS enrollment by grade during the years of declining enrollment from 2000 to 2006, and the recent rapid increases in enrollment since 2007. Enrollment in first grade began a rapid rise in 2007, followed by second grade in 2008, third grade in 2009 and so on. This pattern shows the effect of cohort survival from increases in the early grades pushing up enrollment throughout the system over time.

Methodology

ACPS and the City of Alexandria determined the historic cohort survival rate at which students move from one grade to the next, by grade level, by year, by attending school, by neighborhood school and by individual student. In addition, staff analyzed contributing factors to this variable including established trends, new programmatic initiatives, and neighborhood schools. Unlike the dropout rate, which is based on records of individual students, cohort survival tracks aggregate numbers of students.

Findings

Alexandria's cohort survival rate for elementary and middle school grades is almost always less than 100%, reflecting smaller populations in each age cohort in the city through high school age. In high school, cohort survival rates for 9th and 10th grades are typically higher than 100%, reflecting students entering public school from private schools. The decline in student population by grade is generally considered to be a result of the market demand for Alexandria's housing stock, which is further described in the kindergarten capture and student generation rate summaries.

The graph above shows the 3-year moving average of cohort survival rates for all grades since 2003, reflecting the average of rates since 2001. The cohort survival rate for most grades reached a recent minimum in 2005 or 2006, reached historic highs in most grades from 2007 to 2009, and has stabilized at levels somewhat lower than these peaks from 2010 through 2014. The low cohort survival rate reached in 2006 of approximately 92% for elementary grades means a loss of 8% of students at each grade level, resulting in a 9th grade

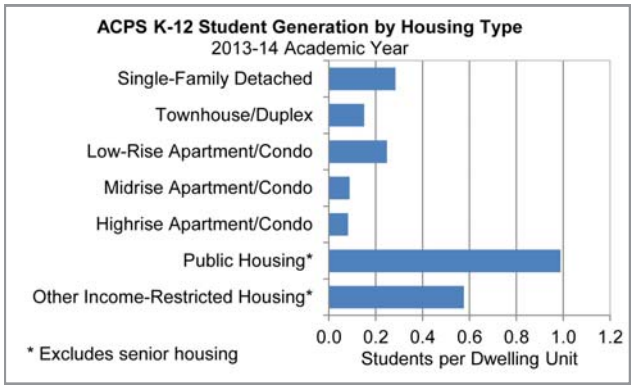


Figure 3.11. Student Generation by Housing Type. Single-family detached, townhouse and low-rise apartment and condo units have the highest student generation rates among market-rate housing units. While public housing and other subsidized or income-limited units have high student generation rates per unit, students from these units make up a small share of total enrollment.

enrollment about half that of a kindergarten enrollment. The recent cohort survival rates of closer to 97% mean in the long term a 9th grade closer to three-quarters the size of the entering kindergarten class each year.

These recent changes can be attributed to the same factors that resulted in similar changes in the kindergarten capture rate over the same period. The combination of the increase in the cohort survival rate, city birth rates, and the kindergarten capture rate has resulted in enrollment growth that is substantially outpacing overall growth in population and housing units in the city.

Summary

After analyzing both the historical student cohort survival rate and the other influencing variables, a 3-year average cohort survival rate was used for the short term enrollment projection. Expectations for cohort survival will also inform the long range forecast model.

Student Generation Rates

Background

The Alexandria City Public Schools (ACPS) student generation rate is the ratio of the number of students enrolled in ACPS to the total number of dwelling units in the city. The City has identified specific generation rates for various types and affordability classes of housing, and the effect on generation rates for a variety of housing characteristics including building type (single vs.

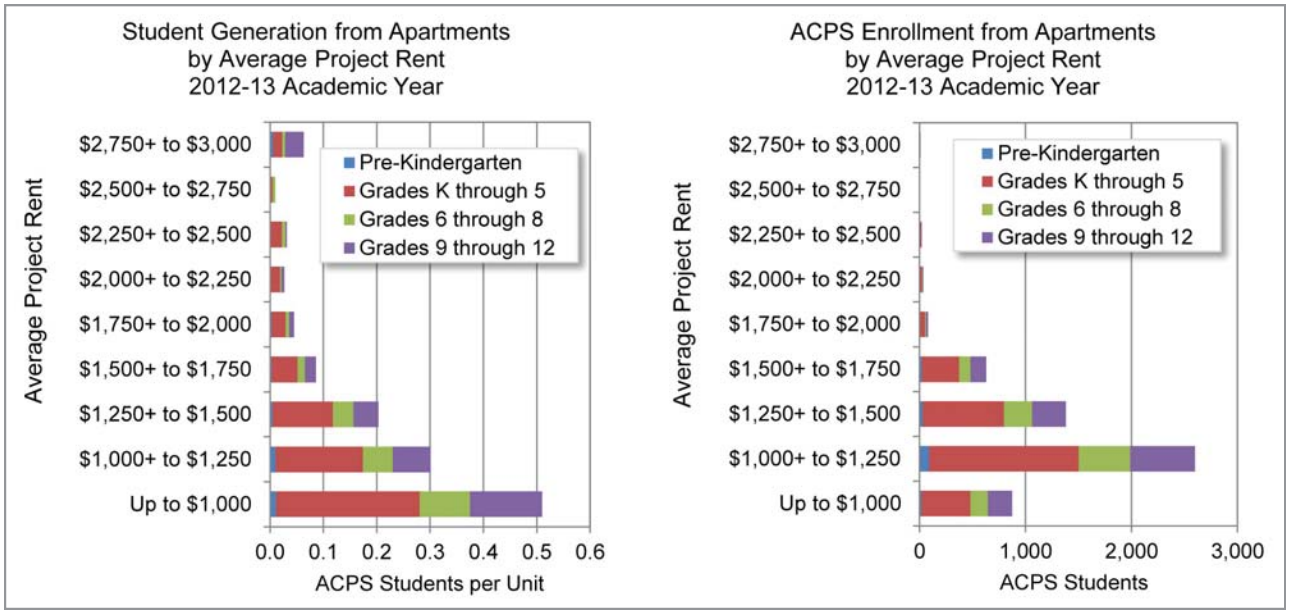


Figure 3.12. Student Generation and ACPS Enrollment by Average Project Rent. This analysis, conducted for the 2012-13 academic year, shows differences in student generation and total enrollment as a function of monthly rent. The graphs are based on rents reported in the Alexandria Office of Housing's annual apartment survey. The survey is limited to apartments of more than 8 units, and participation is voluntary, so not all apartment buildings are included in the survey. Some of the apartments, particularly in the lower rental ranges, are limited to low or moderate-income households. Public housing units are not included in the graphs.

multi-family, low-rise vs.mid-rise and high-rise), tenure (owner or rental), building age, value and rent, whether rent-subsidized or income-restricted, and whether units are restricted to seniors. The generation rate patterns for various types of housing units and unit characteristics assist in predicting future enrollment for the short- and long-term planning horizon as forecasts of demolition and new construction change the expected mix of types of housing in the city over time.

Methodology

Using the address of every ACPS student, staff was able to map nearly all students from Alexandria to a housing type for the 2012 and 2013 school years and analyze generation rates for various types of housing by type, age and affordability class. (Approximately 2% to 3% of students each year cannot be assigned to a specific city residence address and housing type because of insufficient address information or an address that is clearly outside the city.)

In conjunction with this data, staff analyzed multiple factors that might affect student generation based on characteristics including: housing type, housing affordability programs, market affordability, age of housing stock, and home sales.

Findings

The 2013-14 student generation by housing type (Figure 3.11) indicates that detached single family dwelling units, garden apartments, garden cooperatives, and townhomes are the largest student generators by type. Today's snapshot of the mix of housing types in relation to student generation assists in projecting future student enrollment.

Affordability was found to be a key determinant of student generation for most housing types. For market-rate housing, student generation is highest for housing with the lowest values and rents as reflected in the ACPS Student Generation by Average Project Rent column graph at the top of the following page. This applies to both programmed affordable housing (subsidized and income-restricted) and market-rate dwellings. The findings from this analysis indicate that future student generation may depend in part on changes in the affordability of the city's housing stock over time. To the extent that less expensive housing is eliminated through redevelopment, rehabilitation, or price or rent increases, households with school-age students are likely to choose housing in other areas. As the existing housing stock and newly developed housing becomes more affordable as it

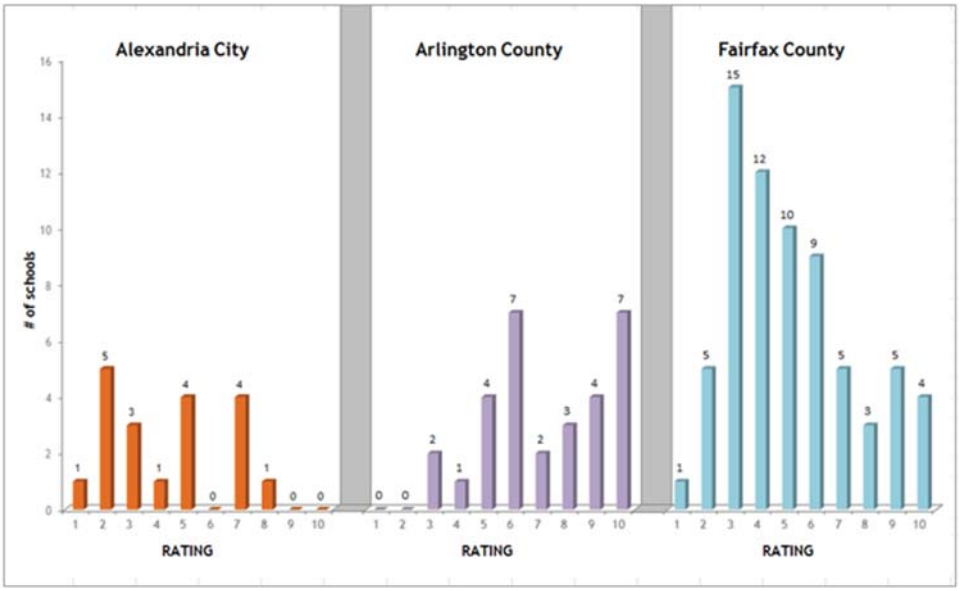


Figure 3.13. School Ratings In and Near Alexandria. These graphs show the number of public schools with various greatschools.org ratings in Alexandria and within 10 miles of Alexandria in Arlington County and Fairfax County. 1 is the lowest rating and 10 is the highest on this scale.

ages, the city will continue to provide housing that families find affordable and will see student growth parallel population growth. To the extent that the city continues to support income-limited and subsidized housing and encourages such housing to be provided in new developments or through voluntary affordable housing contributions, the share of students from such units will remain similar to that today with the growth in housing units and population.

The ACPS Enrollment by Average Project Rent graph at right above shows the total ACPS enrollment from rental units with various average rents listed in the Office of Housing's annual apartment survey. (Average rent in the analysis was based on a single number for each project and not based on individual unit rents. Average project rent was based on the weighted average of the midpoints of the range of rents for efficiencies, 1-bedroom, 2-bedroom and 3-or-more-bedroom units in each project.)

Rental units with rents averaging $1,750 per month or more generated less than 0.05 students per dwelling unit. At rents up to $1,500 per month, rental units generated an average of 0.2 students per dwelling unit or more.

Condominiums, even at low assessed value, generate substantially fewer students per unit than single-family attached (townhouses), detached or duplex units. At valuations greater than $200,000 per unit, condominiums generated less than 0.05 students per unit (1 student per 20 dwelling units). All other ownership units combined generated more than 0.15 students per dwelling unit up to a valuation of $1.5 million. All condominium units are classified as ownership units in the analysis, whether or not the individual condominium unit is rented.

Townhouses with values above $450,000 generate 0.1 students per unit or less except for a very few high-value townhomes. This is substantially fewer students per unit than single-family detached housing units, which generate more than 0.2 students per unit up to an assessed value of $1.5 million.

Income-limited and subsidized housing units, public housing units, and cooperative apartments generate the highest number of students per dwelling unit in the city, in part because such limits and subsidies are often focused on housing affordability problems of families with children. Public housing family units were found to generate nearly one student per dwelling unit, while subsidized and income-limited apartments were found to generate approximately 0.65 students per dwelling unit.

Based on analysis conducted by ACPS and the City of Alexandria, comparing new students and real estate data on home sales, whether a home had been recently purchased did not directly influence student generation.

Student generation varies depending on the area of the city because of the variation in housing type and rent. Redevelopment planned in the West End is expected to result in a reduction of students because the housing to be demolished has a relatively high student generation. The new units are expected to generate at a much lower rate for many years. New development in Potomac Yard will generate new students to the division since no units will be demolished. The net effect across the city was determined to be approximately neutral in the 2012 short-term enrollment projection. However, since reductions were expected in some parts of the city balanced by increases in other areas, it is important for projections of school enrollment to use individual school enrollment areas as the level of analysis.

Summary

As the mix of housing types evolves within the City, such as through the conversion of garden apartments to mid-rise or high-rise units, and the overall increase of multifamily units, ACPS and the City of Alexandria can utilize updated generation rate calculations to track and forecast division-wide and site-specific changes in the student population.

Changes in kindergarten capture and cohort survival affect the generation rates of all units over time, but may change generation rates in some types of units more than others.

School Reputation Influence on Student Enrollment

School Reputation Background

This research element provides a qualitative snapshot of the perception of school quality in Alexandria. It's important to note that the information presented does not in any way assess the actual quality of the school system, but rather is provided to highlight some of the perceptions that residents and potential residents have about Alexandria City Public Schools (ACPS), and how those perceptions could impact school enrollment in the future.

Methodology

The City of Alexandria's planning staff conducted two focus group sessions, in early 2014, with Alexandria-based real estate professionals from McEnearney & Associates, and Long & Foster. The topics of discussion ranged from housing choice trends of families buying and selling in Alexandria, to the role and weight of school reputation in the residential real estate market. The discussions were limited to the home ownership market, so the findings do not reflect trends in the rental market. In addition to the focus groups, planning staff researched school ratings from greatschools.org to gauge public perception of all Virginia public schools within a 10-mile radius of Alexandria.

Findings

There were four key takeaways from the focus group discussions and online research:

Growing urban preference

There is a growing interest in urban lifestyle for families with children. Alexandria's urban profile and amenities are a major draw for this demographic. Many areas within the city are in a position to capture some of this demand along with other inner-suburban and inner-core neighborhoods in the region.

Importance of school reputation

Despite this urban preference, school reputation often plays a larger role in real estate decisions of families, and currently, this is working against Alexandria. In general, families perceive schools to be better in neighboring jurisdictions, and many are choosing not to buy a home in Alexandria, or are selling their existing home in Alexandria, to move to other jurisdictions based on these perceptions. There are a few exceptions within ACPS, particularly among the elementary schools. The real estate group noted that families are willing to pay a premium, as much as $100,000 to $150,000 more, to live in the more desirable school attendance areas within Alexandria.

Alexandria schools are likely better than perceived

The real estate professionals noted that most of their clients with children rely on various websites that rate individual schools. The website greatschools.org was one in particular that is widely used (their ratings are displayed on zillow.com). Interestingly, the rating system used by greatschools.org puts a heavy emphasis on individual student test scores. Communities like Alexandria, which have a diverse population, and high level of mobility, are at a disadvantage under

this rating system because many students who are just starting to learn English do not perform as well on the standardized tests. In addition, the real estate professionals felt that there are many positive aspects of ACPS that are not widely known, and that the school system could improve promoting this message to the community.

There are schools with higher ratings outside Alexandria

An examination of greatschool.org ratings supports real estate professionals' observations about the perception of Alexandria schools. Recently, ACPS has jumped from having no schools with ranking of 6 or better, (two years ago) on a scale of 1 to 10, to now reflecting 5 with rankings of 6 or better on greatschools.org. The Figure below illustrates how Alexandria schools are perceived relative to schools in neighboring Arlington County and Fairfax County. The fact that there are so many options for highly regarded schools proximate to Alexandria but outside of its borders will likely have a dampening effect on school enrollment. An improvement to the reputation could shift this trend and put upward pressure on enrollment. However, even with a better school reputation, there is a limit to the number of families Alexandria could capture because the proportion of single-family homes is much lower than in neighboring jurisdictions, and is not likely to increase.

CHAPTER 4
GUIDELINES FOR 21ST CENTURY EDUCATIONAL FACILITIES

INTRODUCTION

Three components guide ACPS and the City of Alexandria toward 21st century educational facilities —

1. **Educational Specifications (Ed Specs).** Elementary and Middle School Ed Specs were developed under the guidance of the Long Range Educational Facilities Plan Work Group and adopted by the School Board on January 29, 2015. Prek-8 Ed Specs were developed prior to the planning of the Jefferson-Houston School and were adopted by the School Board on January 5, 2012.
2. **Guidelines surrounding the consideration of open space** (see pageXX).
3. **Urban School Model**. It is recommended that the planning of all new schools consider the urban school model.

EDUCATIONAL SPECFICATIONS PURPOSE

Ed Specs were developed to serve as the benchmark for future school renovations and new construction projects. The purpose of the Ed Spec is to define the programmatic, functional, spatial, and environmental requirements for educational facilities, whether new or remodeled.

In essence, an Ed Spec tells the story of the school facility and how the built environment will support the academic program and vision of school leadership. These generic Elementary and Middle School Ed Specs are primarily intended for use as planning guides by architects and project planners, but are also intended to serve as a communication and benchmarking tool for all project stakeholders.

The general concept embodied in the specifications is to provide adequate details for proposed spaces while leaving ample flexibility for creativity and options in design by the architects. Each Ed Spec is meant to be a living document—developed and amended over time.

During the planning phase of a specific project, the Ed Spec is utilized to understand and develop project scopes of work and budgets, while clearly communicating the intent of a project to vendors and thus providing well informed responses to meet actual project needs. Unique site locations of new schools may necessitate floor plan modifications and the program and space requirements should be modified within the parameters of this document.

A detailed discussion of Urban School Models, used as a tool within the planning phase, is provided in section ??

During the implementation phase, the Ed Spec will be reviewed for quality control allowing Alexandria City Public Schools (ACPS) to measure project deliverables against the stated benchmarks and standards within the Ed Specs. Design deliverables will also be examined for compliance within the standards with a goal of meeting those benchmarks within 15 percent. Additionally, the Ed Spec will help provide foundational support for project decisions.

The Ed Spec serves as a valuable aid for facility and staff. These are user-friendly documents that allow those outside of design and construction professions to understand the building and intent of its spaces.

Planning a state-of-the-art school requires consideration of several influencing factors including historical and community context, the current and future learning pedagogy and curricular goals, technical expertise of faculty and administrators, national and regional trends and benchmarks, as well as strategic goals and objectives.

For school planning, Ed Specs guide the cooperative efforts of facility specialists, administrators, faculty, and instructional consultants, in addition to the careful involvement of outside partners and community stakeholders. In order to create the best possible learning environment for children, efforts have been made to incorporate the best ideas from existing plans and facilities, as well as to anticipate future needs for educating Alexandria's children.

PROCESS

The overall workflow for the development of the Ed Specs is shown in figure XX. The process began with a series of discussions devoted to aligning the Ed Spec with the strategic objectives and vision for future schools, followed by several weeks of interviews with technical experts, building users, and other stakeholders.

The Project Planning Team was comprised of ACPS and City staff, Studio 27 Architecture and Brailsford and Dunlavey. The Team solicited community and student input at key intervals to ensure the document considers all perspectives related to facility needs, adjacencies, and space prioritizations. Input from specialists in

technology, facility planning, other school divisions, and elementary school pedagogy has been added to the basic plan to ensure quality facilities well into the twenty-first century.

Strategic Vision

ACPS staff was guided through a series of visioning sessions with educators, administrators, and community members that challenged them to clarify their expectations related to facility operations, sustainability, architectural quality, space priorities, and the community context. The visioning sessions focused on identifying gaps between ACPS' future goals and their current realities. The following narrative summarizes the areas of greatest need and formulates the concept for the construction and operation of a school of the future in Alexandria.

Building Concept and Priorities of Spaces. The desire to teach whenever and wherever drives the need for future facilities to implement a spatial organization that provides both formal and informal learning spaces and maximizes collaboration and interaction between students and faculty.

School designs should focus on creating collaborative and adaptable learning spaces supported by a robust and seamless integration of technology and flexible and ergonomic furniture. Incorporating an overall organization of small learning communities with breakout spaces in hallways, collaborative spaces in classrooms, and spaces that facilitate chance interactions throughout the school will allow teachers to collaborate across disciplines and tailor learning objectives and lessons to students' individual needs.

Providing multifunctional spaces for third party partner and community programs that extend educational and extra-curricular services to students, families and the community is a priority. The facility should operate as one organism that can be segmented into different functions and zones depending on the time of day and use.

Community Context. ACPS school facilities should serve as neighborhood assets and centers for parent, family and community interaction and engagement. Parental and family support plays a critical role in the success of students. ACPS students and families come from diverse backgrounds and schools should be welcoming and inviting places that include dedicated space for parent and family engagement as well as spaces available for community and partnership use.

Each school community is unique and designers should consider what spaces best support the community's needs; however, all schools and their sites should be planned and designed to support community use during non-school hours. Implementing a secure separation between the academic core and the shared use spaces along with the careful application of active and passive design strategies will create safe and secure learning environments. The site also adds opportunities for extended outdoor learning and becomes a neighborhood asset outside of school hours.

Organizational and Operational Paradigm. ACPS believes an integrated, interdisciplinary team approach increases student achievement and faculty collaboration by enhancing the overall learning experience. A collaborative team approach is best facilitated with small learning communities, extended learning environments, and a departmental organization of spaces. Media Centers should be seen as the "learning commons" and be utilized regularly as an extension of teacher's classrooms and workspaces.

ACPS desires to increase inter-student collaboration and group learning and activities. To support this, flexible and adaptable informal and formal teaching spaces are required. Emphasis will be on spaces and configurations that support critical thinking and project-based learning ideally within groups of four students with the ability to break out of formal learning environments. Utilizing a push-in and team teaching approach, special education students will learn in the same collaborative learning environment as their peers.

Architectural and Construction Quality. ACPS has a strong belief that high-quality architecture has a positive influence on student success and faculty retention and is committed to delivering high-quality, state-of-the-art, and sustainable facilities to students, faculty, and the community. This belief applies to both external and internal qualities of the facility. The school facility and grounds are considered a learning tool and creativity in design and architecture is a priority.

Quality of design and engineering should focus attention

on areas that most impact the learning environment with a particular emphasis on incorporating researched-based facility elements, such as enhanced natural lighting, acoustics, air quality, climate control and technology, that directly impact student achievement and educator effectiveness. Externally, the architecture must be respectful of the historical and cultural context of the community while simultaneously inspiring students and the public.

Materials and system selections should consider extended life cycles. Building systems, materials, and finishes must be resilient, easy to maintain, and create a positive, aesthetically pleasing learning environment. Life cycle of materials should balance quality and potential for future costs in an effort to ensure appropriate use of public funds is achieved.

The complete Elementary and Middle School Educational Specifications, including further information on planning concepts, design principles, and spaces can be found in the appendix of this document.

NATIONAL TRENDS IN EDUCATIONAL FACILITY PLANNING

21ST CENTURY LEARNERS

Learning environments should be planned and designed with all types of learners in mind including auditory, tactual, kinesthetic, and visual.

Individual learning styles impact the way in which individual students:

- Concentrate in one's immediate surroundings
- Process information
- Make decisions and solve problems
- Complete tasks and assignments
- Interact with others
- Retain new information

Today's learners are technologically savvy and are accustomed to having information at their disposal. Today, learning occurs any time, any place, any path, and at any pace. Classrooms are transitioning from environments focused on teacher-directed whole-group instruction to learner-centered workplaces that support a collaborative culture of students at work.

While schools and homes continue to be important places for learning and with the knowledge and understanding that students also learn in ways not bounded by classroom walls nor the schedule of the school day, these "other" areas of learning become a critical component in planning and designing innovative, inspirational, and thriving educational environments.

STUDENT FOCUS GROUP

The Planning Team held a focus group with students from George Washington Middle School to discuss current and future learning environments and help inform the plan. The prevailing theme centered on students wanting the opportunity to have choices for how and when they learn throughout each class period, as well as throughout the day.

They generally understood that each student has a unique style of learning and recognized the importance of providing appropriate environments and opportunities for each learning style.

Additional student discussion points captured generally accepted evidence based design elements as well as other trends in modern educational environments including:

- Exciting, engaging and varying learning spaces
- Access to natural daylight and climate control
- Ability to control acoustics and ambient noise
- Furniture options, adaptability, convertibility, and ergonomics
- Ability to work alone and/or in groups
- Space to move around and work within classrooms
- Informal break-out spaces within corridors
- Healthy eating options and improved dining facilities
- Use of the media center for multiple activities (quiet and noisy)
- Access to deliberate outdoor learning spaces
- After-school access to spaces such as the Media Center and fitness spaces

CLASSROOMS & TECHNOLOGY

The "classroom of the future" should be more personalized, student-directed, collaborative, interdisciplinary, and hands-on than those of even 10 years ago. As the focus of education moves away from the transmitting of information to developing creative problem solving and communication skills, the classroom setting is morphing into a beehive of activity – a learning studio.

At different times, students work alone, in pairs, or in groups:

- Working alone - reading, writing, interacting with the computer, or just thinking.
- Working together in pairs or groups - dissecting problems or reading and reacting to one another's written work, role-playing, or sharing ideas, opinions, and experiences.
- Interacting with the teacher and the whole class-listening, making presentations, asking questions or brainstorming ideas.

In addition, teaching methods address a variety of learning styles. Children with disabilities are educated alongside their non-disabled peers in their neighborhood school.

The classroom of the future should no longer be one-directional with rows of desks facing the front of the room. There should be a variety of focal points with mobile resources to support learning, flexible furniture, and robust technology. Rooms should range in size and purpose from small incubator and assessment spaces to large seminar and presentation areas. Corridors and informal learning spaces should create a seamless and extended learning environment. Technology is infused seamlessly into the education program and physical building. Wireless connectivity allows for learning - to occur at all times.

Media Centers and Student Commons

The 21st Century school media centers are changing from the quiet book-lined storage spaces for research and reading to multi-media, interactive studios of social collaboration for faculty and students. They are seen as a learning commons—an extension of the classroom that serve as the social and technological heart of the school.

New media centers are more than 50 percent digital and offer learning and gathering spaces as well as production areas. The ideal media center may move from noisy to quiet - through a café and mobile computing environment, to small, AV-enhanced, group study conference areas, to individual study carrels or a media production room that allows students to communicate and learn via various aspects of today's multi-media technology.

Multi-media technology is what this generation of students understands and uses. They communicate and learn through on-line devices, but also publish and perform. The media center may include a computer lab for research, a publications room for the school newspaper and yearbook, a video production and editing lab for film, a distance learning lab, and a variety of display venues.

National standards for media centers call for 4-6 square feet per student. Even at this size, most learning commons cannot offer a full range of media options. Multimedia satellites instead are infused throughout the school, complementing core curricular activities. Many learning commons also offer virtual space with internet, bringing together a generation that grew up on social media.

Building & Site

The school building itself is considered a learning tool and community asset. There is a sense of identity and the quality of architecture instills a sense of place and pride. The architecture considers learning opportunities over the entire campus, including school grounds and landscaping.

Transparency of spaces also helps foster an internal sense of community and excitement about the learning activities that are occurring within. Use of glass allows for visual connections externally and internally. Front entrances are inviting and welcoming for all community member – parents, families, and neighbors. The school is a hub of activity before and after school. Health services and other non-educational support are often provided.

In addition, ACPS decisions regarding buildings and grounds should consider recommendations from the City with regard to open space on school sites—including a goal of no net loss of usable open space. A more detailed discussion of open space guidelines is presented within "Section IV.A.p. Sites" later in this document.

Evidence-Based Environmental Elements

Evidenced-based design is the consideration of credible research findings in the planning and design process with a goal of achieving positive outcomes. Researchers have presented findings that link measurable outcomes such as student attendance, academic performance, faculty retention, and disciplinary actions. More specifically, the following four design elements have been connected to these outcomes: lighting quality, indoor air quality, acoustics, and furniture design.

Lighting Quality. The Heschong Mahone Group found statistical correlations between the amount of daylight in an elementary school classroom and the performance of students on standardized math and reading tests in 1999. *Goal: Improve natural and artificial lighting in classrooms.*

Environmental / Air Quality. According to the US Centers for Disease Control and Prevention, American children miss approximately fourteen million school days each year due to asthma. Controlling environmental factors such as dust, pollen, and carbon dioxide could help prevent more than 65 percent of asthma cases of elementary school-age students according to the American Journal of Respiratory and Critical Care Medicine.
Goal: To ensure comfortable rooms, address temperature control, ventilation, air filtration, carbon dioxide levels, and HVAC background noise.

Acoustics. Research links the importance of maintaining appropriate acoustic conditions for student learning. This relates to noise from external sources and reverberation in the classroom and is linked to academic achievement, behavior, attention, and academic concentration. Acoustics are also important for teacher wellness and avoiding straining vocal cords while attempting to speak over noise.
Goal: Limiting reverberation and background noise and improving sound isolation.

Ergonomics. A 2007 study compared adjustable furniture in schools to traditional fixed furniture. Students using adjustable furniture were found to have higher grades than those in the control group using traditional school furniture. Characteristics of furniture that promote good posture should be considered as well as adjustable desks and chairs to allow students of varying sizes and body types to improve their comfort levels when sitting for long periods of time. Research studies continue to explore this issue.
Goal: Continue research exploring adjustable furniture to ensure comfortable experiences for students that enhance their learning.

In summary, these national trends provide an important context for many of the ideas that ACPS is working to implement and how those concepts are articulated within this document.

ACPS Learning and Teaching Model

Learning and teaching in ACPS is a well-executed balance between a rigorous curriculum, proven instructional strategies (pedagogy) and relationships with students that communicate high expectations and commitment to student success.

ACPS developed and uses a 21st century curriculum focused on helping students become critical thinkers and problem solvers. In addition to helping students acquire declarative and procedural knowledge, each unit has a focus on higher-order thinking skills to ensure students are developing critical thinking skills needed for post-secondary success: reading complex text, writing at a post-secondary level, analyzing and interpreting data and participating in discourse across the disciplines.

Instructional Methods

Instructional methods vary with grade level, but maintain continuity from early childhood through the primary, intermediate, and middle grades. Predominant elements include:

- Integrated learning, where content areas cross disciplines
- Flexible groupings (In primary grades, regrouping stays within the classroom.)
- Mentoring of older to younger students
- Extended day learning opportunities
- Parent involvement and volunteer activities

ACPS offers 'What to Expect' brochures for every grade level available on its web site, and the full program of studies is available for middle and high school. These documents should be referenced by architects to better understand program offerings and curriculum goals.

Planning Concepts

The following section provides executive summary level descriptions of the capacity analysis and planning concepts of each program space within an ACPS school facility.

Every school project begins with establishing the number of students that will be served when the project is complete or the "capacity." Capacity is the primary driver in determining the number, type, and size of the spaces in the new or modernized building.

While there is no ideal school size, schools in ACPS range from ~350 students to ~900 students at the elementary level and typically between ~1100 and ~1300 at the middle level. Additionally, the middle school's Ed

Spec is based on a capacity of 1200 students due to the current and projected sizes of the middle schools. Ideally, elementary capacities would range between 450 students and 800 students, and this prototype is based on 700 students for illustration only. Nationally, the average elementary school size is 600 (540 in Virginia) with smaller schools in urban cores.

The Division has been provided with an active, editable spreadsheet that allows planners and architects to develop facilities lists for a range of schools based on the capacity and unique program needs in real time.

Simply defined, school capacity is a product of the number of classrooms at a school and the number of student stations assigned to each room type. Only classrooms that are 600 square feet or more with a teacher and students regularly assigned to the space are counted toward full time capacity. For elementary schools, small instructional spaces and specialized labs including art, music, or resource are not part of the capacity calculation. It is possible for a school's capacity to change from year to year based on average class sizes (determined by the budget) or changes in the number and type of programs.

By applying actual school staffing to enrollment, it can be determined that for most ACPS elementary schools, class sizes will range from 20 to 24 in grades kindergarten through 5th grade, while middle school ranges fall between 20 students for core classes and 25 students in the encore (art, vocal music, library, and physical education) classes.

Currently, for elementary grades, ACPS budgeted class size caps range from 22 in kindergarten to 26 in 5th grade, but the average class size in ACPS is lower. The classroom size limits enunciated by the ACPS School Board are generally in line with the regional averages and in keeping with the division's long range policies and goals. It is important to size all classrooms to accommodate the maximum number of students even if the average is used for capacity planning.

At the middle school level, ACPS has become more concerned about the size of these schools. All middle school buildings function in a grade level multi-team environment. In this setting, teams of teachers (English, Social Studies, Math, and Science) together teach the same group of students (100-110). The team usually has the same planning period so they can collaborate and create and interdisciplinary curriculum customized to their students' needs. This strategy makes it difficult to "float" teachers. However, since teachers usually teach 5 out of 7 periods, the overall utilization of the building in any given period is 71-80%. For this Ed Spec, maximum capacity will be factored at 80% utilization.

Once a capacity is proposed, many other areas of the building are sized to support the enrollment. The number of small group rooms, art and music labs, and support staff offices are based on staffing formulas. The size of the core areas such as media center, dining and food services, physical education facilities, and site amenities are based on local and national benchmarks related to size.

The following charts **(figure xx)** summarize the breakdown of the proposed capacity for both a prototype 700 student elementary school and prototype 1200 student middle school.

Per the Guidelines for School Facilities in Virginia's Public School, the goal of the optional guidelines developed by the Virginia Department of Education is *"… to provide recommendations that will help local school divisions ensure that their school sites and facilities support the principles of good teaching and learning and promote sound educational programs."*

The guidelines included in the Ed Specs respond to or exceed Virginia State guidelines and recommendations.

Program Area Summaries

The following section provides executive level narrative summaries of the core program space areas.

Supporting figures for each of the following items can be found in the appendix of this document.

Main Office-Reception, Administration, and Student Services. As students, families and other visitors enter an ACPS building, it is important that they are greeted with an inviting and well organized front office suite.

Elementary schools should also have their main offices located at the primary entrance. The architect should consider security when designing the main spaces while office space should be organized to provide direct visual access to the entrance doors. Architects should also provide appropriately sized office spaces with an adjoining shared conference room and adjacent staff restroom. Occupational and Physical Therapy services as provided by ACPS consist of staff traveling between multiple school locations. Within the main office, provide an appropriately sized space that includes itinerant work stations and storage. Near or adjoining the main office, provide the Family and Community Engagement center. Other administrative functions can be dispersed throughout the school via grade level suites to encourage maximum student collaboration and connection.

For middle schools, the primary administrative office, guidance services, and adult restrooms should be located in a centralized area near the main entrance to the school. A digital kiosk in the lobby may provide real-time information on school's administrative and building operations.

Visitor parking should be located by the front door. Signage and building design should clearly indicate the school entrance. Immediately upon entry, visitors should be directed to the Welcome Center/main office. For security reasons, no visitor should be able to enter the classroom areas without being checked through the reception area.

Health Services. Health Services should be located near the main entrance to the school. Health Services is responsible for providing health related amenities to all students and staff. The space should be organized to provide appropriate space for:

- health screenings
- illness or injury treatment
- meetings and trainings
- prescription medication storage and distribution
- secure records keeping
- private consultations
- rest and recovery units
- waiting area

In addition, it is possible that a facility in the future will provide (location dependent) community partner/provider operated wellness centers. These centers will require additional spaces accommodating such amenities such as:

- full medical evaluations
- full laboratory services
- dental services
- radiology services
- pharmaceutical services

If the school division elects to provide a school based health center (SBHC), the architect should work with officials to ensure full space programming requirements are met according to federal regulatory standards. This center should be adjacent to the school clinic but implementation of a full SBHC will require significant advance coordination by ACPS.

Core Instructional Spaces. The basic organizational structure of the school should reflect a cluster concept and should consist of general purpose classrooms, commons space for informal instruction, a small group room, two and three dimensional display areas, and a teacher work center. Each cluster should also contain a resource classroom used by support educators and an extended learning area to facilitate collaborative teaching and learning. At the elementary level, student restrooms should be located within all classrooms or shared by two adjoining classrooms.

Classrooms. Elementary and middle school classrooms should utilize flexible, easy to arrange and store furniture. Student arrangements should reflect small collaborative groupings over individual desk arrangements. Many elementary classrooms are designed around discovery-based learning centers. Provide 'teaching and learning' surfaces on two walls to include touch screen interactive boards, magnetic white boards and tackable surfaces at student height. The provision of an itinerant or hoteling space for drop-in or special needs instructors is a unique feature that should be included in each classroom. Restrooms should adjoin classrooms at every grade level to increase flexibility for conversion to younger grades if necessary. Each classroom should include a sink and a water bubbler.

Extended learning areas (ELA) should be incorporated into designs as additional teaching spaces learning areas that occur adjacent to each academic cluster. ELAs are open spaces off the corridor that are meant to facilitate break out instruction, small group and project-based work in addition to multi-class collaboration and joint teaching initiatives. ELAs vary in size based upon the individual needs of the school and the academic cluster and should be designed and equipped to accommodate a variety of furniture arrangements to optimize flexibility.

Science. Each elementary-level classroom should be designed to support science activities and simple lab components. Schools should supplement the in-classroom sinks by providing a portable science demonstration cart for each academic cluster. Additionally the provision of an outdoor classroom, a garden area, and/or a food lab should also be considered in order to support elementary level science

instruction. If a food lab is provided, it should be located off the main dining area and equipped as a dual purpose warming and cooking studio for both teaching and extracurricular activity support.
Middle school science classroom should be designed to support combined science lectures and hands-on lab activities. Integrate technology to support wireless one-to-one device connectivity and Bluetooth precision measurement device connectivity. Science classrooms should be integrated into the grade-level academic clusters. Additionally, the provision of an outdoor classroom, a garden area, bio-retention pond, greenhouse, water collection observatory, and/or a food lab should also be considered in order to support science instruction.

Career Technical Education. At middle school, space should be provided for: (1) Business, (2) Family & Consumer Sciences (FACS), and (3) Technology programs. FACS courses require access to kitchen studios while business courses require a standard flexible classroom. Technology course space requires a dedicated multipurpose technology lab that allows for flexibility to shift from between various course topics supported with portable furniture and equipment. Programs taught at the middle school level build foundations for more specialized high school program offerings.

Special Education. Special education facilities should be integrated throughout the school to support the concepts of inclusion and the specialized requirements for the students. Currently, more than 70 percent of all students with disabilities are included in standard learning environments for 80 percent of each day. In all schools, provide at least one resource space for every two grades or at least three spaces per school to support individualized learning needs and/or speech therapy. Typical occupancy of a pullout space is approximately four to five people.

A dedicated, programmatically-sized classroom may be necessary on a location-by-location basis to support City-wide programs and would be identified at the time of individual site planning. Special education facilities should be integrated throughout the school to support the concepts of inclusion. Special attention should be given to accessibility of all facilities and an integrated learning program.

English Language Learning (ELL). ELL instruction occurs at every elementary school in the division but enrollment can vary from as little as 5% of the school's total student population to over 50%. The majority of ELL instruction is pushed-in to the general education classrooms with an itinerant instructor floating into classes as needed. Elementary schools also provide an English Language Development (ELD) break out class which can typically be accommodated in one of the resource classrooms; however, in schools with a large ELL population, such as Ramsey ES, it is possible that a dedicated classroom will be required.

Middle schools also provide English for Academic Purposes (EAP) break out classes to help students with specific needs. These break-out classes can typically be accommodated in the larger resource classrooms. It should be noted that beginning in the 2015 school year a new International Academy program, modeled after that which exists at T.C. Williams, will be implemented at Hammond MS. Designers should be careful to inquire about the site-specific requirements.

Talented and Gifted (TAG). A TAG program exists at every school in the division, although enrollment varies widely from school to school. At the elementary level, staffing levels are based upon enrollment but at most schools there is one full time TAG teacher. For grades K – 3, TAG curriculum is 'pushed in' to the standard classrooms and is managed by the elementary teachers. At the 4th and 5th grade levels the same strategy is utilized for social studies and science curriculum; however, mathematics and language arts TAG course work is 'pulled out' into a separate classroom. Typical class size for these TAG classes is about 15-20 students, warranting the provision of an assigned, standard classroom. Additionally, TAG curriculum emphasizes project-based learning which may occasionally require use of ELA space or resource rooms along with the provision of storage for student projects.

At the middle school level, honors (TAG) classes are taught by the subject area teachers as part of their normal daily schedule and student enrollment varies from 10 to 20 percent of the total student population. Therefore, separate, individual TAG classrooms are not necessary. The TAG program does, however, include a TAG resource

teacher who provides curriculum guidance and instructional support to the individual subject area teachers. The TAG resource teacher may 'float' from class to class occasionally requiring the use of itinerant desk space in the classroom and, because of the emphasis on project-based learning, the TAG resource teacher may occasionally work with a small group of students in an ELA space or a resource room.

Early Childhood. ACPS does not currently provide universal pre-kindergarten programs and, at some schools, early childhood education is provided either through a state funded grant (Virginia Preschool Initiative) or federally funded grant such as Head Start (provided by a community partner, The Campagna Center). In accordance with national trends toward earlier schooling, ACPS desires to implement universal prekindergarten at every school. For planning purposes, this document allocates classrooms for early childhood at every school at 80 to 90 percent of the planned kindergarten classrooms. At schools that house Head Start, classes can be held in standard PreK/K classrooms described in this document.

Advancement Via Individual Determination (AVID). AVID is an elective course that targets students in the academic middle who have a desire to attend college. Enrollment in AVID varies year to year and from school to school but approximately 10 to 15 percent middle school students currently take the course, which amounts to about 25-30 students per class period throughout the school day. The AVID academic week includes two days of traditional classroom-based instruction, two days of small group tutoring, and one day of team building activities or guest speakers.

Accommodating all of these activities in one space requires a larger than average classroom that can be partitioned into two smaller rooms to minimize noise and maximize available whiteboard space during tutoring sessions. On tutoring days the class is divided into four smaller groups at a ratio of about seven students to one tutor. Several small tables should be utilized to maximize flexibility and all furniture should be on casters due to daily rearrangement. It is suggested that a small adjacent room be added to accommodate hoteling space for tutors and storage for student work files. The AVID room should be placed in a centralized location at an equitable distance to all grade levels, with a suggested adjacency to the media center.

Visual and Performing Arts. ACPS has a strong arts focus in the elementary and middle grades. Well-designed spaces need to support a vigorous curriculum and creative presentations. Art, music, and multi-purpose classrooms should be shared by all grade levels for general class and small group instruction. The location and access to these rooms should promote orderly transitions.

Larger ACPS elementary schools often have more than one art teacher (but less than two). The main art instructor assigned to the school will own the main art classroom and ancillary spaces. Optimal location for the art room is on the ground floor with a northern day lighting orientation. Access to an outside patio or seating area should offer additional work space, display spaces, and performance spaces. The itinerant art instructor assigned to the school will function out of the Early Childhood Dining/ELA space where a separate art storage location is provided. This location provides the opportunity for push-in art assembly or the ability to program the adjacent ELA as a full-size classroom when needed.

Additionally, larger elementary schools also often have one music teacher each for choral, band and orchestra – not all full time. Large practice and performance spaces are not provided for part-time programs and so the stage may be used part of the day for practice for orchestra or one of the other classes. If possible the music suite should be located near the stage and instrument storage shared between the band and orchestra. Chair and music stand storage can be provided on or under the stage.

For middle school, art rooms should support 2D and 3D instruction. The optimal location for the art room is on the ground floor with a northern day lighting orientation. Access to an outside patio or seating area will offer additional work space, display spaces, and performance

CASE STUDY — Bailey's Upper Elementary School for the Arts & Sciences, Falls Church, VA

This school for grades 3-5 is the first mid-rise elementary school in Fairfax County. Fairfax County Public Schools purchased the vacant, five story office building in December 2013 and retrofitted it to a school in time for a September 2014 opening. Approximately 600 students attended the school in 2014.

The school is located in the Seven Corners Area, 1.6 miles from Bailey's Lower Elementary School for the Arts & Sciences, which houses grades Pre K-2.

The center of the L-shaped building is the "main circulation spine" and includes a large stairwell. The common rooms are located close to the center with the classrooms on the far ends of the building. Some uses such as small auditorium spaces and the media center span two floors and provide their own separate connections between floors. There are three or four classrooms per floor, organized into learning communities and connected by new stairways to classrooms above or below. All of the classrooms have exterior windows. About half of the classrooms have bathrooms, while the other bathrooms are near the elevators. Students do no use the elevators on a regular basis; the elevators are primarily used by students and staff with disabilities.

The school also has a black box theater, a story pit in the library, a cafeteria with small tables giving it a café feel, science labs, a TV studio room and art rooms. Three wood-floored rooms with padded walls provide indoor space for physical-education class. The school does not have a playground. A second construction phase could add a playspace in what is now an asphalt parking lot, and possibly an enclosed field house.

The entrance was moved to the back of the building to meet ADA accessibility requirements and to better accommodate a bus dropoff and kiss and ride area.

spaces. Display areas in the corridor should allow for 2D and 3D projects.

A multi-purpose performance venue (auditorium), at the middle school level, will also act as a drama classroom (stage), a practice room, a large group gathering space, and a community meeting space.

The room should have a flat floor with flexible seating options and may have telescoping seating for some portion of the room. Appropriate acoustics, sound and lighting systems are critical to the room's flexibility and functionality. If possible, the music suite should be located near the auditorium. Locate dedicated small group practice rooms within the music suite along with storage areas.

Media Center. The media center serves a dual role – its traditional role as a gathering place for research and learning and a new role as a technological information base and learning hub. In this new role, the media center may house a wireless voice/video/data network, which runs throughout the entire building. This network enables the transmission of media services to the desktops of teachers and students without physically entering the media center. The new library will utilize digital technology to enhance voice, video, and data communications within the school, among division facilities, and with distant learning resources.

Physical Education. To support the elementary and middle school physical education program, a variety of indoor and outdoor areas are required. Outdoor physical education teaching areas should be located near the indoor gymnasium. Physical education facilities should be designed with a focus on community use during non-school hours, since there is a high demand for both indoor and outdoor facilities.

ACPS offers formal physical education to elementary students twice a week. For larger schools this may mean 2-4 teachers are teaching in the gymnasium at the same time. At a safe 100 square feet per student, larger schools need a full size gymnasium to accommodate the program. Because the elementary schools do not have intramural sports, no seating is required. To further support the physical education program and provide for after school programs, larger schools should have a smaller multi-purpose space.

ACPS offers formal physical education to middle school students daily on a rotating quarterly schedule. Intramural sports are offered each season and utilize both

Urban School Models

As Alexandria becomes more urban, there are fewer vacant sites or sites developed at a low intensity that could potentially be used for school sites. In this changing environment, the City and ACPS are exploring urban school models. For purposes of this plan, urban school means a smaller school site than is the norm in Alexandria with a school building that is taller (3+ stories) than the norm in Alexandria. While an urban school can often serve as the center of a community through the co-location of other uses, such as a library, recreation facilities or senior center, such co-locations can occur on traditional school sites as well; co-location is examined in further detail in applicable sections of this document.

An urban school can also include completely separate uses within the same building. A school might occupy the first few floors of a building with offices or residences above, or a school might occupy a separate wing of a mixed use building. A school which included preschool or elementary grades would need to be on the lowest occupy-able floors, with consideration given to having the youngest students on the ground floor. In a mixed-use building, the portion devoted to the school would need its own entrances, and would likely require separate elevators and stairwells for security purposes. Separate alarms and HVAC systems would also be required.

The Educational Specifications that are part of this plan were developed with a traditional school in mind. With an urban school model, most of the specifications would remain the same. Given the limited size of an urban school site, however, some of the Educational Specifications might need to be provided in a non-traditional manner. Nearby community and private facilities could in certain circumstances be used to meet the specifications. Providing play space in an adjacent park is one case in point.

Specification	Potential Alternate Provision
Gymnasium	▪ Less than full size ▪ Use of nearby public or private gym
Auditorium	▪ Use of nearby theater/ performance space
Cafeteria	▪ Distributed eating throughout school ▪ Lunch in classrooms ▪ Use of private catering company ▪ Use of nearby restaurant/cafeteria
Media Center	▪ Use of nearby library ▪ Mobile library
Art	▪ Mobile art lab
Administrative Offices	▪ Distributed throughout school
Health Services	▪ Use of nearby public health clinic ▪ Partnership with a nearby private clinic (ex. Minute Clinic) ▪ Mobile health unit
Early childhood (Pre-K)	▪ Located in a nearby facility
Aftercare	▪ Located in a nearby facility
Outdoor playspace (hard and soft surface)	▪ Rooftop ▪ Use of nearby facility (must be fenced)
Bus	▪ Bus drop-off location required ▪ Use of BRT lanes for school buses
Kiss and Ride	▪ Dedicated on-street parking spaces
Parking	▪ Less parking if near Metrorail or Metroway (Bus Rapid Transit) ▪ Use of shared parking

Table 4.1

Table 4.1 lists Elementary and Middle School Educational Specifications that might be accommodated in a non-traditional manner in an urban school. In all cases, any nearby spaces or facilities would need to be within ¼ mile walking distance and the walk would need to be on a safe, continuous sidewalk or trail, through open space or along a roadway categorized as a primary collector, residential collector or local street. Students would not be allowed to cross or walk along Controlled Access Facilities/Expressways[1] such as I-395 or Arterials such as Duke Street, King Street or Route 1.

Considerable public input would be required at the early planning stages of an urban school to determine which of the educational specifications could be provided in an alternative manner or in an alternative location.

Note: *(1) Street classifications may change as a result of the update to the Pedestrian and Bicycle Master Plan and the development of the Complete Streets Design Guidelines. The intent would still be to keep children away from high capacity roads.*

indoor and outdoor space. Fixed seating requirements should seat the entire school enrollment in bleachers. To further support the physical education program and provide for after school programs, larger schools should have a smaller multi-purpose space and a full locker room with individual showers.

Parking should be located near the gymnasium and a separate entrance should be provided for after school activities. Flexibility of space use is desired and designers should provide the ability to separate the gymnasium into two smaller gym stations during teaching periods.

Dining and Food Service. The dining space(s) should accommodate one-third of the projected student capacity each lunch period. The dining area(s) should be warm and inviting spaces with plenty of natural light,

pleasant acoustics, and multiple seating choices. The furniture should be age appropriate and serving lines height sensitive which may require having two distinct areas for primary and intermediate students. It is proposed through creative design that dining area(s) should effectively house multiple functions including assemblies, community meetings, and potentially be utilized as learning areas.

For elementary schools, this educational specification recommends providing for two separate dining areas: one for the early childhood grades (PreK and K) and one for grades one through five. The early childhood dining area should be located adjacent to the classrooms where it can also function as the ELA and an indoor play area in a fashion similar to the distributed dining concept. The dining area for grades one through five should be much larger and designed as a more traditional centralized cafeteria adjacent to the kitchen. The space should also include the school stage for performances. The key to a well-designed multi-purpose performance space is to consider the technology, acoustics, and layout very early in the design process. The architect should consider the room volume, configuration, technology requirements, acoustics, and general layout as it relates to the stage and kitchen. These key design points can then be further enhanced by the selection of materials and a well-designed audio system.

For middle school students, this educational specification recommends a more traditional, centralized dining space adjacent to the kitchen. This space will serve multiple functions and will also include a stage to host school performances. The architect should consider the room volume, configuration, technology requirements, acoustics, and general layout as it relates to the stage and kitchen. These key design points can then be further enhanced by the selection of materials and a well-designed audio system.

Food service is responsible for food preparation and delivery of food programs division wide. Food services facilities should provide appropriate space for both 'scratch' and 'warming' kitchens with appropriate equipment. Provide appropriate sized storage facilities to support healthy eating program offerings which include; breakfast, bag meals, meals between bells, snacks, lunch, and supper.

Architects should consider serving and dining areas that incorporate composting and recycling facilities, homelike environmental qualities, breadth of flexible seating options, and design qualities that support visual and verbal communication between students and faculty.

Open Space Goals & Guidelines

1. The City recommends establishing policies on zoning with regard to open space on school sites, including a goal of no net loss of usable open space. The 2002 Open Space Master Plan Goal #7 calls to "maximize use of public school open space areas." This is an important goal as the City is increasingly dense and school sites provide some of the largest open spaces on public land in Alexandria. The open space at school sites contributes to the performance measure the City has to maintain of 7.3 acres of open space per 1,000 residents. A loss of open space on existing school sites would reverse the efforts to maintain this ratio. In order to preserve this open space, the City recommends:

Existing schools sites renovations

- School sites shall avoid any net loss of open space on the property and seek to improve the quality of the open space on existing sites.
- If open space is zoned Public Open Space (POS) it cannot be built on. However, if the building renovation or addition is best situated on existing POS then there must be a rezoning that results in the equivalent amount of new POS elsewhere on the site for recreation or natural area purposes—ensuring that the City does not lose open space acreage (as occurred with the Jefferson Houston School redevelopment project).

New schools sites

- Given the densification and urbanization of the City, there will be a need to design and build for "urban model" facilities to accommodate enrollment projections. As with many urban schools in other jurisdictions, there may not be opportunity to incorporate the outdoor recreational and nature area spaces suggested in the educational specifications.
- However, it is developmentally important for students to recreate, have access to explore nature, and learn in an outdoor classroom, as advocated in many recent initiatives including the First Lady's Let's Move campaign, the City of Alexandria Eco-City Charter (2008), and the Partnership for Healthier Alexandria's Playspace Policy (2013).
- In order to provide recreational and outdoor spaces for new urban schools, the City recommends the following three strategies:
  - Build multi-story schools to maximize the availability of outdoor space on the site
  - Explore creative options for urban recreational space, such as rooftop courts or partnerships with private gyms
  - If no open space is available on site, ensure that the school is located within 0.25 miles (a child's walking distance) of an existing park that has safe access and connections. The Park shall be able to accommodate outdoor educational classes and be enhanced, as necessary, to manage increased use.

2. Meet the Guidelines for School Facilities in Virginia's Public Schools (2010) standards for school sites, including the acreage of outdoor play area space per pupil. Recent studies have shown that ensuring access to play, whether

active recreation or exploration in nature, have positive impacts on both physical and mental health. The Summary of Facility Space Requirements on page 39 in the Educational Specifications provides guidance of recreational play space, per the Guidelines for School Facilities in Virginia's Public Schools. Including these standards in any school site project ensures that students receive the benefit of recreational opportunities. The State guidelines do not include specific size per pupil standards for natural areas, however, the City encourages opportunities to connect children to nature. Moreover, the 2013 Parks and Recreation Needs Assessment showed that 67% of Alexandria residents have a need for natural areas and 81% have a need for walking trails, furthering the desire to incorporate accessible nature into school sites that are open to the public after school hours and for after school activities.

3. Maximize community use and recreation program space and delineate clear access to public use spaces for students and community, as identified in the education specifications and the 2014 Facility & Outdoor Maintenance & Use Agreement. The 2014 Facility and Outdoor Maintenance and Use Agreement ("agreement") provides a structure for the broad and cost effective use and maintenance of all ACPS and city owned and operated facilities in support of the community use of these facilities. The intent is to share spaces and provide maximum effective public benefit of all community facilities. School divisions and governmental agencies across the country are beginning to realize that they need cooperation, especially considering the ever-shrinking budgets and meeting the diverse needs of the community. Planning for future schools should include joint use considerations at the beginning of, and throughout the process.

4. Maximize canopy coverage and fulfill the goals of the Urban Forestry Master Plan. The 2009 Urban Forestry Master Plan included specific recommendations for increasing tree canopy on school sites. Alexandria City Public School properties are perhaps the city's greatest untapped public resource for planting trees and adding to the city's tree canopy cover. Public school properties are important community green spaces and should be managed for the benefit of the neighborhoods in which they are located. In order to implement the Urban Forestry Master Plan, the City recommends that ACPS and the City inventory and then develop comprehensive management plans for all trees on public schools.

5. Where a full size field can physically fit, meet the requirements of the National Federation of State High Schools Standards for athletic fields. ACPS school sites provide some of the largest recreational areas in the city and the best locations for full size fields that meet the requirements of the National Federation of State High Schools Standards. Through the RPCA and ACPS shared use agreement, ACPS gives RPCA the priority to use their facilities, including sports fields, one hour after school lets out each day. Each school community is unique and designers should consider what spaces best support the community's needs; however, APCS and the City should plan and design school sites to support community use during these non-school hours. A full size field at a school not only benefits the school time use of the field for the students, but also the citywide community of children and adults that play sports throughout the year.

Site. Site circulation should be organized for safety and efficiency. This should be accomplished through careful separation of vehicular traffic, including the separation of school buses, parents, and staff. Particular consideration should be given to providing safe passage to pedestrian traffic. Sufficient stacking space should be provided to prevent congestion of busy streets.

All play areas should be protected from vehicular and pedestrian traffic, so students can be assured of a safe and secure environment on the entire school site. Shading elements should be considered along with an outdoor learning area and garden.

The Virginia Department of Education Guidelines recommend that each school *"site have areas that can be developed to provide the minimum number of play areas require for physical education."*

Alexandria school sites are urban in nature and most current and future sites cannot accommodate the recommendations outlined in the Guidelines for School Facilities in Virginia's Public School. However, every elementary school site should accommodate non-structured or natural play areas as well as at least one playground. It is recommended that architects work with ACPS and RPCA to prioritize types of outdoor space development on a site-specific basis. Architects should endeavor to design new schools or future renovations in a way that will maximize available open space. Ideally, all elementary schools will be designed to accommodate one multiuse field play area that conforms to the state guidelines.

Site Management. Recreation, Parks, and Cultural Activities (RPCA) is a partnership program that utilizes shared ACPS facilities for afterschool programming. RPCA operates the majority of playing fields, courts, parks, and playgrounds adjacent to Alexandria schools. When funds are available to enhance the campus or

grounds of the school, architects should coordinate and consider RCPA's requirements towards playgrounds, courts, fields, and gymnasium spaces, per the joint ACPS/ RPCA Facility & Outdoor Maintenance & Use agreement.

Parking and Transportation. ACPS recommends the minimum parking requirements based upon proposed capacity prototype. Actual parking requirements may be impacted by factors such as zoning, site constraints, absences or presence of other modes of transportation, etc. The architect must coordinate at time of design and it should be noted that ACPS offers incentives to encourage carpooling and the use of mass transit by staff.

Design Principles

The following section provides executive summaries of the guiding design principles that should be applied to each space within an ACPS school facility. The appendix of this document includes expanded detailed guidance for some of the categories discussed here.

Furniture & Equipment

Classrooms vary in shape and size; therefore, the furniture should be flexible to accommodate a variety of classroom formats for both individual and group activities. Teachers and students should have storage space for personal belongings, papers, books, supplies, and teaching materials.

To the extent possible, movable furnishings should be used, rather than fixed casework, to provide flexibility for future reconfiguration. Furniture should be selected for its ergonomic traits, with consideration for variability and adjustability to support diverse learning styles. In middle schools, architects should consider full height private lockers in hallways for every student.

Technology

The facility should contain the latest in technology and infrastructure should be provided to support wireless access to data and video throughout the building. It is intended that access to technology will be seamless and pervasive throughout the building with only the minimal number of hard drops needed to support voice, teaching stations, and wall-mounted devices. Technology infrastructure should support the concept that learning can happen anywhere by enabling a one-to-one student to device ratio and the notion of "bring your own device." The specific tools and design guidance will be determined based on the best practices at the time of construction.

Every learning area should be wired for teacher audio enhancement. Research into this cutting-edge technology suggests that student learning can improve in classrooms where the teacher's voice is amplified and the classroom acoustics are designed to support voice clarity.

Universal Design

The entire facility should be accessible for students, staff, and visitors. This should be accomplished through judicious use of ramping and elevators with sufficient internal clearances for circulation, convenient bus/van loading and unloading, and nearby handicapped parking spaces. All elements of the Americans with Disabilities Act must be complied with, including way finding and signage, appropriate use of textures, and universal accessibility of all indoor and outdoor school facilities.

Safety & Security

ACPS wants to maintain an inviting and de-institutionalized environment, while simultaneously providing a safe environment for students, staff, and community. The organization of a building will have a major impact on student behavior and safety concerns. Architects should refer to Crime Prevention Thru Design (CPTED).

All school locations should include a double perimeter approach where every visitor is guided through a secure exterior door into a secure holding vestibule prior to gaining access to the main office. Visual access from the main office to the exterior vestibule is mandatory and every entrance to the school should have a CCTV IP camera. Consult with ACPS over the most current keying policy.

Community Use and Partnerships

ACPS is pleased to have community and non-profit partners in its buildings offering valuable services and programs for students and families. Partnership programs and other regular community activities require shared, co-located and sometimes dedicated space that is internal to the school yet has the ability to operate beyond ACPS school hours. Extended hours of operation require the partnership programs and community activity area to have an entrance that can be separated from the main school. This allows partnership program to operate independently of the school's staffing requirements and provides the necessary security to protect the main school. This

secondary building entrance for after school program use should be visible to all spaces co-located in the community use and partnership area, specifically the gym and multipurpose rooms. This space will be utilized by after school programs for record keeping, registration transactions, secure money storage, and child pickup. During general school hours, partnership programs should function under ACPS' security policies and use of secondary entrances should be restricted.

Program offerings are location dependent and include, but are not limited to:

- Tutoring
- Family and Community Education Centers (FACE)
- Recreation, Parks & Cultural Activities (RPCA)
- Medicaid Therapy
- Campagna Center

Functions of these programs should be co-located with the ability to utilize standard classrooms, the gymnasium, multipurpose room and media center. It is also important to note that licensed programs have specific requirements that should be considered as a part of any plans to renovate or build new facilities. While the requirements are not onerous, failure to incorporate their consideration during the planning process can significantly constrain having access to such programs.

ACPS has a standing partnership with Alexandria City's Department of Recreation, Parks, and Cultural Activities (RPCA) for the maintenance and after-school programming of fields. At several schools, RPCA operates after school and community programs in the gymnasium or multipurpose room; per the joint ACPS/RPCA Facility and Outdoor Maintenance and Use Agreement.

Family and Community Engagement Centers

ACPS serves a diverse community of families who have immigrated to the DC Metropolitan area from all over the world. It is understandable that newcomers to the school may be hesitant to engage staff and need additional support. The Division wants to establish Family and Community Education Centers (FACE) at each school to welcome families and provide the additional resources to help them succeed.

A typical FACE center would ideally be located near the main office and include a reception area with comfortable seating for individual conversations, table seating for meetings and classes, private offices, and storage.

Parent Teacher Associations

Provide flexible use space to accommodate the mission and program offerings of the PTA group. PTAs meet on a monthly schedule, typically during the evening and have 30 to 35 participants in attendance. PTA meetings include School Board Members, parents, and, on occasion, the Superintendent. The PTAs offer volunteer after-school programs that require access to standard, flexible classrooms, the gymnasium, the media center, and the cafetorium. Consider co-locating PTA with other partnership functions like the FACE center. PTA functions require dedicated storage space and direct interaction with the school's main office suite and staff.

Energy & Environmental Performance

ACPS is dedicated to renovating existing or building new facilities that meet or exceed the City of Alexandria Eco-City standards and LEED environmental performance standards. ACPS desires to offer schools that teach faculty, staff, students and the community the importance of environmental stewardship. ACPS believes quality architecture and high energy performance facilities positively impact the education of students and increase retention of staff and students. At this time, city development standards require compliance with LEED Silver certification standards for major construction projects.

Materials & Finishes

ACPS believes high-quality architectural materials and finishes create an atmosphere that supports and inspires learning. All spaces should be conducive to teaching and provide a warm and welcoming feeling and meet the principles of Evidence Based Design (lighting, environmental / air quality, and acoustics). All materials must be highly durable and resilient yet support a creative learning environment. ACPS is cognizant that materials should be reasonable in cost and not exorbitant when considering budget and life-cycle costs of maintenance and upkeep. Balance is necessary to maintaining budget and achieving ACPS' facility standards.

Operations & Mechanical

Provide mechanical systems that are climate appropriate and responsive to the life cycle, maintenance and efficiency expectations of ACPS. Provide passive systems that pair with active systems and coordinate to achieve maximum efficiencies while coordinating with the users

to determine the location of universal and dedicated systems.

Elementary and Middle School Prototypes

The careful organization of programmatic components during early design phases is critical for the success of a future school program.

The 700 student elementary school prototype

There are two academic clusters in the 700 student prototype. A single main entry is a specific determination of ACPS's security plan and that entrance is supported by administration and family and community engagement center functions. Academic clusters are located in the quiet areas of the building that can be isolated during off-hours. Noisier and shared programmatic clusters are grouped toward parking, public and play areas and allow for after-hours access. Informal "break-out" or Extended Learning Areas happen throughout the building.

The number and size of support spaces and labs are driven by staffing formulas and national benchmarks. For new schools or the modernization/addition to an existing school, this information would inform a 'site specific' educational specification

The 1200 student middle school prototype

There are three academic clusters in the 1200 student prototype. Academic clusters are positioned at the corners of a diamond-shaped plan with the fourth corner taken by the main entrance. A single main entry is a specific determination of ACPS's security plan and that entrance is supported by administration and family and community engagement center functions. Academic clusters are located in the quiet areas of the building that can be isolated during off-hours. At the middle school level, each academic cluster includes a per grade administrative suite. Noisier and shared programmatic clusters are grouped toward parking, public and play areas and allow for after-hours access. Informal "break-out" or Extended Learning Areas happen throughout the building.

The number and size of support spaces and labs are driven by staffing formulas and national benchmarks. For new schools or the modernization/addition to an existing school, this information would inform a 'site specific' educational specification.

Chapter 5
Mini Master Plans

Educational Adequacy Assessment

The mini master plans were developed based on an educational adequacy assessment that measured existing ACPS facilities against the educational specifications adopted by the School Board in January 2015 and outlined in Chapter 4.

The initial step in the evaluation process was to document existing conditions of building interiors. This assessment, conducted September 2013 — March 2014 by Hughes Group Architects (HGA), electronically gathered data on each school including square footages, light and acoustic levels and presence of technology. In fall 2014, the exterior school sites were assessed and documented including natural resources, parking, circulation, recreation features and utilities. This existing conditions information served as the baseline for the educational adequacy assessments supported by the project team of Studio27 and Brailsford and Dunlavey.

The educational adequacy assessment evaluated specific components of the school campus including individual instructional and support spaces, and provided an evaluation of projected school capacity and utilization. The areas of evaluation as well as the scoring methodology were based on an approach previously developed by the Council for Educational Facility Planners International (CEFPI).

Facility condition assessments evaluate the condition of building systems such as mechanical, electrical, plumbing and structural, through a on-site inspection by technical experts. This is recommended for all the facilities. ACPS is currently in the process of evaluating all the building conditions and the results from that effort should be combined with the recommendations of this report.

Scoring

Scoring for the site, building assessment, and individual spaces was conducted based on the percentage criteria met for each factor evaluated. The **rating categories** assigned to these scores were based on the ranges of scores shown in *Table 5.1*.

Rating	Range	
Excellent	89.5	100
Satisfactory	69.5	89.4
Borderline	49.5	69.4
Inadequate	29.5	49.4
Very Inadequate	0	29.4

Table 5.1

Scoring for building utilization was conducted based on projected enrollment through school year 2020 divided by the capacity. Capacity figures were established based on the quantity and size of teaching spaces established in the educational specifications.

Rating of building utilization included an upper and lower range, because both underutilization and overutilization of facilities is problematic. *Table 5.2* indicates the rating categories established for **building utilization**:

Rating	Range			
Excellent	100			
Satisfactory	90	99.9	100.001	110.0
Borderline	80	89.9	110.001	115.0
Inadequate	70	79.9	115.001	120.0
Very Inadequate	0	69.9	120.001	300.0

Table 5.2

Prioritization of the educational adequacy factors was undertaken via a tiered approach based on five groups of evaluation factors established by the LREFP subcommittee.

The 5 tier groups of evaluation factors are:

1. Safety
2. Capacity
3. Support of Educational Program
4. Enhancements to Learning Environment
5. Other

Each of the educational adequacy evaluation factors was assigned to a tier group and, when combined with the rating for that factor, is used to establish the relative priority of that factor. The priorities have been utilized to focus project recommendations for each school on issues that are most pertinent to ACPS and the City of Alexandria. ***Table 5.3*** clarifies how the rating and the tier result in a priority score for each factor evaluated.

The goal of this assessment is to provide an overall snapshot of the health of a school and provide guidance to the issues that may need to be addressed. The results of this analysis is summarized in the ***At A Glance*** table for each school and provided in detail as *Appendix- Exhibit As*. A summary of data gathered from all schools in the educational adequacy assessment is shown in ***Table 5.4***.

Rating	Tier	Priority
Very Inadequate	1- Safety & Security	1
	2- Capacity	2
	3- Support of Educational Program	3
	4- Enhancement to Learning Environment	4
	5- Other	5
Inadequate	1- Safety & Security	6
	2- Capacity	7
	3- Support of Educational Program	8
	4- Enhancement to Learning Environment	9
	5- Other	10
Borderline	1- Safety & Security	11
	2- Capacity	12
	3- Support of Educational Program	13
	4- Enhancement to Learning Environment	14
	5- Other	15
Satisfactory	1- Safety & Security	16
	2- Capacity	17
	3- Support of Educational Program	18
	4- Enhancement to Learning Environment	19
	5- Other	20
Excellent	1- Safety & Security	21
	2- Capacity	22
	3- Support of Educational Program	23
	4- Enhancement to Learning Environment	24
	5- Other	25

Table 5.3

School Site	Average Priority of Site, Building Assessment and Individual Spaces	Average Utilization Score	Electric Usage in kwh (7-1-13/6-30-14) Per SF	Number of Maintenance Calls (7-1-13/6-30-14) Per SF
Charles Barrett	73	68	10.6	0.30
Cora Kelly	70	19	9.0	0.35
Douglas MacArthur	68	68	9.6	0.24
George Mason	61	73	7.7	0.22
James K. Polk	77	68	9.9	0.19
John Adams	82	85	7.7	0.17
Lyles-Crouch	60	84	7.2	0.30
Matthew Maury	66	72	7.9	0.14
Mount Vernon	53	73	9.6	0.28
Samuel Tucker	80	30	11.8	0.13
William Ramsay	58	74	5.7	0.16
Francis C. Hammond	61	66	9.2	0.09
George Washington	73	50	7.4	0.10

Table 5.4

An overall summary of the elementary assessments is outlined below and in *Table 5.5:*

- All elementary schools (including Jefferson-Houston) are **currently** over capacity by a total of **290** students.

- In 2020, elementary schools will be over capacity by a total of **1,271** students.
  - In the east end (CB, GM, DM, CK, JH, LC, MV, MM): **457**
  - In the west end (JKP, ST, JA, WR, PH): **814**

- In 2020, the elementary level will need a total of **23** core classrooms (PK-5) to accommodate expected enrollment.
  - In the east end (CB, GM, DM, CK, JH, LC, MV, MM): **1**
  - In the west end (JKP, ST, JA, WR, PH): **22**

- Three elementary schools are projected to be over the maximum recommended size of 850 students. If capped at 850, **77** Polk students, **330** Adams students, and **148** Ramsay students (a total of **555 students**) will need to be served elsewhere.

School Site	2014	Current Capacity	Current Utilization	2020 Projections	Future Capacity	Projected Utilization	Future Net Room Surplus/ Deficit	Future Core Classroom Surplus/ Deficit
Charles Barrett	458	428	107%	512	524*	98%	(4)	2
Cora Kelly	341	429	79%	409	429	95%	3	5
Douglas MacArthur	708	554	128%	772	554	139%	(11)	(6)
George Mason	541	368	147%	692	368	188%	(15)	(11)
James K. Polk	704	660	107%	927	756*	123%	(13)	(4)
Jefferson-Houston	444	800	56%	553	800	69%	6	6
John Adams	944	858	110%	1,180	858	138%	(7)	(2)
Lyles-Crouch	396	375	106%	360	375	96%	(3)	4
Matthew Maury	441	350	126%	473	350	135%	(9)	(2)
Mount Vernon	817	755	108%	841	755	111%	(6)	1
Patrick Henry	596	790	75%	701	790	89%	-	-
Samuel Tucker	750	620	121%	780	620	126%	(3)	(7)
William Ramsay	885	748	118%	998	748	133%	(18)	(9)
ES Total	8,025	7,735	104%	9,198	7,927	138%	(80)	(23)

***Future capacity includes 2 summer 2015 capacity projects at Barrett and Polk of 4 classrooms**

Table 5.5

An overall summary of the middle school assessments is outlined below and in *Table 5.6:*

- At middle school, **currently** over capacity by a total of **113** students.

- In 2020, middle schools will be over capacity by a total of **685** students.
- If both middle schools are capped at the maximum ideal school size of 1200 students, there are **831** sixth through eighth graders to house .

School Year	2014	Current Capacity	Current Utilization	2020 Projections	Future Capacity	Projected Utilization	Future Net Room Surplus/ Deficit	Future Core Classroom Surplus/ Deficit
Francis Hammond	1,436	1,396	103%	1,832	1,396	131%	6	(1)
George Washington	1,223	1,150	106%	1,399	1,150	122%	(15)	(11)
MS Total	2,659	2,546	104%	3,231	2,546	127%	(9)	(12)

Table 5.6

Mini Master Plan Organization

Each mini-master plan has four main features:

1. At A Glance Table
2. Narrative describing the results of the analysis
3. Recommendations and Cost Estimates
4. School attendance boundary, context and proposed future conceptual design

The recommendations section is divided into required planning, first and second priorities, and long range recommendations — and is intended to be a menu of options for the School Board's consideration during the development of the Capital Improvement Program.

The conceptual design shown in each plan is only one visual representation of how to potentially accommodate the future growth. This drawing is intended to be illustrative only.

The cost estimates provided are based on implementing the suggested master plan in its entirety and in certain cases, breaks out costs for renovation versus new construction (additions). These are conceptual cost estimates, based on the one option illustrated in the mini-master plans and are subject to change. Future costs will be affected by market conditions. Priorities must be balanced with fiscal resources. Further evaluation of existing conditions may recommend modifications to the plans as shown. Projects and cost estimates will be reevaluated and refined through the development of the capital improvement budget which occurs annually.

Table 5.7 defines the information contained in each plan's ***At A Glance*** section. Each table contains information on the existing building and site (year built, current floor area, lot size, floor area ratio), zoning (zoning, floor area permitted by zoning) and educational adequacy (school site, building assessment, instruction & support spaces, and utilization).

AT A GLANCE…			
Year Built **Year school was built**	***Current Floor Area*** **Current square footage of the building**	***Lot Size (acres)*** **The size of the lot in acres.**	***Floor Area Ratio*** **Gross Floor Area/Lot Size**
Zoning **Zone or zones in which the property lies.**	***Floor Area Permitted by Zoning (SF)*** **Floor area permitted by the zoning code**	***Core Classroom Surplus/Deficit (2020)*** ***Number of core classrooms needed as determined by the assessment.***	***Total Program Square Feet (2020)*** ***Total program square feet (includes core spaces, encore and core classrooms) needed as determined by the assessment.***
School Site **Evaluated site circulation, size and appropriateness of play areas**	***Building Assessment*** **Organization of the building, technology and supporting infrastructure**	***Instructional & Support Spaces*** **Size of classrooms, loose and fixed furnishings, lighting, acoustics and air quality**	***Utilization*** **Required spaces per the educational specifications compared against existing spaces**

Table 5.7

CHARLES BARRETT ELEMENTARY SCHOOL

1115 Martha Custis Drive, Alexandria, VA 22302

AT A GLANCE...

Year Built 1949	*Current Floor Area* 62,760 (school) 9,800 (rec center)	*Lot Size (acres)* 5	*Core Classroom Surplus/Deficit (2020)* +2 (includes 2015 capacity project)
Zoning R-B (006.01-03-01)	*Floor Area Permitted by Zoning (SF)* 113,061	*Floor Area Ratio* 0.75	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* -4,756
POS (006.01-03-01)	0	0.0	N/A
School Site Satisfactory	*Building Assessment* Satisfactory	*Instructional & Support Spaces* Satisfactory	*Projected Utilization (2020)* 98%

BACKGROUND

Charles Barrett Elementary School was built in 1949. The 1997 addition of a media center is the only major renovation the school has undergone since its establishment. The building shares a gymnasium and play fields with the adjacent Charles Barrett Recreation Center.

In 2014, Charles Barrett's enrollment was 458 students with a measured capacity of 428. Enrollment projections indicate the school population will increase to a student body of 512 by the year 2020.

The academic curriculum at Charles Barrett includes reading, language arts, mathematics, social studies, and science and also offers:

- Music instruction once a week
- Art instruction once a week
- Band and orchestra beginning in 4th grade
- Two physical education classes a week
- Family life instruction at age-appropriate levels
- English as a second language classes
- Special education programs
- TAG pull out program
- Talented and Gifted program for grades K-5[1]

[1] *http://www.acps.k12.va.us/barrett*

STUDENT ENROLLMENT (# OF STUDENTS)

	2014	2020 Projection
Enrollment	458	512
Capacity	428	524*

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

* includes summer 2015 capacity project

KEY FINDINGS

SUMMARY

The data collected through this assessment reveals Charles Barrett Elementary School meets 73 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

- The majority of classrooms did not meet the minimum size requirements.
- Core and specialty classrooms are not equipped with appropriate storage furnishings.

School Site

Site Data	
Steep Slopes	*Steeper slopes in outfall channel and around open fields*
Playgrounds	*3*
Recreation Features	*Ball fields, open fields, recreation center*
Resource Protection Areas	*None*
Parking	*42*
Storm Water Management	*Flow through planter boxes & bioretention*

The school site received a satisfactory rating. The school's site circulation rated borderline due to conflicts between vehicular and pedestrian traffic patterns. The kiss-and-ride, school bus lane, and pedestrian traffic all access the school from the same point of entry. This causes significant congestion on the main street near the school's front entrance during peak times. A study is recommended to determine whether the drop-off location can be relocated or reconfigured.

Instructional and Support Spaces

The most urgent items in this section are classroom capacity and HVAC mechanical issues.

Overall, the instructional and support spaces ranked satisfactory. **All spaces failed to meet appropriate size requirements.** The measured average classroom size for grades one through five is 775 square feet rather than the desired 900 square feet needed to provide a flexible learning environment. The majority of resource rooms and specialty classrooms are not only too small, but also lacked the necessary equipment, furniture, fixed infrastructure, and storage. The overall size of specialty classrooms is approximately 56 percent smaller than the square foot minimums detailed in the educational specifications. A renovation is recommended to right-size core and specialty classrooms.

The school has significant deficiencies with air temperature and classrooms lack individual temperature controls. Occupants deal with major temperature fluctuations from season-to-season.

Instructional classrooms do not have individual student desks and therefore do not support diverse learning styles or flexible seating arrangements. The student and teacher program furniture, which includes shelving, cabinets, wardrobes, and cubbies, is either not adequate or non-existent in most classrooms.

Building Assessment

The school's capacity is below satisfactory primarily because the core classrooms, specialty classrooms, and administrative spaces all fail to meet the required size. Most classrooms at Charles Barrett have the technology infrastructure and tools required to support a 21st century learning environment. The third, fourth, and fifth grade classrooms are not organized in grade level clusters as required by the educational specifications. There are no defined extended learning areas adjacent to the classrooms to allow for flexible and alternate teaching or break-out groups. Additionally, shared spaces, including the gym, art room, and cafeteria, are not centrally located as required. The recommended renovation will address deficiencies in classroom size as well as provide extended learning areas.

RECOMMENDATIONS

Charles Barrett must be expanded and reconfigured to meet the recommended size requirements and key organizational adjacencies. This analysis assumes the four classroom addition currently scheduled for construction summer 2015.

GROUP 1 — REQUIRED PLANNING

- **Site** assessment to determine whether the drop-off location for the school can be relocated/ reconfigures (based on property boundaries, set-backs, etc.). It will also help inform opportunities for additional parking.
- **Assess** HVAC and mechanical issues through the facility condition assessment.

GROUP 2 — FIRST PRIORITY

- **Reconfigure** the spaces within the existing school to meet the recommended size requirements for individual academic spaces as outlined in the educational specifications ($24.5M).
- **Demolish** the existing north wing and build an addition to the school to meet recommended size requirements and key organizational adjacencies outlined in the educational specifications ($4.3M).

GROUP 3 — SECOND PRIORITY

- **Provide** additional storage for teachers and students as well as an upgrade to the furniture, fixtures and equipment.
- **Equip** all classrooms with individual climate controls.

GROUP 4 — LONG RANGE RECOMMENDATIONS

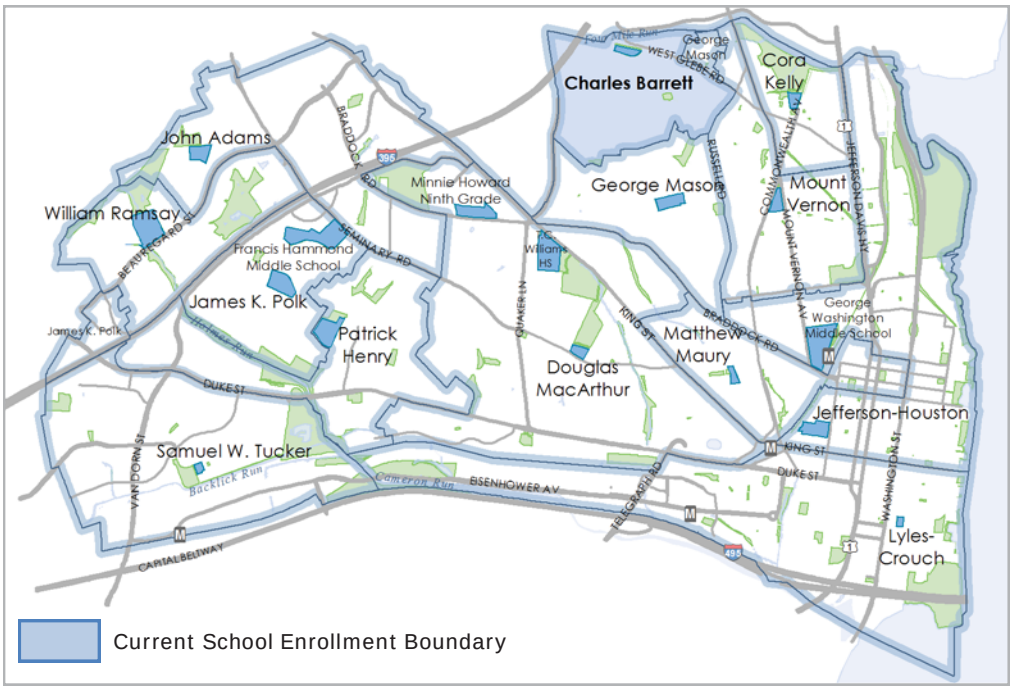
- **Reconfigure**, based on the site assessment, the vehicular circulation to reduce potential conflicts with pedestrians.
- **Upgrade** the recreation fields to meet the standards.

CONCEPTUAL COST ESTIMATES

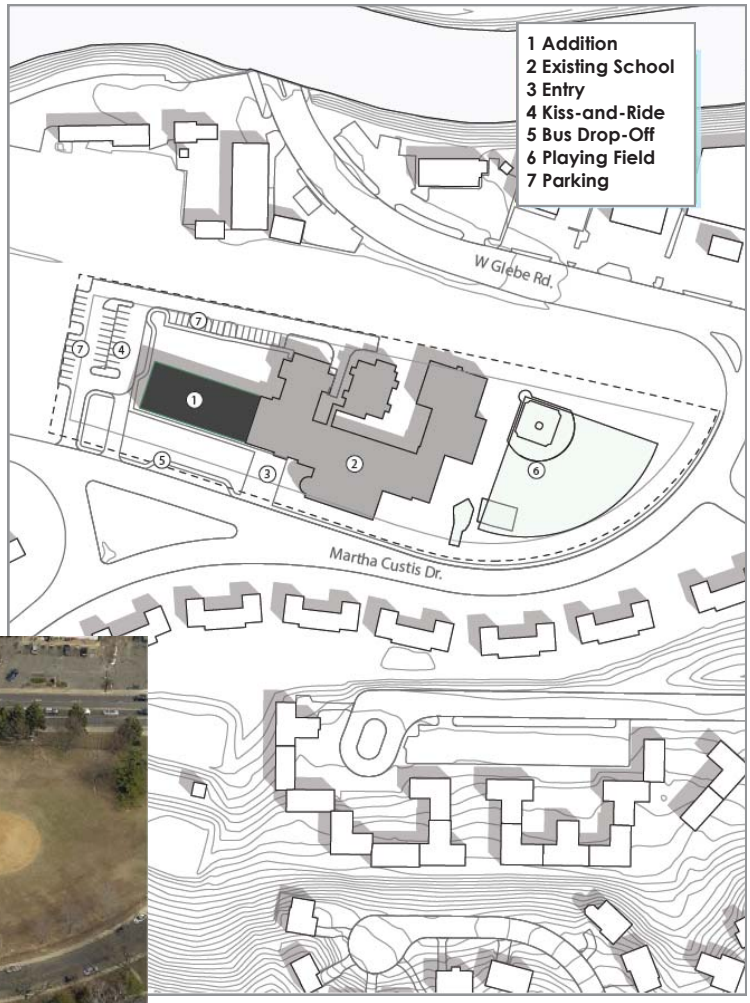
- **Total Renovation**, ***Excluding the Rec Center* — $24.5M ($309/SF) includes**:
  - All new mechanical, HVAC, plumbing, electrical and window systems
  - New food service and A/V equipment for auditorium, cafeteria and classrooms and sufficient classroom storage
  - New interior walls, floors and ceilings
- **Addition — $4.3M ($388/SF) includes:**
  - Replacement of existing Kindergarten pod
- **Complete master plan construction- $28.8M ($319/SF) includes**:
  - 15% contingency and 17% fees, insurance, etc.

Barrett is not currently in the modernization program per the FY 2016-2025 CIP; however, a four classroom addition will be built in summer 2015. Additional renovations, additions or the complete master plan project will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.

Charles Barrett Elementary School



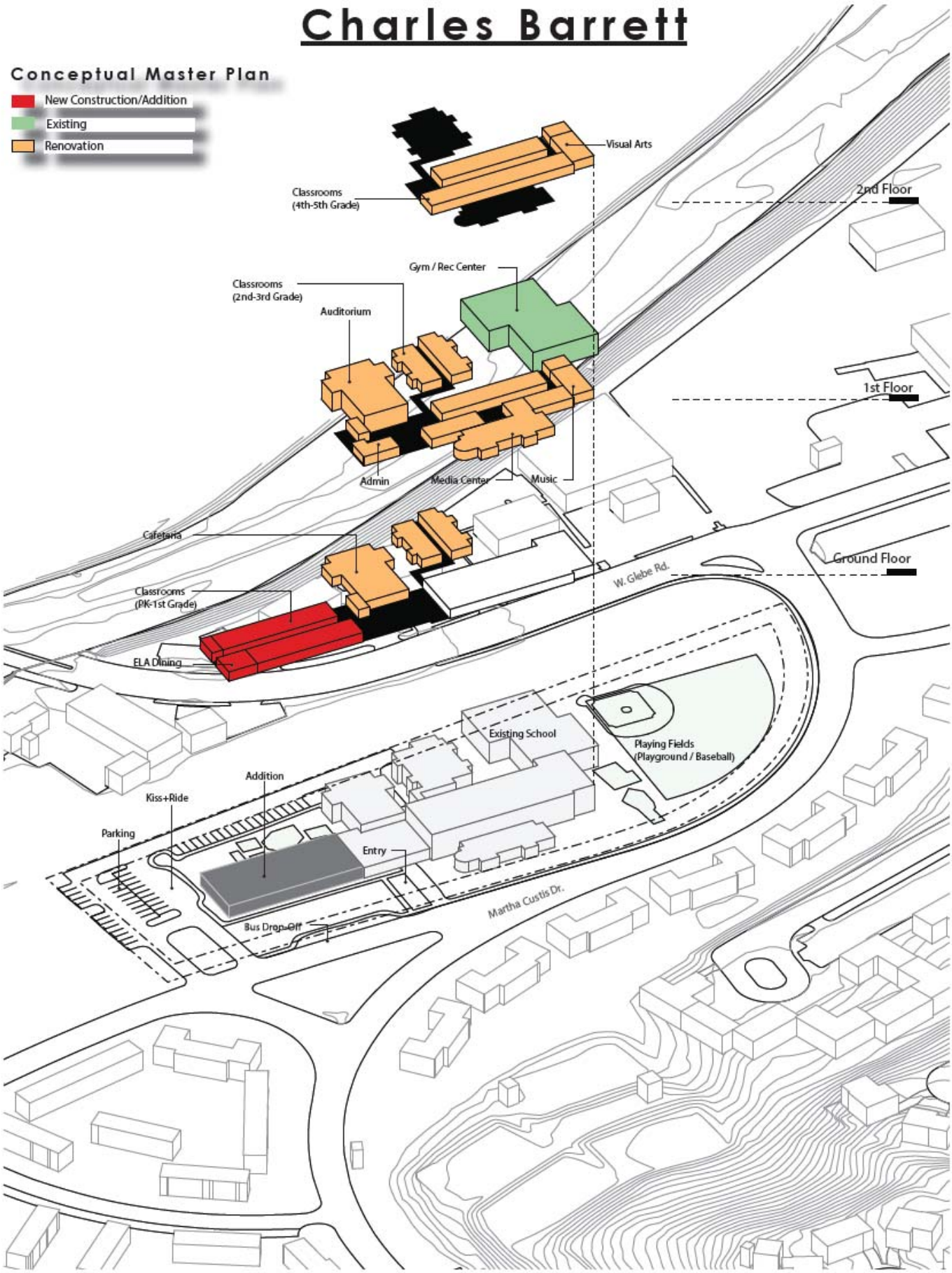
Neighborhood Context



Master Plan concept showing school addition.

School site looking north across Martha Custis Drive.

Charles Barrett



Cora Kelly Elementary School

3600 Commonwealth Avenue, Alexandria, VA, 22305

At a Glance…

Year Built 1955	*Current Floor Area* 69,000 (school) 25,840 (rec center)	*Lot Size (acres)* 4.5	*Core Classroom Surplus/Deficit (2020)* 5
Zoning R-B (015.02-09-01)	*Floor Area Permitted by Zoning (SF)* 148,255	*Floor Area Ratio* 0.75	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* 10,500
POS (007.04-09-04)	0	0.0	
School Site Satisfactory	*Building Assessment* Inadequate	*Instructional & Support Spaces* Satisfactory	*Projected Utilization (2020)* 95%

Background

Cora Kelly Elementary School was built in 1955 and shares a gymnasium with the adjacent to the Cora Kelly Recreation Center. Enrollment projections indicate the school's population will increase to 409 students by year 2020.

The academic curriculum includes reading, language arts, mathematics, social studies, and science and also offers:

- Guided Math with personalize instruction meeting individual needs of students
- Core subject matter is integrated within encore classes (i.e. art, library, music and physical education)
- Science & computer labs are provided for students to help develop science and technology literacy.[1]

[1] *http://www.acps.k12.va.us/kelly*

Student Enrollment (# of students)

	2014	2020 Projection
Enrollment	341	409
Capacity	429	429

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

Based on the data collected through this assessment, Cora Kelly meets 70 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

High Priority Items

- Core classrooms are generally under-sized and lack air temperature controls.
- The building's technology and supporting infrastructure, also earning a score of inadequate, must provide basic capabilities such as wireless internet access and ample supply of electrical outlets for teaching devices.

School Site

Site Data	
Steep Slopes	*Steep slopes to offsite channel around open fields*
Playgrounds	*3*
Recreation Features	*Playground, adjacent natural area*
Resource Protection Areas	*None*
Parking	*85*
Storm Water Management	*Bio-retention, multiple storm inlets*

Based on the assessment, the school site received a satisfactory rating. The site circulation is the main area of concern for this section. The school's kiss-and-ride and bus lane are not separated and all vehicles access the same driveway in front of the school. Additionally, some of the primary pedestrian routes are not separated from vehicular traffic, as required.

The existing school building was partially constructed in the adjacent park (POS zone). Any future projects should consider rectifying this property boundary issue.

Instructional and Support Spaces

While the instructional and support spaces ranked satisfactory. **Core classrooms fail to meet size requirements.** The measured average size for pre-kindergarten and kindergarten class is 810 instead of the desired 1,025 square feet. The measured average size for grades one through five is 741 instead of the desired 900 square feet. Collectively, only three of the twenty-four classrooms, or thirteen percent, meet the recommended size requirement. A renovation is recommended to right-size the core classrooms.

The core classrooms do not have individual student desks and therefore do not support flexible seating arrangements. Very few of the core classrooms have restrooms within the classroom or shared with an adjacent room, as specified. These rooms also lack individual temperature controls and occupants deal with major temperature fluctuations from season-to-season.

The specialty classrooms and shared spaces generally have adequate square footage, but they typically lack adequate storage, fixed equipment, and infrastructure. The rooms are missing two teaching walls and sound enhancement equipment. There are very few classrooms with teacher desks and personal storage equipment. In general, the student and teacher program furniture (e.g. shelving, cabinets, wardrobes, and cubbies) is either not adequate or non-existent in most classrooms.

Building Assessment

The building component of the educational adequacy assessment revealed an inadequate rating. The technology infrastructure and tools are not capable of serving a 21st century learning environment as defined in the educational specifications. Electrical outlets are not present in multiple locations along classroom and corridor walls. The clocks and PA system throughout the building are not integrated, nor are the clocks digital, as desired. Additionally, there is limited wireless connectivity in the hallways and corridors. Finally, the school does not provide wireless bandwidth at a one-to-one student-to-device ratio.

The other two sub-sections of the building assessment did not score much higher. Both building organization and accessibility earned a borderline rating. The building organization rating is due to the lack of distinct academic clusters and extended learning areas (ELAs) throughout the building. The building's configuration allows for after-hours access without compromising the school's security. Lastly, the building's accessibility is poor because the only handicapped access to the second floor is by a stair lift.

Recommendations

While Cora Kelly can meet the projected enrollment within the existing building, reconfiguration is required to achieve the standards in the educational specifications. Because it is under capacity, there is an opportunity to address capacity issues in adjacent districts. Additionally, there are site considerations and ADA projects that should be considered.

Group 1 — Required Planning

- **Site assessment** to determine whether all pedestrian circulation routes can be separated from vehicular traffic as recommended in the education specifications.
- **Explore** the feasibility of installing an elevator near the main entry to address the existing ADA accessibility issue.
- **Assess** building condition comprehensively through a facility condition assessment

Group 2 — First Priority

- **Reconfigure** the existing building to ensure the core classrooms meet the recommended size requirements outlined in the educational specifications ($19.1M).

Group 3 — Second Priority

- **Equip** all classrooms and support spaces with individual climate control.
- **Equip** all core classrooms, corridors and support spaces with additional electrical receptacles as required.
- **Provide** additional storage for teachers and students should be integrated into the reconfigured classrooms as well as an upgrade to furniture, fixtures and equipment.
- **Equip** all classrooms with two teaching walls.

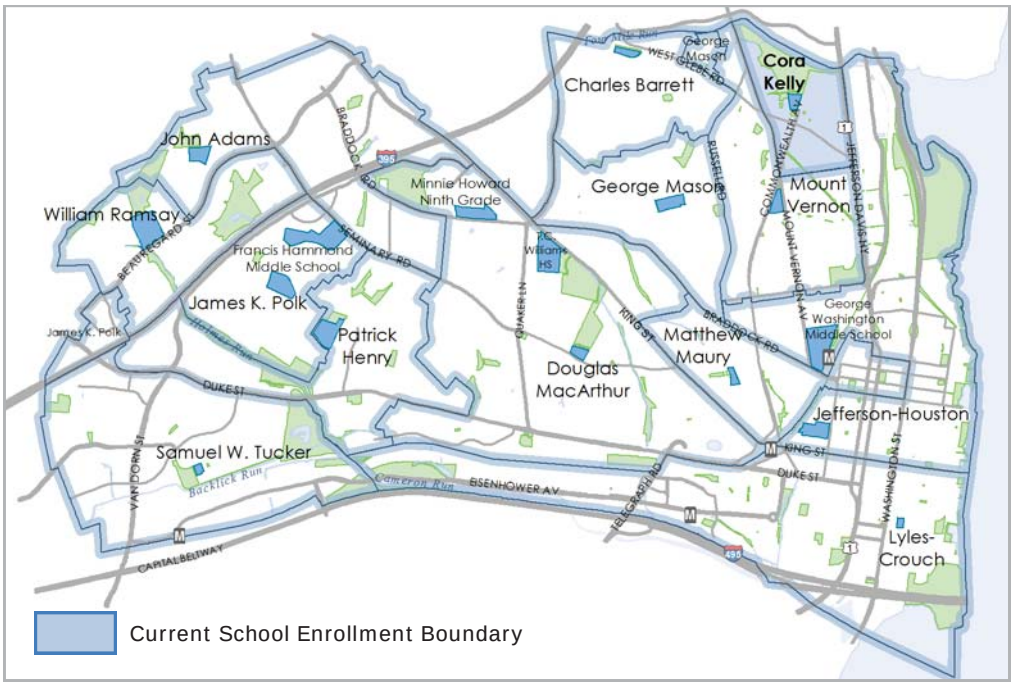
Group 4 — Long Range Recommendations

- **Combine** circulation routes and parking with adjacent recreation center to improve efficiency.

Conceptual Cost Estimates

- **Complete master plan construction — $19.1M ($275/SF) includes**:
  - 15% contingency and 17% fees, insurance, etc., (***excludes*** the rec center in 2015 dollars)
  - All new mechanical, plumbing, electrical and window systems
  - New food service and a/v equipment for auditorium, cafeteria and classrooms
  - New interior walls, floors and ceilings

In the FY 2016-2025 School Board CIP, Cora Kelly is budgeted to receive a modernization and addition beginning in FY 2019 based on division-wide capacity needs. The construction budget for that project is currently $20,145,000 and includes a capacity component.



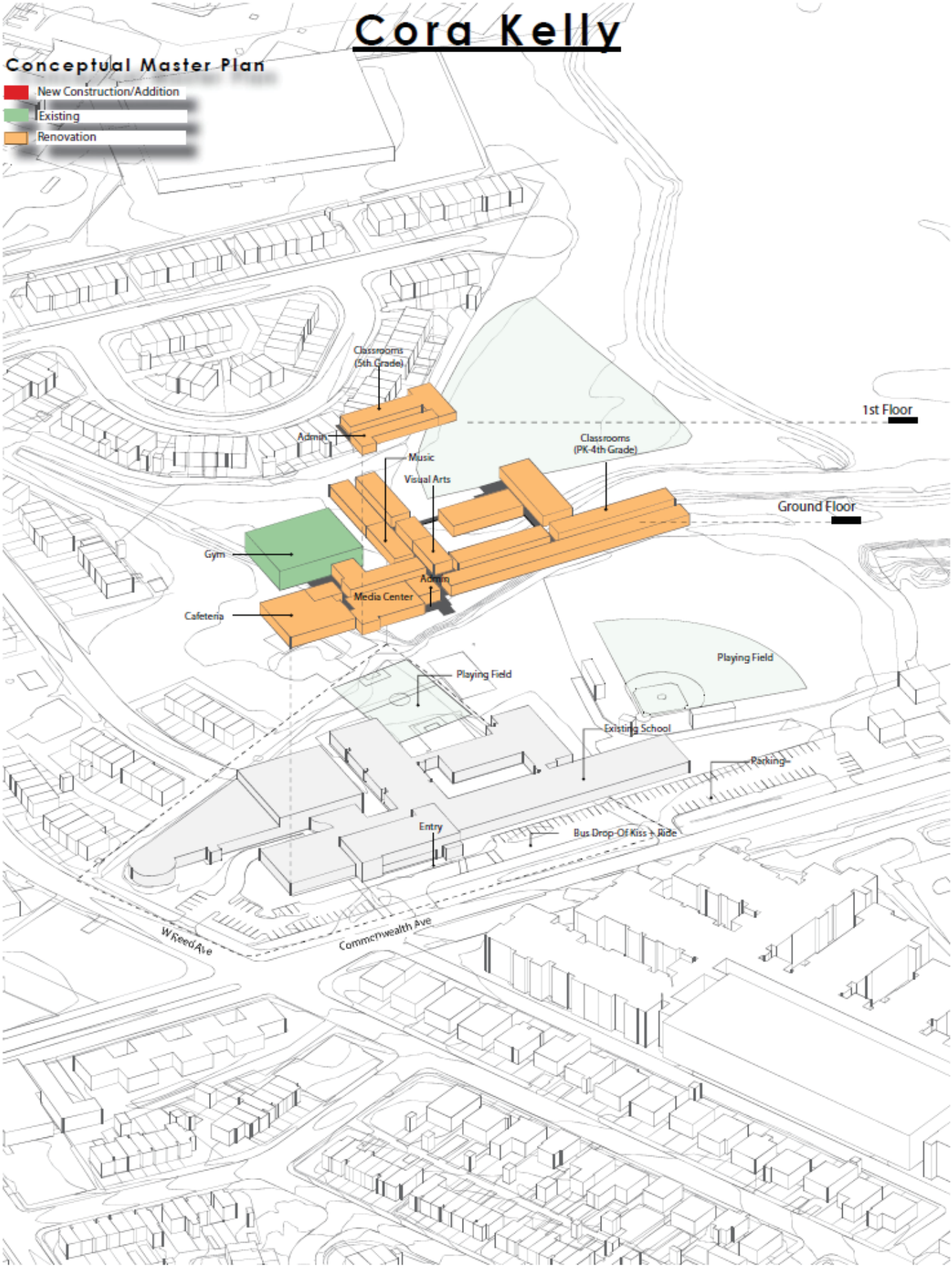
Cora Kelly Elementary School

Neighborhood Context

School site looking west across Commonwealth Avenue

Master Plan Concept with renovation within current footprint

Cora Kelly


Conceptual Master Plan
New Construction/Addition
Existing
Renovation
Classrooms (5th Grade)
Admin
Music
Visual Arts
Classrooms (PK-4th Grade)
1st Floor
Ground Floor
Gym
Admin
Media Center
Cafeteria
Playing Field
Playing Field
Existing School
Parking
Entry
Bus Drop-Of Kiss + Ride
W Reed Ave
Commonwealth Ave

DOUGLAS MACARTHUR ELEMENTARY SCHOOL

1101 Janneys Lane, Alexandria, VA 22302

AT A GLANCE…

Year Built 1942	*Current Floor Area* 56,098	*Lot Size (acres)* 4.4	*Core Classroom Surplus/Deficit (2020)* -6
Zoning R12 (051.02-03-16)	*Floor Area Permitted by Zoning (SF)* 57,000	*Floor Area Ratio* 0.3	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* -19,970
School Site Satisfactory	*Building Assessment* Borderline	*Instructional & Support Spaces* Borderline	*Projected Utilization (2020)* 139%

BACKGROUND

Douglas MacArthur Elementary School was built in 1942 predominantly for children of the Naval Torpedo Plant workers living in Chinquapin Village. The school has undergone a number of renovations with a minor one occurring in 2008. The existing school is adjacent to Forest Park.

In 2014, Douglas MacArthur had an enrollment of 708 students with a capacity of 554 students. By 2020, enrollment is expected to increase by 9.5 percent to 772 students.

The academic curriculum at MacArthur includes reading, language arts, mathematics, social studies, and science and also offers:

- Art instruction once per week
- Two physical education classes per week
- Global Art on a Timeline
- Habits of the Mind and Character Counts
- Family life instruction at age-appropriate levels
- Band and orchestra beginning in 4th grade
- Vocal music instruction once per week
- Visiting science teacher
- Weekly library visits
- Talented & Gifted program for grades K-5
- ELL program for students learning English as a second language
- Opportunity to participate in numerous after school programs[1]

STUDENT ENROLLMENT (# OF STUDENTS)

	2014	2020 Projection
Enrollment	708	772
Capacity	554	554

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

KEY FINDINGS

SUMMARY

With a score of 68 percent, the site assessment completed for Douglas MacArthur rates this school as borderline on the educational adequacy benchmark.

High Priority Issues

- The school will be significantly over capacity by 2020. The major issues in the school are the classroom sizes, need for additional storage areas and temperature controllability.

[1] *http://www.acps.k12.va.us/macarthur*

School Site

Site Data	
Steep Slopes	*Rolling slopes*
Playgrounds	*4*
Recreation Features	*Playgrounds, basketball court, synthetic turf field, open fields.*
Resource Protection Areas	*No*
Parking	*59*
Storm Water Management	*No existing BMPs*

The assessment of this school site resulted in a satisfactory rating. The school is lacking a student drop-off area with sufficient room for cars to stack and the pedestrian pathways are not adequately separated from vehicular traffic. There are significant drainage issues that have caused flooding and deterioration of the north wing of the school.

Instructional and Support Spaces

The instruction and support space assessment ranked borderline. Items contributing to this low score include classroom size, internal organization, loose furnishings, and air quality.

The majority of classrooms were below the minimum square footage requirement. The desired square footage for a kindergarten classroom is 1,025, however, at Douglas MacArthur; the average for this grade level was 961 square feet. First through fifth grade classrooms require 900 square feet but the average at this school is 742 square feet. **The overall capacity of the instructional classrooms is only 69 percent of their ideal square foot size (per student) as detailed in the educational specifications.**

The lack of controllable lighting and air temperature were borderline for both core and specialty classrooms. Although most core instructional classrooms contained appropriate equipment, infrastructure and acoustics. However, several core classrooms lack natural daylight. The specialty classrooms were lacking in lighting and temperature controls as well as adequate storage and an interactive electronic device.

Building Assessment

MacArthur received a borderline rating in the assessment of building accessibility and technology and support infrastructure. Some technology inadequacies include: lack of wireless internet for students at a 1:1 ratio, lack of electrical outlets in classrooms and hallways, and an integrated clock and public announcement system.

Building organization received a satisfactory score due to the lack of extended learning for first through third grade clusters. Public visitor restrooms were not available at MacArthur.

Recommendations

Because of the building condition and the interior configuration, a total school replacement is recommended to rectify the deteriorating building condition and to accommodate the projected future enrollment. A new building, sized to accommodate the 2020 projections, will likely exceed the FAR allowed under the current zoning.

Group 1 — Required Planning

- **Site** assessment to determine an appropriate drop-off location for the school with sufficient stacking room and separated from buses and pedestrians (based on property, boundaries, setbacks, etc.).
- **Assess** building condition comprehensively through a facility condition assessment

Group 2 — First Priority

- **Consider** a total school replacement. This should address additional square footage supporting projected utilization and address deficient key organizational adjacencies while maximizing open space at the existing site ($37.0M).

Group 3 — Second Priority

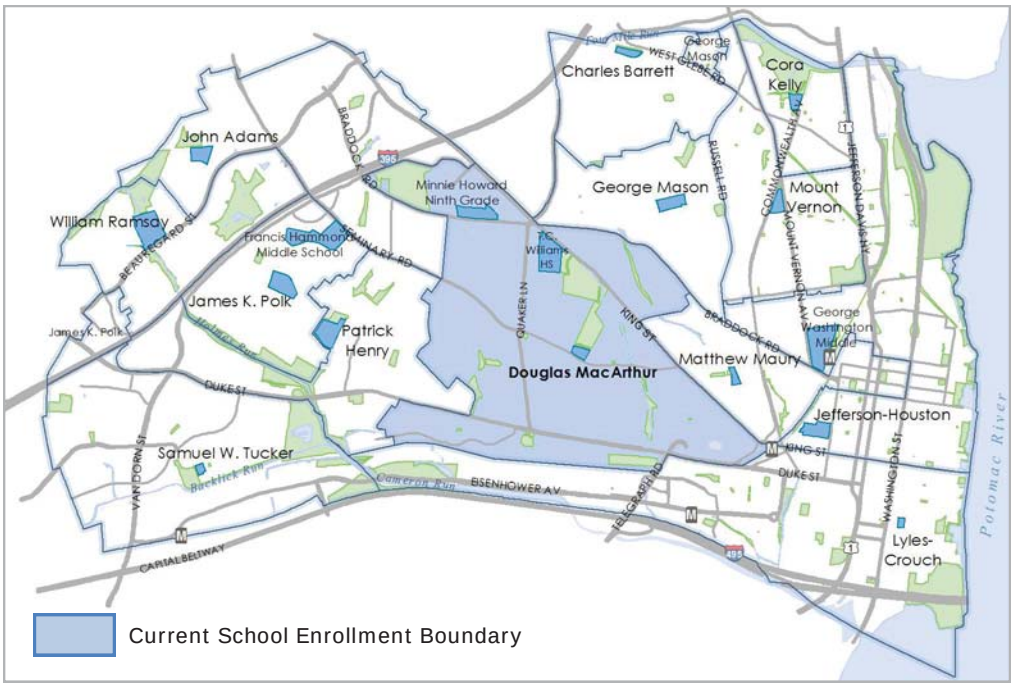
- **Equip** all core classrooms and support spaces with wall mounted interactive devices.
- **Provide** integrated storage for teachers and students in the reconfigured classrooms.
- **Equip** all classrooms and support spaces with individual climate and lighting controls.

Group 4 — Long Range Recommendations

Conceptual Cost Estimates

- **Complete master plan construction- $37.0M ($405/SF) in 2015 dollars**
  - Total demolition of existing building
  - Grading for new building, parking and fields
  - Storm water management, landscaping, site lighting
  - New recreation features including basketball courts, playing field and playgrounds
  - All new mechanical, plumbing, electrical systems
  - New interior walls, floors and ceilings
  - Two new elevators
  - New food service and a/v equipment for gymnasium, cafeteria and classrooms

In the FY 2016-2025 School Board CIP, Douglas MacArthur is slated to receive a modernization and capacity addition beginning in FY 2017. The construction budget for that project is currently $28,000,000.



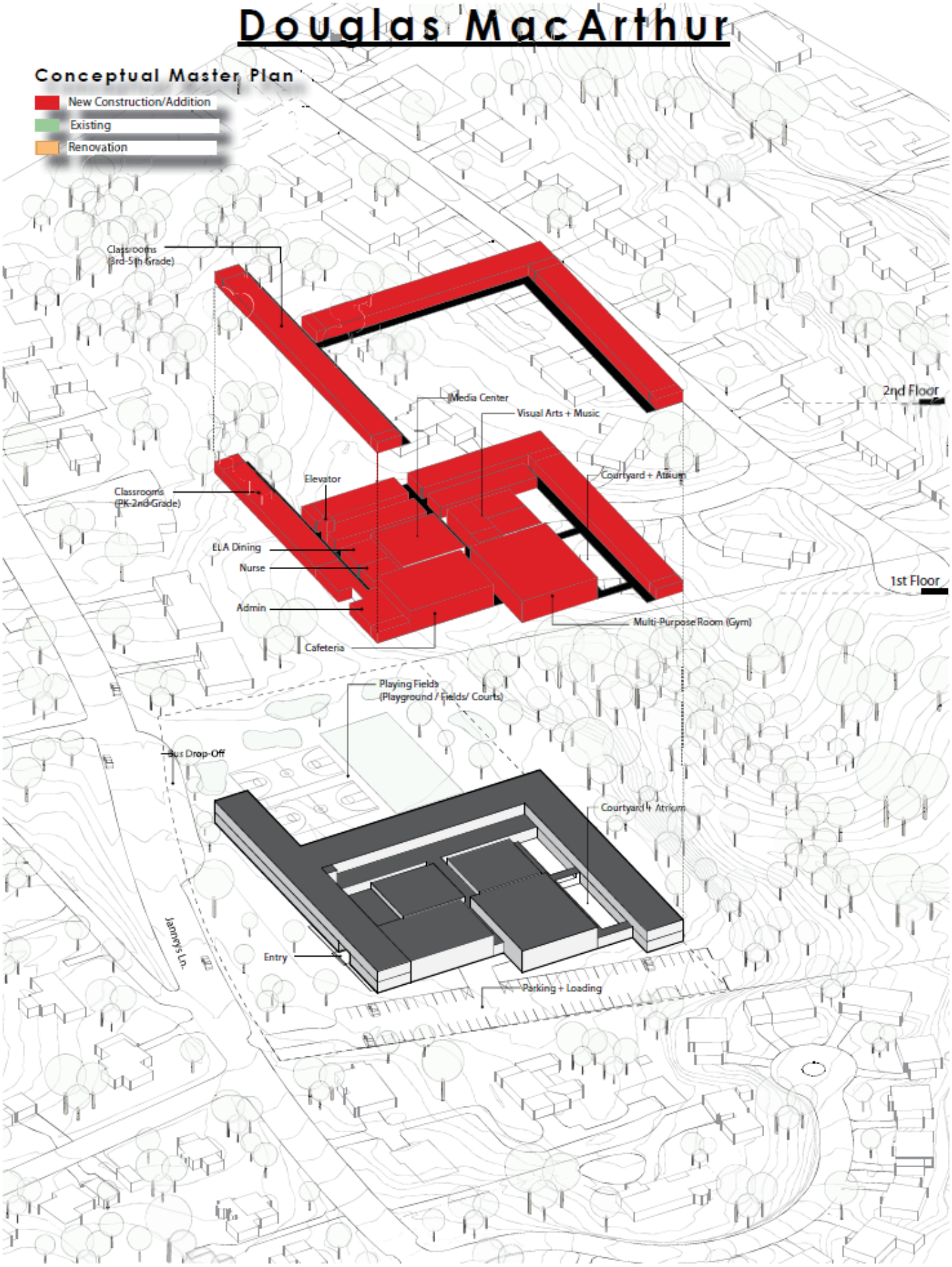
Douglas MacArthur Elementary School

Neighborhood Context

School site looking north across Janneys Lane

Master Plan Concept
School Replacement

Douglas MacArthur



GEORGE MASON ELEMENTARY SCHOOL

2601 Cameron Mills Road, Alexandria, VA 22302

AT A GLANCE…

Year Built 1939	*Current Floor Area* 65,291	*Lot Size (acres)* 9.4	*Core Classroom Surplus/Deficit (2020)* -11
Zoning R-8 (023.04-10-20)	*Floor Area Permitted by Zoning (SF)* 142,552	*Floor Area Ratio* 0.35	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* -21,994
School Site Borderline	*Building Assessment* Borderline	*Instructional & Support Spaces* Borderline	*Projected Utilization (2020)* 188%

BACKGROUND

George Mason Elementary School was built in 1939 and has undergone two major renovations, in 1949, and 1977. Other minor renovations occurred in 1988, 1997, and 2005. In 2014, the school underwent a substantial expansion which included enlarging the cafeteria, adding two courtyards and four new classrooms. The school has a total square footage of 65,291 over the span of two floors.

In 2014, George Mason had an enrollment of 541 students and a measured capacity of 368 students. By 2020, the enrollment is expected to increase to 692 students.

The academic curriculum at George Mason includes reading, language arts, mathematics, social studies, and science and also offers:

- Art instruction once per week
- Vocal and instrumental music lessons beginning in 4th grade
- Two physical education classes per week
- Family life instruction at age-appropriate levels
- Special education programs
- Talented and Gifted programs for grades K-5
- ELL program for those learning English as a second language
- Opportunity to participate in numerous after school programs[1]

[1] *http://www.acps.k12.va.us/mason*

STUDENT ENROLLMENT (# OF STUDENTS)

	2014	2020 Projection
Enrollment		
Capacity		

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

KEY FINDINGS

SUMMARY

The data collected through this assessment revealed that George Mason Elementary School meets 61 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

- The school will be severely over capacity lacking space for nearly 324 students in 2020.
- Classrooms are undersized and lack of fixed equipment and infrastructure, and poor acoustics.

School Site

Site Data	
Steep Slopes	*Relatively flat with steeper slopes down to natural channels*
Playgrounds	*2*
Recreation Features	*Playground, tennis courts, asphalt play area, baseball and open fields.*
Resource Protection Areas	*None*
Parking	*19*
Storm Water Management	*Flow-thru planter boxes, multiple riprap channels and inlets*

George Mason is not equipped with a dedicated vehicular traffic drop-off and pick-up area for students and visitors. The school bus lane and the kiss-and-ride are not separated. Buses and cars park on the public road in front of the school to drop-off and pick-up students. The play areas, located behind the school, are in a good location and connect to a few pedestrian foot paths. The school does not have outdoor learning areas.

George Mason is bordered on one side by a church which serves as a temporary parking lot for staff and visitors during the week. Although the size of the lot is adequate; it is not located near the school's main entrance, nor is it owned by the school.

Instructional and Support Spaces

The school is suffering from a significant shortage of classrooms which is compounded by the fact that the recommended ratio of square feet per student is not met.

The overall quality of the core classrooms is borderline. The core, specialty, and shared spaces do not meet the minimum square footage requirements and lack individual temperature and lighting controls. There is not adequate storage for the students and teachers.

The average core classroom size for pre-kindergarten and kindergarten is 877 rather than the suggested 1,025 square feet. The measured average classroom size for grade one through five is 686 square feet rather than the desired 900 square feet needed to provide a flexible learning environment. The overall capacity of specialty classrooms and small support rooms is approximately 29 percent smaller than that square foot minimums detailed in the educational specification.

Most rooms do not have full control of the HVAC system and multiple occupants noted there are issues with humidity. Several of the specialty classrooms did not have an interactive electronic presentation device.

Building Assessment

Roughly half the classrooms at George Mason do not have the technology infrastructure and tools to support a 21st century learning environment. Overall, the school does not meet the division's expectations for small learning environments and key adjacencies. The current spatial layout requires all students and staff to walk through the Media Center in order to access the music room or art room.

The shared programmatic spaces are not centrally located. This does not allow for ease of access from the core academic classrooms. The building is organized in grade level clusters, but there are no extended learning areas or collaborative learning spaces within these areas.

Recommendations

In order to meet the educational specifications, the school requires interior reconfiguration and an addition. Overall, it would be beneficial to demolish portions of the existing structure and reconfigure.

Group 1 — Required Planning

- **Evaluation** of the site analysis information will accurately determine whether the drop-off location for the school can be relocated/reconfigured (based on property boundaries, setbacks, etc.).
- **Analyze** existing building conditions to determine if partial demolition is a more cost effective option to renovation.

Group 2 — First Priority

- **Improve** overall operational efficiency by demolishing and reconfiguring portions of the existing structure attain the additional square footage will also be required to support the projected utilization ($40.9M).

Group 3 — Second Priority

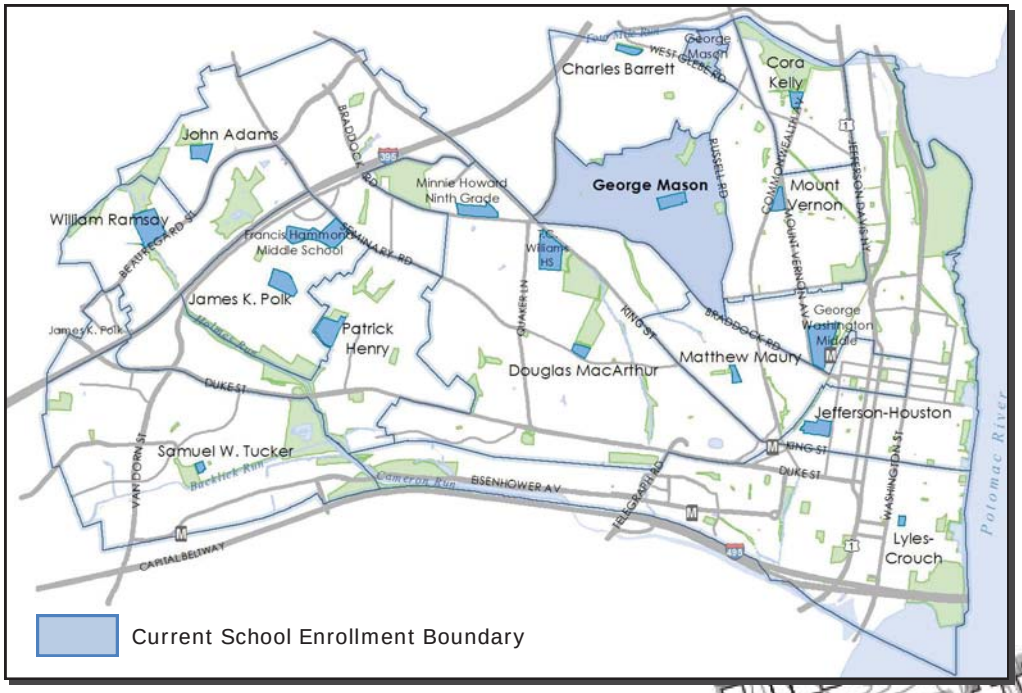
- **Equip** all classrooms and support spaces with individual climate controls, variable lighting controls, and technological equipment and infrastructure.
- **Provide** additional storage for teachers and students in the reconfigured classrooms.
- **Upgrade** the furniture, fixtures and equipment as many classrooms do not have the required millwork necessary for the teaching environment.

Group 4 — Long Range Recommendations

Conceptual Cost Estimates

- **Complete master plan construction- $40.9M ($418/SF) in 2015 dollars:**
  - 15% contingency
  - 17% other fees, insurance, etc.
  - New 80,000 SF addition
  - New food service and a/v equipment for auditorium, cafeteria and classrooms
  - New windows
  - All new mechanical, plumbing, electrical systems
  - Two new elevators
- **Renovation of 18,000SF of the existing building including (admin and cafeteria):**
  - Rehabilitation of the existing façade portions to remain
  - New interior walls, floors and ceilings
  - Security, fire alarm and IT/data system
  - Exterior improvements including playgrounds, site lighting, landscaping, basketball courts, soccer field, and storm water management.

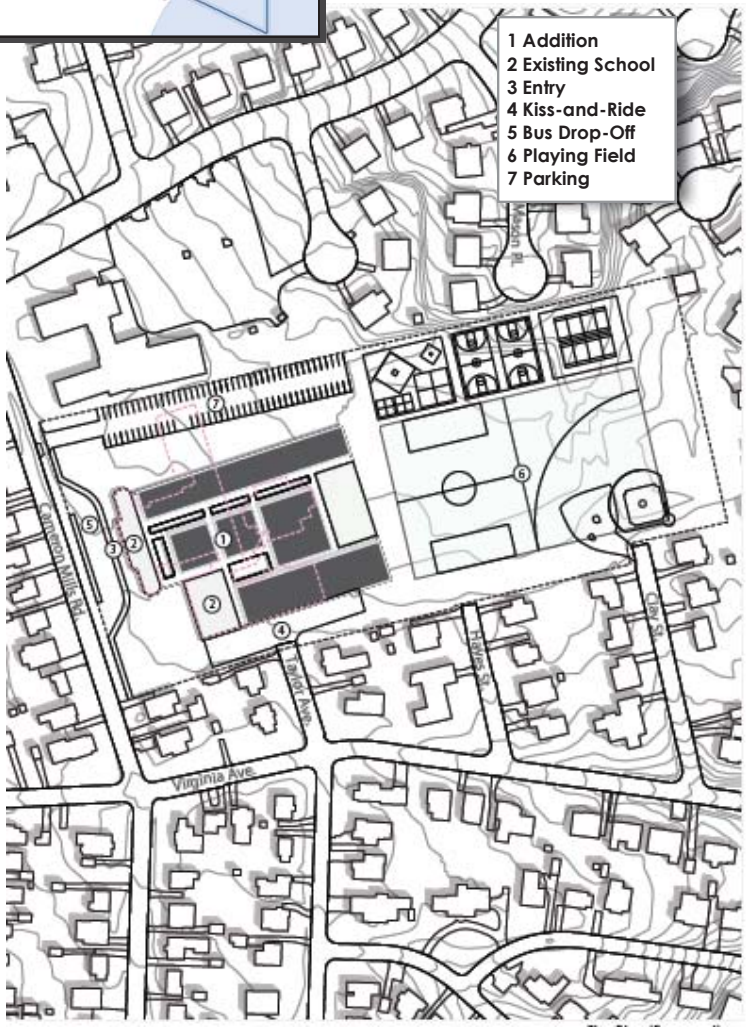
In the FY 2016-2025 School Board CIP, George Mason is slated for renovation, without capacity, beginning in FY 2021. The construction budget for that project is currently $13,222,510, because it does not include additional capacity.



George Mason Elementary School

Neighborhood context looking north

School site looking east across Cameron Mills Road.

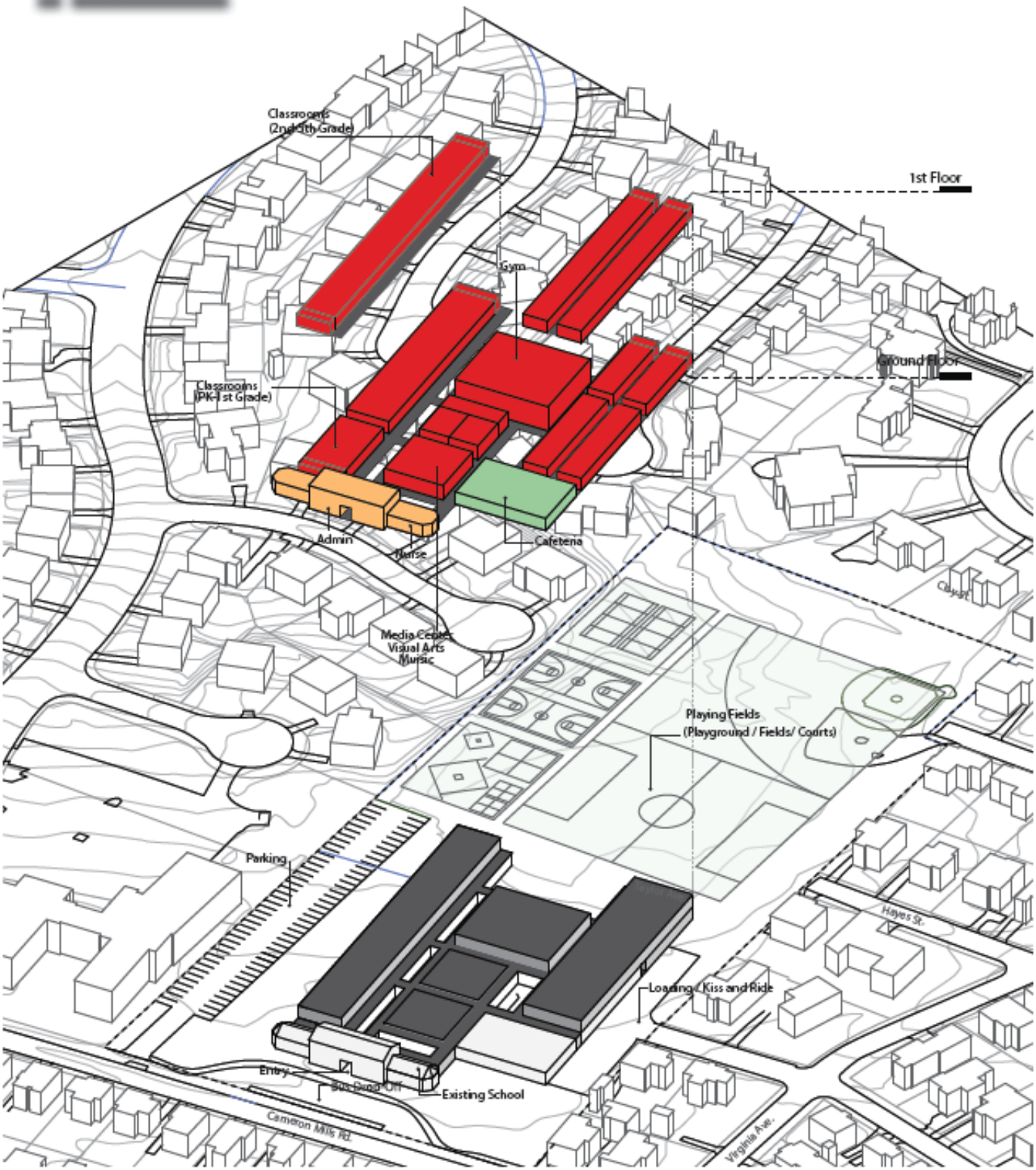


Master Plan Concept
Potential Addition

George Mason

Conceptual Master Plan

New Construction/Addition
Existing
Renovation



JAMES K. POLK ELEMENTARY SCHOOL

5000 Polk Avenue, Alexandria, VA, 22304

AT A GLANCE…

Year Built 1965	*Current Floor Area* 83,230	*Lot Size (acres)* 13.5	*Core Classroom Surplus/Deficit (2020)* -4 (includes 2015 capacity project)
Zoning R12 (039.01-01-01)	*Floor Area Permitted by Zoning (SF)* 128,041	*Floor Area Ratio* 0.30	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* -16,929
R20 (039.01-01-01)	40,250	0.25	
School Site Satisfactory	*Building Assessment* Satisfactory	*Instructional & Support Spaces* Satisfactory	*Projected Utilization (2020)* 123%

BACKGROUND

James K. Polk Elementary, built in 1965, sits on a 13.5 acre site. The school expansion in 1994 included a new library, main office, music room, and secure main entrance. In February 2010, Polk received a new gymnasium that was predominantly pre-fabricated off-site. During the summer of 2011, Polk added four new classrooms using the same modular approach and four more are planned for construction in summer 2015.

In 2014, James K. Polk had an enrollment of 704 students and a measured capacity of 660 students. By 2020, the school should increase to 927 students. The existing school capacity will not accommodate the increase of students, the school will be over-utilized, and the projected enrollment will exceed the recommended maximum school size of 850 for elementary schools.

The academic curriculum at James Polk includes reading, language arts, mathematics, social studies, and science and also offers:

- Art instruction once per week
- Two physical education classes per week
- Family life instruction at age-appropriate levels
- Band and orchestra beginning in 4th grade
- Vocal music instruction once per week
- Talented & Gifted program for grades K-5
- 3, 4, and 5th grade Keyboarding
- TAG Pullout program
- Special education programs [1]

STUDENT ENROLLMENT (# OF STUDENTS)

	2014	2020 Projection
Enrollment	704	927
Capacity	660	756*

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

* includes summer 2015 capacity project

KEY FINDINGS

SUMMARY

Based on the data collected through this assessment, James K. Polk meets 77 percent of the educational adequacy benchmarks for an ideal 21st century elementary school. The school has a satisfactory rating in all sections except for utilization.

Besides utilization, there are still other areas of concern that this report will address.

[1] *http://www.acps.k12.va.us/polk*

High Priority Items

- Core classrooms are under-sized and lack sufficient quantity to meet the projected enrollment.
- Shared spaces are significantly under-sized.

School Site

Site Data	
Steep Slopes	*Steeper slopes on the open spaces*
Playgrounds	*2*
Recreation Features	*Multiple gathering areas. Basketball courts, baseball field, play areas and open field.*
Resource Protection Areas	*No RPAs. Adjacent natural area*
Parking	*35*
Storm Water Management	*Multiple BMPs. Vegetated roof, planter boxes, vegetated swale.*

James K. Polk earns a satisfactory rating on its school site assessment. The school meets all the requirements for site circulation and play areas.

Instructional and Support Spaces

The instructional and support spaces at this school earn a satisfactory rating. The highest priority item for this section is the measured size of the shared spaces. **None of the shared spaces meet the educational adequacy size requirements for a school of this size.** The most undersized is the gymnasium.

The second highest priority item for this section is the measured size of the core and specialty classrooms. The average size of a kindergarten classroom is 823 square feet instead of the desired 1,025 square feet. The average size of a first through fifth grade classroom is 785 square feet instead of the desired 900 square feet.

Additional issues include lack of adequate natural light and proper fixed equipment in the shared spaces. Most of the shared spaces do not have the adequate marker boards, interactive presentation devices or sound enhancement technology. Natural light is also lacking in the specialty classrooms. The temperature in most classrooms is acceptable but individual temperature controls are not present as required. The items discussed above need attention and an interior renovation and an addition are recommended to right-size existing classroom and provide more classrooms to accommodate the projected enrollment.

Building Assessment

The building assessment resulted in a satisfactory rating. The school does not have all of its shared programmatic spaces appropriately clustered and located away from the academic areas. In addition, there are no extended learning areas present in the building.

The technology infrastructure earned a low score because the school lacks a judicious supply of electrical receptacles in classrooms and main corridors. Additionally, the clocks and PA system throughout the building are not integrated, nor are the clocks digital, as desired. Finally, there is limited wireless connectivity in the hallways and corridors and the school does not provide wireless bandwidth at a one-to-one student-to-device ratio.

Recommendations

The school will be over capacity by 2020 and will exceed the recommended size for an elementary school. In order to accommodate the projected enrollment, a significant addition and interior renovation is required. Consideration should be given to accommodating the projected increase in enrollment at another location due to the overall school size.

Group 1 — Required Planning

- **Explore** a new west end elementary school to alleviate the over enrollment.
- **Assess** building condition comprehensively through a facility condition assessment.

Group 2 — First Priority

- **Reconfigure** existing instructional, shared and support spaces to meet the recommended size requirements outlined in the educational specifications ($22.1M).

Group 3 — Second Priority

- **Equip** all core classrooms, corridors and support spaces with additional electrical receptacles as required, and all classrooms with two teaching walls.
- **Equip** all classrooms and support spaces with individual climate control.
- **Additional** storage for teachers and students should be integrated into the reconfigured classrooms as well as an upgrade to furniture, fixtures and equipment.
- **Upgrade** the building technology equipment and infrastructure to meet the educational adequacy standards.

Group 4 — Long Range Recommendations

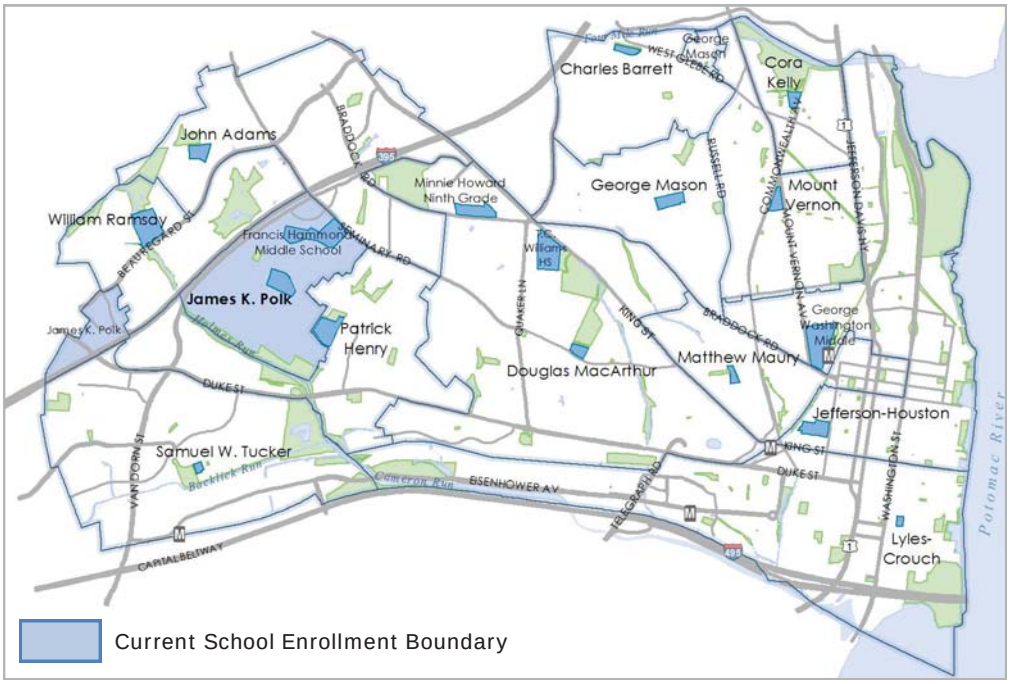
- **Resize** the gymnasium to meet the standards required for the size of the student population.
- **Explore** the feasibility of an expansion to attain additional instructional square footage required to support the projected enrollment if a decision is made to exceed the recommended size for an elementary school or if alternatives cannot be determined.

Conceptual Cost Estimates

- **Complete Master Plan Construction $34.2M (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **New 38,000 SF addition ($12.1M) including**:
  - Demolition of existing pod to be replaced
  - Relocation and expansion of the gymnasium
- **Total renovation of existing building ($22.1M) including**:
  - All new mechanical, plumbing, electrical and window systems
  - New food service and a/v equipment for auditorium, cafeteria and classrooms
  - New interior walls, floors and ceilings

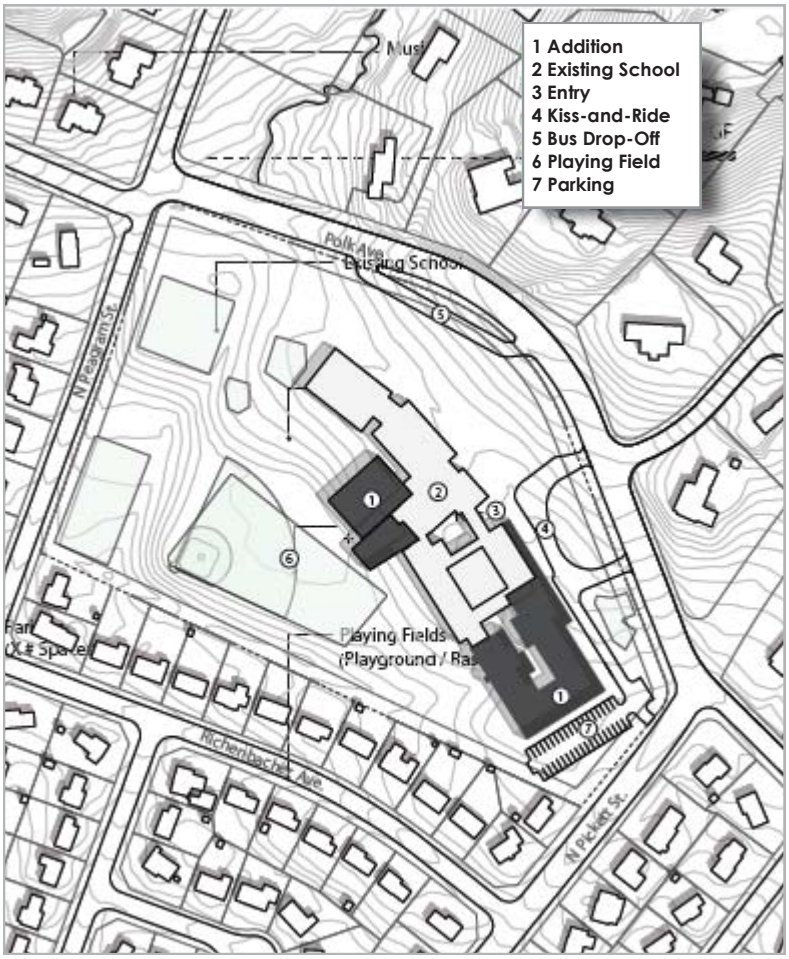
Polk is not currently in the modernization program per the FY 2016-2025 CIP; however, a four classroom addition will be built in summer 2015 and a ten classroom addition is scheduled beginning in FY 2016. The construction budget for that project is currently $4.8M. Additional renovations, additions or the complete master plan projects will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.

James K. Polk Elementary School



Neighborhood context looking north. Patrick Henry Elementary School is at lower right.

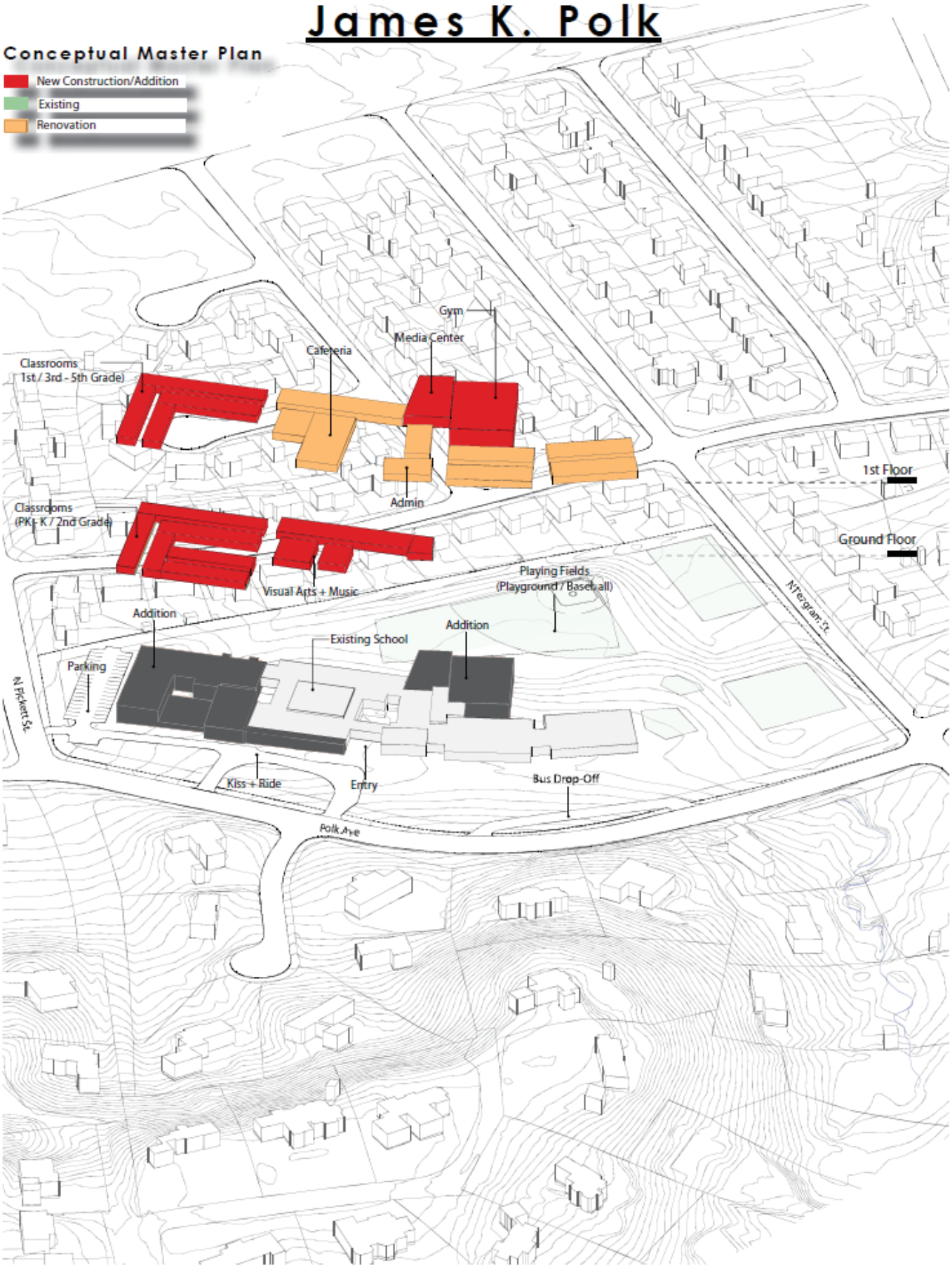
School site looking west across Polk Avenue



Master Plan concept showing potential additions

James K. Polk

Conceptual Master Plan



JEFFERSON-HOUSTON SCHOOL

1501 Cameron Street, Alexandria, VA 22314

AT A GLANCE…

Year Built	*Current Floor Area*	*Floor Area Permitted by Zoning (SF)*
2014	124,000 (school) Durant Center (15,358) Old Town Pool (5,336)	241,705
Zoning RB (064.03-01-01)	*Lot Size (acres)* 7.4	*Floor Area Ratio* 0.75
POS (064.03-01-01)	2.9	0.0

Jefferson-Houston was not included in the educational adequacy analysis because it opened in September 2014.

BACKGROUND

Jefferson-Houston School was built in 2014. The building includes a full size gymnasium, a white box theater, and a distributed dining operation instead of a traditional cafeteria.
Adjacent to the school is the City of Alexandria's Durant Center, Old Town Pool and Buchanan Park.

The new building includes:

- 10 early-childhood classrooms
- 21 classrooms for first- through eighth-grade students
- Full-size gymnasium
- Synthetic turf playing field
- Play areas and structure for all grade levels
- Green features that are on target for LEED Silver designation

SCHOOL SITE

Jefferson-Houston has a full-size athletic turf field, playgrounds, and an outdoor learning garden. Adjacent City recreation features include:

- Buchanan Park, located behind the Old Town Pool, has a playground that is accessible throughout the day.
- Durant Center, home of the Alexandria Commission for the Arts, provides space for community rehearsals, performances, special events, meetings and arts focused classes.
- Old Town Pool is a 25-yard pool with a diving well and separate training pool for small children.

STUDENT ENROLLMENT (# OF STUDENTS)

	2014	2020 Projection
Enrollment	444	553
Capacity	800	800

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

RECOMMENDATION

Because this is the newest ACPS facility, it is recommended to reassess in 10 years.

John Adams Elementary School

5651 Rayburn Avenue, Alexandria, VA 22311

At a Glance…			
Year Built 1967	*Current Floor Area* 143,290	*Lot Size (acres)* 7.9	*Core Classroom Surplus/Deficit (2020)* -2
Zoning R-12 (019.01-01-48)	*Floor Area Permitted by Zoning (SF)* 103,842	*Floor Area Ratio* 0.3	*Total Program Square Feet (2020)* -13,843
School Site Excellent	*Building Assessment* Satisfactory	*Instructional & Support Spaces* Satisfactory	*Projected Utilization (2020)* 138%

Background

John Adams was built in 1967 to serve the community as a middle school. It became an elementary school in 1980. The school's mission is to create a community of high achieving students through their involvement in arts-integrated learning environments.

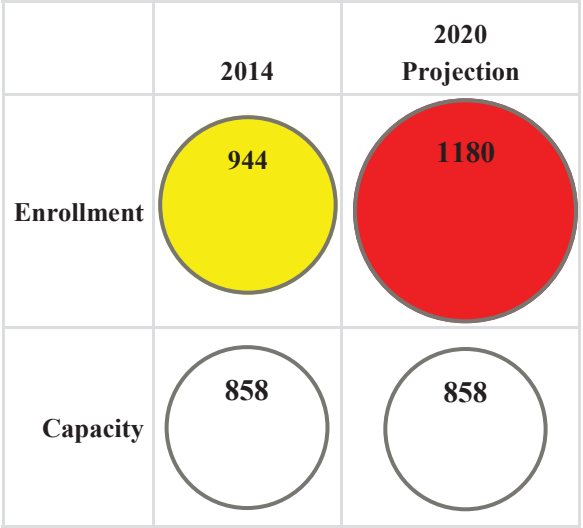
In 2014, John Adams had an enrollment of 944 students with a measured capacity of 858 students. By 2020, enrollment is expected to increase to 1,180 students lacking space for approximately 322 students. Both the current and projected enrollment exceeds the recommended size for an elementary school.

The academic curriculum at John Adams includes reading, language arts, mathematics, social studies, and science and also offers:

- Vocal and Instrumental music instruction once a week
- Art instruction once a week
- Band and orchestra beginning in 4th grade
- Two physical education classes a week
- Family life instruction at age-appropriate levels
- English as a second language classes
- Special education programs
- TAG pull out program
- Talented and Gifted program for grades K-5[1]

[1] *http://www.acps.k12.va.us/adams*

Student Enrollment (#of students)



Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

Based on the data collected through this assessment, John Adams meets 82 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

High Priority Items

- Core classrooms are under-sized.
- School exceeds the recommended size for an elementary school.

School Site

Site Data	
Steep Slopes	*Steep slope changes around the edges of the school*
Playgrounds	*4*
Recreation Features	*Playgrounds, asphalt play area. Adjacent Chambliss Park includes baseball field, tennis courts and open field. Dense forest north of school.*
Resource Protection Areas	
Parking	*124*
Storm Water Management	*Severe ponding around site. No known SWM facilities.*

John Adams earned an excellent rating on their school site assessment. While it met the minimum requirements of separated vehicular, bus and kiss and ride circulation, the one vehicular access off of Rayburn Avenue causes traffic problems during arrival and dismissal. Additionally, there is not enough staff and visitor parking so currently overflow parking is located adjacent to Chambliss Park (zoned POS). A parking lot expansion is underway and expected to be completed prior to the 2014-2015 school year. The portion of the park currently used for parking will be restored as open space once the school lost is expanded. Site access is constrained, even with planned improvements.

The existing square feet of the school exceeds the allowed square feet per the zoning.

Instructional and Support Spaces

The highest priority item at John Adams is the measured size of core classrooms. **Collectively, only five out of 52 core classrooms, or ten percent, meet the educational adequacy size requirements.** The average size for a pre-kindergarten or kindergarten class is 749 square feet instead of the desired 1,025 square feet. The average size for grades one through five is 705 instead of the desired 900 square feet.

The second highest priority item in this section is the fixed equipment and infrastructure in the specialty classrooms. All of these rooms lack sound enhancement systems and half of them are not equipped with wall mounted interactive devices. These classrooms are not equipped with the required infrastructure to function as a 21st century learning space.

Additional issues with the instructional spaces are the lack of storage, plumbing fixtures, and fixed equipment. The classrooms lack adequate student and teacher built-in storage and shelving. Over 90 percent of the classrooms have an interactive electronic device as needed but are missing a secondary teaching wall.

The educational standards require an internal or adjoining bathroom for all core classrooms, but these are absent from over 50 percent of John Adams' classrooms. In addition, 70 percent of classrooms are not equipped with sinks and bubblers.

Building Assessment

The building assessment of John Adams is rated satisfactory. The portion most lacking is sufficient electrical receptacles being present in multiple locations along classroom and corridor walls. The clocks and PA system throughout the building are not integrated, nor are the clocks digital, as desired. Finally, there is limited wireless connectivity in the hallways and corridors and the school does not provide wireless bandwidth at a one-to-one student-to-device ratio.

John Adams also lacks extended learning areas.

RECOMMENDATIONS

The student enrollment currently exceeds the optimal school size for an elementary school. To serve the projected enrollment, an addition is required and should only be considered in conjunction with major circulation /transportation improvements. Considerations should be given to accommodating the projected increase in enrollment at another location due to the overall school size. Also, the current building exceeds the FAR allowed under the current zoning.

GROUP 1 — REQUIRED PLANNING

- **Assess** building condition comprehensively through a facility condition assessment.
- **Explore** a new west end elementary school to alleviate the over enrollment.

GROUP 2 — FIRST PRIORITY

- **Reconfiguration** of the school to achieve size and layout requirements in the instructional classrooms and provide extended learning areas, per the educational specifications ($43.9M).

GROUP 3 — SECOND PRIORITY

- **Additional** electrical receptacles added to the classrooms and corridors.
- **Provide** additional storage for teachers and students.
- **Equip** all classrooms with two teaching walls
- **Upgrade** the building technology in specialty classrooms to meet the educational adequacy standards.

GROUP 4 — LONG RANGE RECOMMENDATIONS

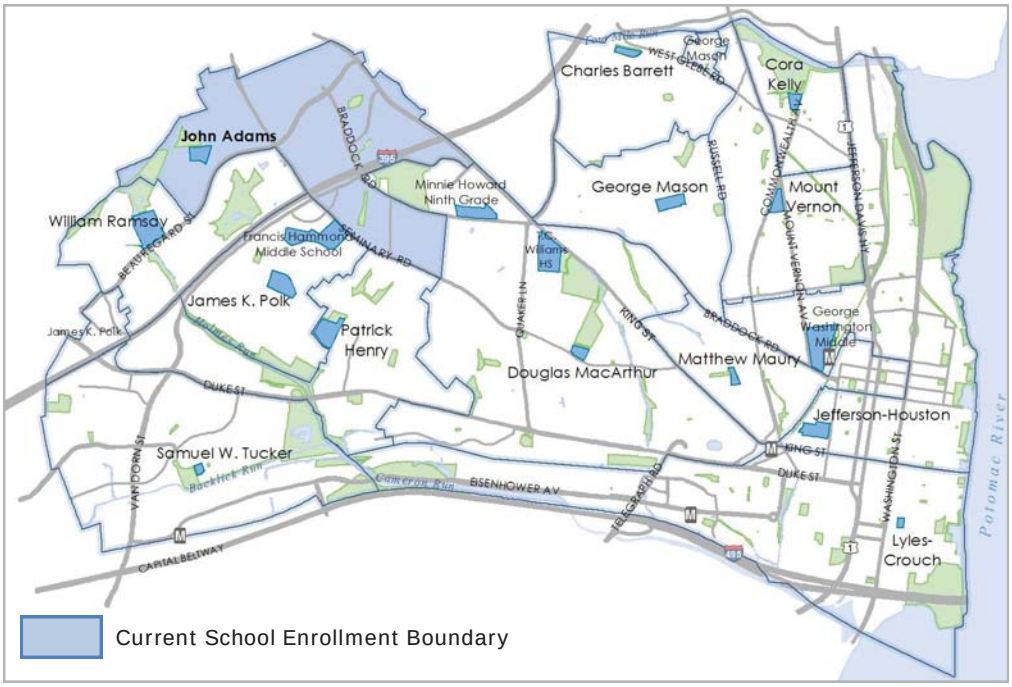
- **Implementation of the future Beauregard Small Area Plan (SAP)** road network may provide opportunities for alternate and cohesive site strategies including relocating playgrounds to build a parking lot adjacent to the new parallel road, which includes a pull-off for student kiss-and-ride.
- In conjunction with the implementation of the Beauregard SAP road network, **an addition could be considered** to accommodate an increase in enrollment if a decision is made to exceed the recommended size for an elementary school. This addition should only be considered in conjunction with major circulation/transportation improvements and would exceed the FAR under the current zoning.

CONCEPTUAL COST ESTIMATES

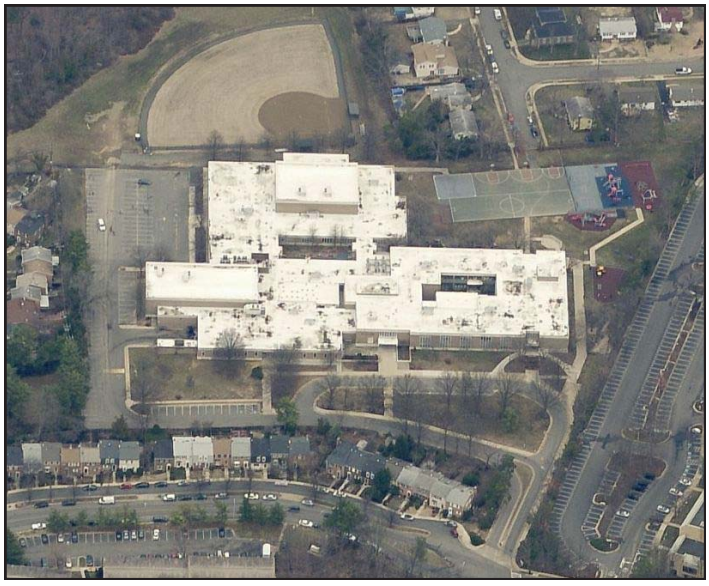
- **Complete Master Plan Construction $49.4 (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **New 9,000 SF addition ($5.2M) including:**
  - New parking and playing field
  - New playgrounds and storm water management
- **Total renovation of existing building ($43.9M) including:**
  - All new mechanical, plumbing, electrical and window systems
  - New food service and a/v equipment for auditorium, cafeteria and classrooms
  - New interior walls, floors and ceilings

John Adams is not currently in the modernization program per the FY 2016-2025 CIP. This project will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.

John Adams Elementary School



Neighborhood Context

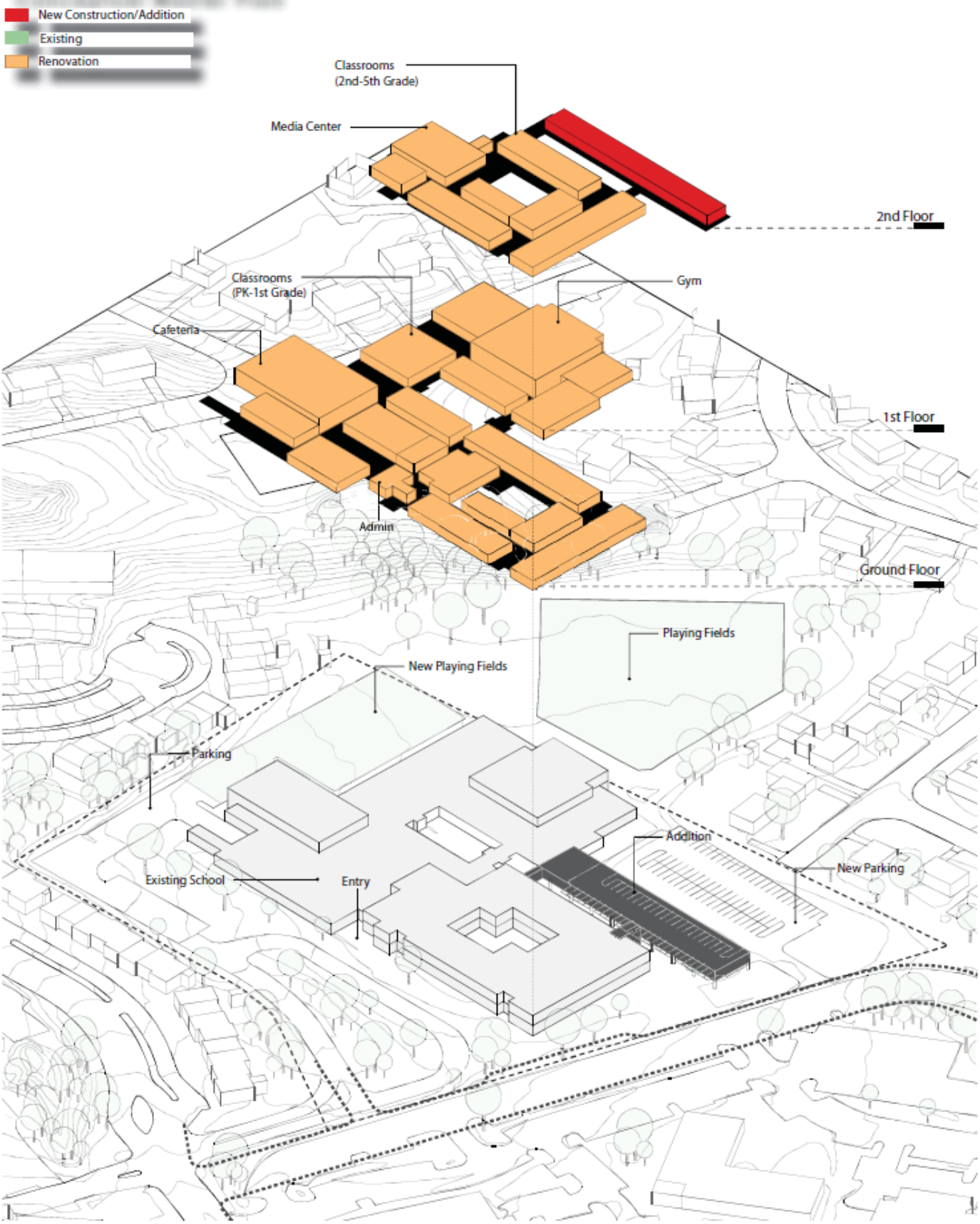


School site looking north across Rayburn Avenue

Master Plan concept showing potential addition and potential future access road alignment.

John Adams

Conceptual Master Plan



Lyles-Crouch Traditional Academy

530 South St. Asaph Street, Alexandria, VA, 22314

At a Glance…

Year Built 1958	*Current Floor Area* 65,645	*Lot Size (acres)* 2.0	*Core Classroom Surplus/Deficit (2020)* +4
Zoning RM (080.02-03-01)	*Floor Area Permitted by Zoning (SF)* 86,838	*Floor Area Ratio* 1.5	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* -3,243
School Site Inadequate	*Building Assessment* Borderline	*Instructional & Support Spaces* Satisfactory	*Projected Utilization (2020)* 96%

Background

Lyles-Crouch is a traditional academy educating children from kindergarten through fifth grade.

In 2014, Lyles-Crouch's enrollment was 396 students with a measured capacity of 375. By 2020, enrollment is expected to decrease nine percent to 360 students. Therefore, based on the school's existing capacity it will be able to accommodate the future enrollment size, as currently projected.

The academic curriculum at Lyles-Crouch includes reading, language arts, mathematics, social studies, and science and also offers:

- Art instruction with a certified art teacher once a week
- Vocal music instruction with a certified music teacher once a week
- Instrument music lessons beginning in fourth grade
- Fourth and Fifth graders can join band or orchestra
- Two physical education classes a week with a certified P.E. teacher
- Family life instruction at age-appropriate levels
- English as a second language classes
- Special education programs
- Talented and Gifted program for grades K-5[1]

Student Enrollment (# of students)

	2014	2020 Projection
Enrollment	396	360
Capacity	375	375

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

Based on the data collected through this assessment, Lyles -Crouch meets 60 percent of the educational adequacy requirements. A score of 66 earns this school a borderline rating.

While there is an adequate number of core classrooms to accommodate future enrollment, the existing rooms are not large enough. An interior reconfiguration would expand the classrooms to meet the square footage requirements of the educational specifications.

High Priority Item

- Core classrooms are all under-sized.

[1] http://www.acps.k12.va.us/adams

School Site

Site Data	
Steep Slopes	*No steep slopes*
Playgrounds	*1*
Recreation Features	*Picnic and bench areas. Asphalt play areas, open field & baseball field. Garden beds.*
Resource Protection Areas	*No RPAs or natural areas.*
Parking	*43*
Storm Water Management	*Sand filter*

Lyles-Crouch earns an inadequate rating on the school site assessment. The school's site circulation lacks proper separation of the kiss-and-ride and school bus lane. There is no stacking area for the student kiss-and-ride. The on-site parking is not adequate to accommodate the needs of the school, although there is street parking on the adjacent streets that accommodate school visitors and staff.

The school's play field size is inadequate and the outdoor play equipment appear undersized. Additionally, the site design does not incorporate outdoor learning spaces.

Instructional and Support Spaces

The instructional and support spaces at this school earn a satisfactory rating. The highest priority item at Lyles-Crouch is the measured size of the core classrooms. **Collectively, none of the core classrooms meet the educational adequacy size requirements.** The average size for a kindergarten class is 750 square feet instead of the desired 1,025. The average size of grades one through five is 727 square feet instead of the desired 900 square feet. An interior reconfiguration is recommended to right-size the core classrooms.

The second priority item, in this section, is the measured size of the specialty classrooms and shared spaces. Both these sections earn an inadequate rating and an addition is recommended to address this inadequacy.

Additional issues with the specialty and shared spaces are the lack of temperature controllability, the lack of storage, and the lack of fixed equipment. Only half of these spaces possess an interactive electronic device as needed. In addition, 70 percent of spaces are missing a secondary teaching wall. Lastly, the educational standards require an internal or adjoining bathroom for all core classrooms; these are only present in 10 percent of the core academic classrooms.

Building Assessment

The building assessment of Lyles-Crouch reveals a borderline rating. The building organization is inadequate because there are no distinct academic clusters, the shared programmatic spaces are not appropriately located and clustered, and the building lacks extended learning areas.

The technology infrastructure is inadequate because the school lacks the adequate wireless access for students and lacks a sufficient amount of electrical receptacles in corridors and classrooms. In addition, the clock and PA system are not integrated, nor are the clocks digital as required.

Recommendations

The school has the adequate number of core classrooms but they are not the adequate size. A small addition is recommended to provide sufficient size of the specialty classrooms and shared spaces.

Group 1 — Required Planning

- **Assess** the site to determine whether the separation of the kiss-and-ride and school bus lane is feasible (based on property boundaries, setbacks, etc.). It will also help inform opportunities for additional parking
- **Assess** building condition comprehensively through a facility condition assessment.

Group 2 — First Priority

- **Reconfigure** existing instructional classroom spaces to meet the recommended size requirements and provide extended learning areas as outlined in the educational specifications ($12.7M).

Group 3 — Second Priority

- **Equip** all core classrooms, corridors and support spaces with additional electrical receptacles as required and all classrooms with two teaching walls.
- **Upgrade** the building technology equipment and infrastructure to meet the educational adequacy standards in the specialty classrooms.
- **Upgrade** the playing fields and play equipment.
- **Equip** all classrooms and support spaces with individual climate control.

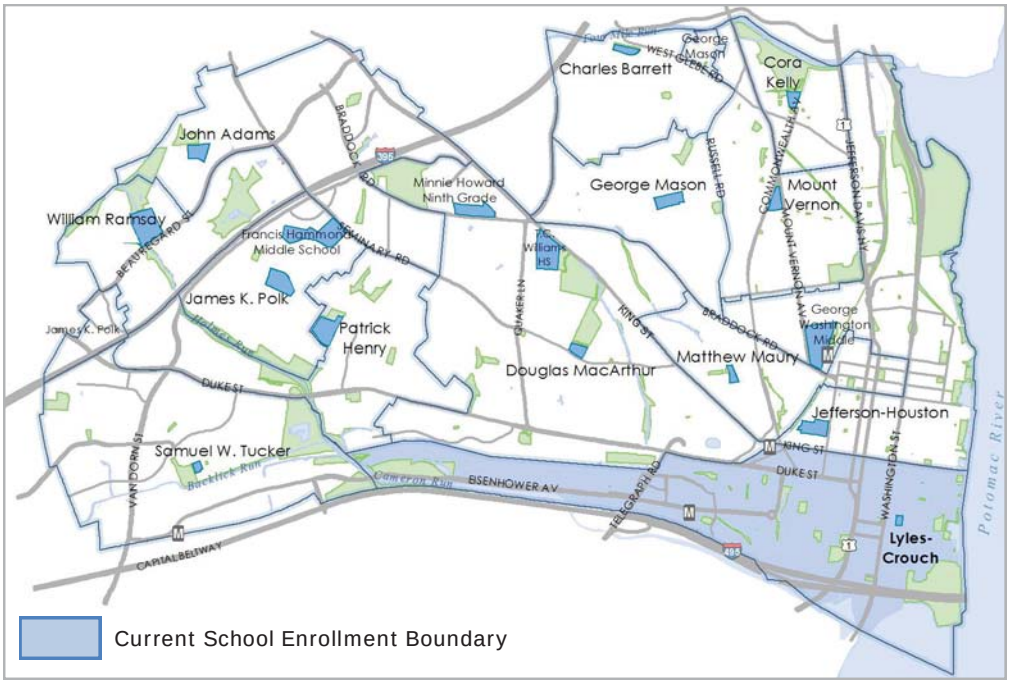
Group 4 — Long Range Recommendations

- **Expand** the building to allow for right-sized specialty classrooms such as art and music ($2.0M).

Conceptual Cost Estimates

- **Complete Master Plan Construction $14.7 (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **New one-story 5,500 SF addition ($2.0M) including:**
  - Concrete columns on the ground floor level
- **Total renovation of existing building ($12.7M) including:**
  - All new mechanical, plumbing, electrical and window systems
  - New a/v equipment for classrooms
  - New interior walls, floors and ceilings

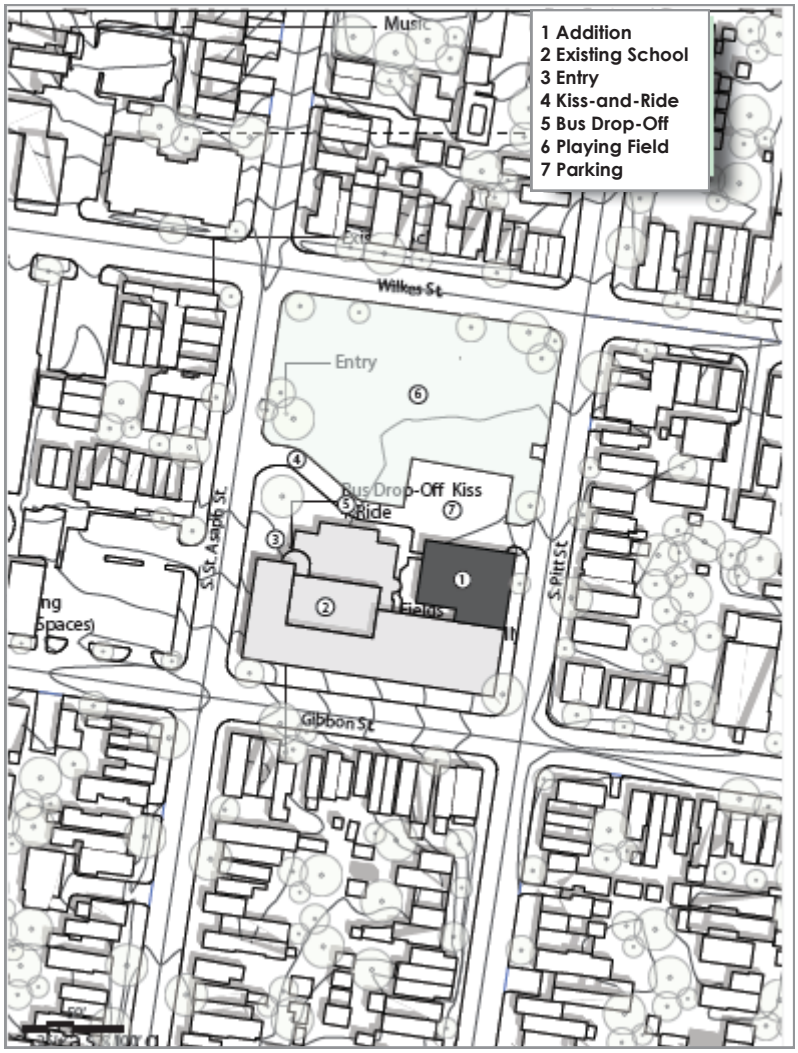
Lyles-Crouch is not currently in the modernization program per the FY 2016-2025 CIP. Renovations, additions or the complete master plan projects will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.



Lyles-Crouch Traditional Academy

Neighborhood context looking north with Washington Street on the left and Royal Street on the right.

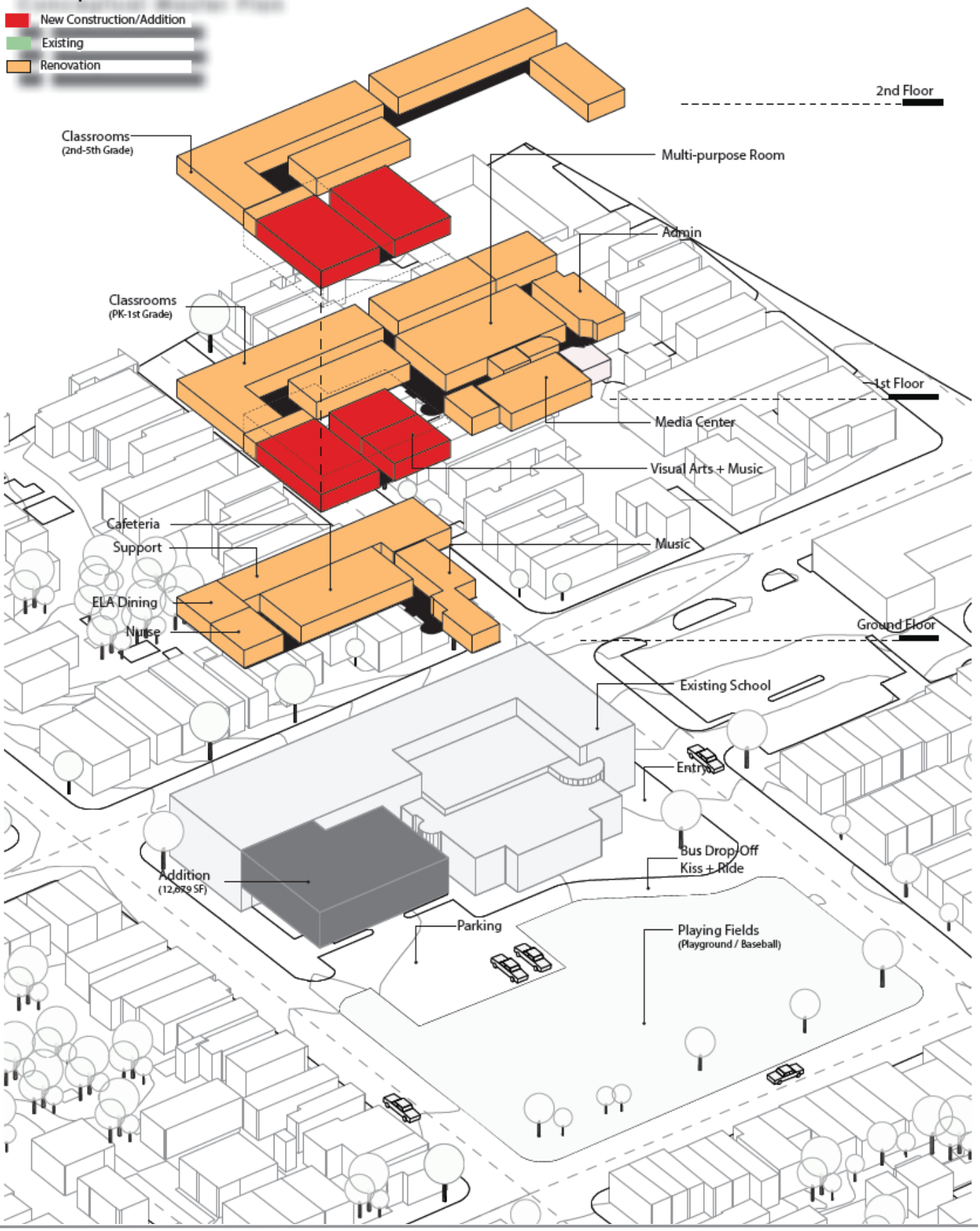
School site looking south across Wilkes Street with St. Asaph Street on the right of the image



Master Plan concept with potential addition over parking

Lyles-Crouch

Conceptual Master Plan



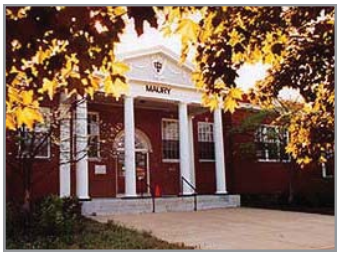
MATTHEW MAURY ELEMENTARY SCHOOL

600 Russell Road, Alexandria, VA, 22301

AT A GLANCE…

Year Built 1929	*Current Floor Area* 51,800	*Lot Size (acres)* 3.9	*Core Classroom Surplus/Deficit (2020)* -2
Zoning R-5 (053.03-02-02)	*Floor Area Permitted by Zoning (SF)* 76,840	*Floor Area Ratio* 0.45	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* -10,308
School Site Borderline	*Building Assessment* Satisfactory	*Instructional & Support Spaces* Satisfactory	*Projected Utilization (2020)* 135%

BACKGROUND



Matthew Maury Elementary School was built on seven acres of farm land purchased in 1929. Classroom additions occurred in 1941, 1949, and 1961. In 1971, a gymnasium was added while the library underwent a major renovation. In 2005, a new media center, additional classrooms, teacher work area, new offices, and security upgrades were added.

In 2014, Matthew Maury's enrollment was 441 students with a measured capacity of 350. By 2020, enrollment is expected to increase to 473 students.

The academic curriculum at Maury includes reading, language arts, mathematics, social studies, and science and also offers:

- Music instruction once a week
- Art instruction once a week
- Band and orchestra beginning in 4th grade
- Two physical education classes a week
- Family life instruction at age-appropriate levels
- Dedicated science exploration lab
- Talented and Gifted program for grades K-5[1]

STUDENT ENROLLMENT (# OF STUDENTS)

	2014	2020 Projection
Enrollment	441	473
Capacity	350	350

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

KEY FINDINGS

SUMMARY

The data collected through this assessment reveals that Matthew Maury Elementary School meets 66 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

HIGH PRIORITY ITEMS

- Based on the 2020 enrollment projections, as it exists now, the school will be significantly over capacity and lacking space for over 120 students.

[1] *http://www.acps.k12.va.us/maury*

School Site

Site Data	
Steep Slopes	*Flat with steep slope around playground*
Playgrounds	*1*
Recreation Features	*Playground, asphalt play areas, basketball goals, baseball and open fields; Natural area adjacent to main building*
Resource Protection Areas	
Parking	*7*
Storm Water Management	*Nyloplast inlets-underground detention system, but many SWM issues on site.*

The Matthew Maury site is poorly organized for both pedestrian and vehicular traffic. Site circulation does not separate these types of traffic creating potential conflicts. The bus lane and parent kiss-and-ride drop off occur in the same location; on the street in front of the school. There is a small parking lot behind the school with room for about 7 vehicles and due to the urban nature of the site, a majority of parking occurs in the street. Furthermore, the small school site does not allow for full-size athletic fields as recommended by the Virginia Guidelines. The equipment provided is weathered and dated. The playground is not accessible for students with disabilities; play courts are deteriorating and drainage is poor.

Instructional and Support Spaces

The instructional and support spaces of the building earned a satisfactory rating. While the overall assessment resulted in a positive rating, it should be noted that **most of the instructional spaces do not meet the division's size requirements.** Common deficiencies throughout the spaces include dated furniture that is not flexible, inadequate space to accommodate flexible furniture arrangements, lack of electrical outlets, and poor internal adjacencies for required restrooms or collaborative learning spaces.

The most urgent items in this section are classroom capacity. **The average classroom size for kindergarten is 680 rather than the suggested 1,025 square feet.** This is the smallest in the division. The measured average classroom size for grade one through five is 715 square feet rather than the desired 900 square feet. The overall capacity of specialty classrooms and small support rooms is approximately 29 percent smaller than the square foot minimums detailed in the educational specification.

Building Assessment

Most classrooms in Matthew Maury have the technology infrastructure and tools required to support a 21st century learning environment. However, overall space arrangements do not meet the division's expectations for providing small learning environments and key classroom adjacencies. Classrooms are loosely organized by grade grouping with few adjacent restrooms and no collaborative learning spaces. Additionally, the school is not ADA equitable with the main entrance not providing ADA access.

RECOMMENDATIONS The shortage of classroom numbers and space must be addressed in order to bring Matthew Maury up to levels designated in the Ed Specs for ACPS, and to address the level of student population currently projected. The Site and Building Plan improvements should be considered and incorporated into the comprehensive site and building plan listed below. Site and building recommendations (Groups 2-4) are generally grouped according to priority; however, due to the limited size of the school site, each decision may impact the others.

GROUP 1 — REQUIRED PLANNING

- **Develop** a vision, goals and strategies with a comprehensive Site and Building Plan for the school.
- **Develop** priority phasing with associated Return-on-Investment to determine whether existing building renovations, demolition, and new construction should be combined or phased separately. Funding sources, level of service, and schedule disruption should be identified. Funding should consider coordinated impacts of future construction in an effort to prevent double-work or demolition of new facilities.
- **Consolidate** the two adjacent properties of the main school site—600 Russell Road and 701 Johnston Place—to create one single lot. Analyze the newly combined FAR to determine whether further rezoning is necessary to accommodate projected additional spaces.
- **Seek** abandonment and dedication to the school of the Rucker Place spur east of Johnston Place.
- **Develop** a long-range management plan for the school and site facilities to coordinate capital improvement and operations projects. Management plan should incorporate decisions which may be allowed to evolve in response to future needs and opportunities.
- **Assess** building condition comprehensively through a facility condition assessment.

GROUP 2 — FIRST PRIORITY

- **Reconfigure** the space within the existing school to meet recommended size requirements outlined in the Educational Specifications.
- **Construct** a new, two-story wing in the general location of the existing northern wing and gymnasium to provide the missing classroom and support space needed to meet the projected utilization. Redistribute the core classroom types accordingly.

GROUP 3 — SECOND PRIORITY

- **Provide** outdoor learning areas with sufficient infrastructure, allowing flexible programming.
- **Address** physical and/or operational changes for the drop-off location, configuration for busses, and kiss-and-ride.
- **Reorganize** overall layout of classrooms—may allow opportunity to create a PreK/Kindergarten "wing" at the school.
- **Explore** the utilization of Johnston Place for greater connection to Beach Park. Various approaches may include temporary closures (times barricades) to connect the school with Beach Park, narrowing the street for greater space or converse utilization for parking. Coordinate with the Neighborhood Park planning process and the City's Recreation Parks and Cultural Activities to enhance Beach park facilities for greater utilization by the school and Community.
- **Provide** all classroom and support spaces with the appropriate loose furnishings and fixed equipment to address noted deficiencies for a 21st century learning environment.
- **Consider** the improved utilization of the southwestern on-property alley (from Elm Street) for additional parking opportunities in that area of the school site.
- **Upgrade** the existing play areas and field to meet ACPS and ADA guidelines.

GROUP 4 — LONG RANGE RECOMMENDATIONS

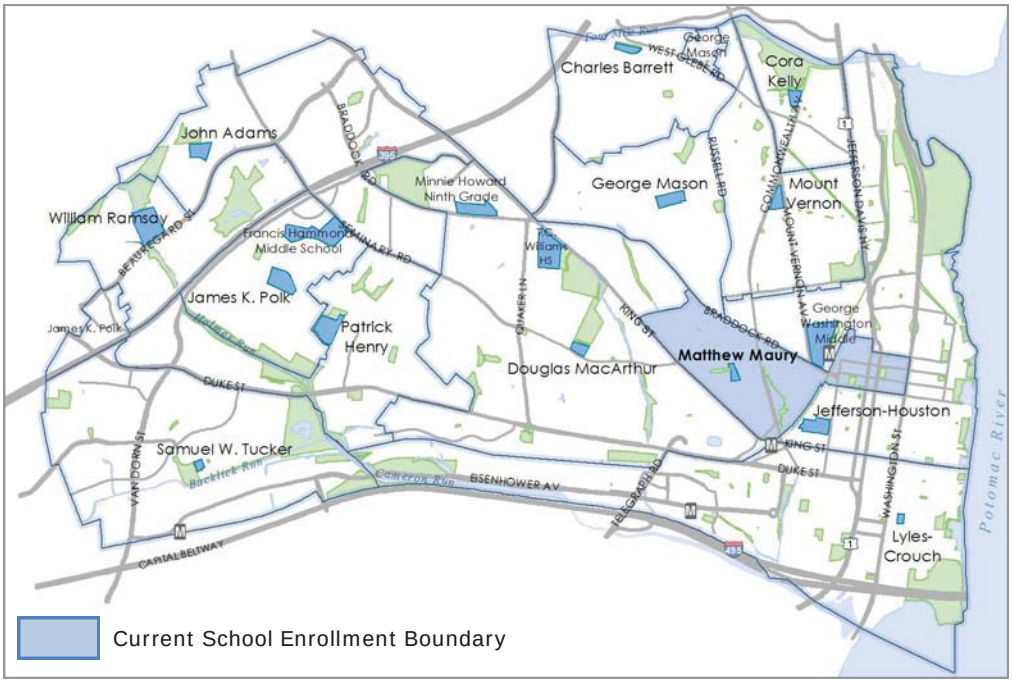
- **Consider** the purchase of adjacent property as it may provide more area for the school thus creating a more efficient site.

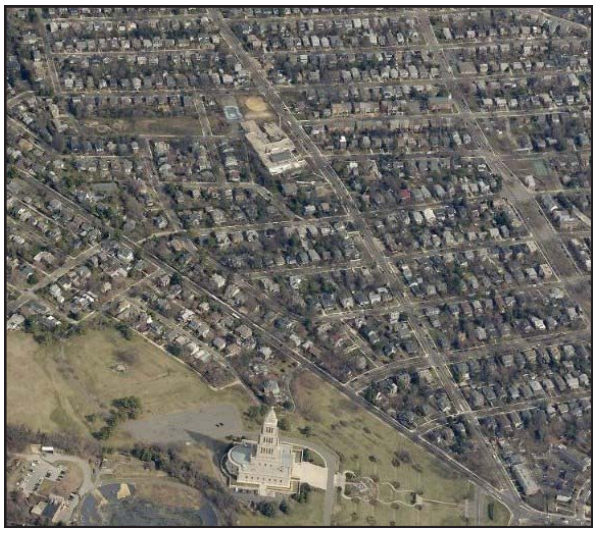
CONCEPTUAL COST ESTIMATES

- **Complete Master Plan Construction $23.7 (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **Total renovation of existing building ($10M) including:**
  - All new mechanical, plumbing, electrical and window systems
  - New food service and a/v equipment for auditorium, cafeteria and classrooms
    - New interior walls, floors and ceilings
- **New 31,000 SF addition ($13.6M) including:**
  - Demolition of portions of the existing building
  - New elevator
  - New gymnasium and relocated cafeteria

In the FY 2016-2025 School Board CIP, Maury is currently slated to receive a modernization and capacity addition beginning in FY 2023. The construction budget for that project is currently $16,500,000.

Matthew Maury Elementary School



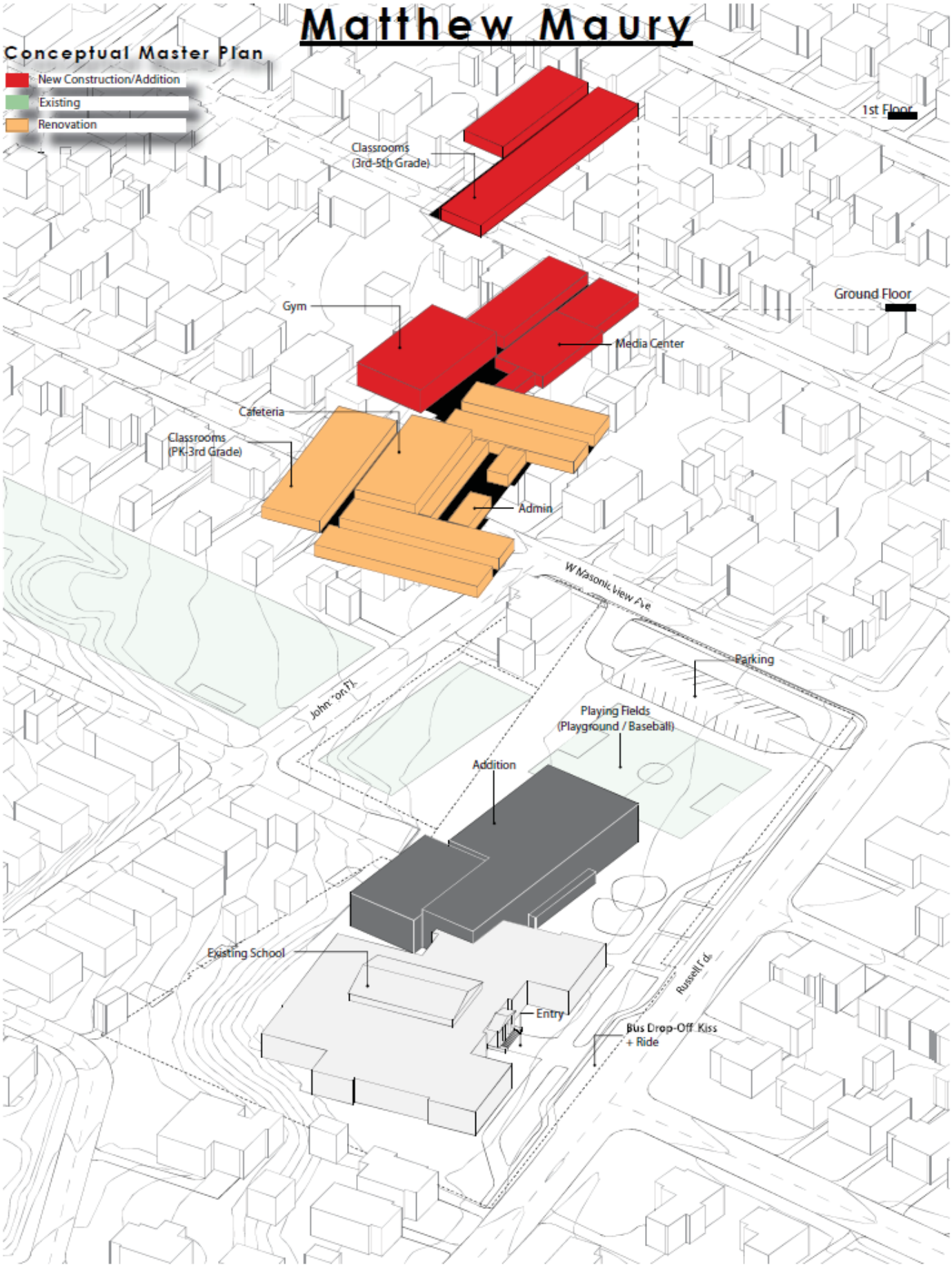


Neighborhood context looking north across King Street from Masonic Memorial

School site looking west across Russell Road

Master Plan concept showing potential second-level addition

Matthew Maury



Mount Vernon Community School

2601 Commonwealth Avenue, Alexandria, VA 22301

At a Glance…

Year Built	Current Floor Area	Lot Size (acres)	Core Classroom Surplus/Deficit (2020)
1923	112,730 (school) 18,000 (rec center) (library*)	6.5	+1
Zoning	**Floor Area Permitted by Zoning (SF)**	**Floor Area Ratio**	**Total Program Surplus/Deficit (Sq.Ft.) (2020)**
R-2-5 (024.04-02-03)	90,272	0.45	-1,064
POS (024.04-02-03)	0	0.0	
School Site	**Building Assessment**	**Instructional & Support Spaces**	**Projected Utilization (2020)**
Borderline	Inadequate	Borderline	111%

Background

The current Mount Vernon Community School structure was built in 1923. Classroom additions were built in 1941 and 1950 with major building additions in 1967 and 1991. The adjacent Mount Vernon Recreation Center, built in 1997, shares the gym and outdoor fields with the school.

In 2014, Mount Vernon had an enrollment of 817 students with a capacity of 755 students. By 2020, enrollment is expected to increase to 841 students. Mount Vernon is a community school encouraging partnerships between school and community in an effort to improve academics, health, and development of the community and its students. This relationship fosters a personalized curriculum teaching real-world problem solving skills. Mount Vernon offers an English-Spanish Dual Language program aiming to make students bilingual, bi-literate, and culturally aware. The school also offers:

- Art instruction once per week
- Two physical education classes per week
- Family life instruction at age-appropriate levels
- Band and orchestra beginning in 4th grade
- Vocal music instruction once per week
- Talented & Gifted program for grades K-5
- 3, 4, and 5th grade Keyboarding
- TAG Pullout program
- Special education programs[1]

[1] *http://www.acps.k12.va.us/mtvernon*

** Because the school, recreation center and library are located on the same site, all contribute to the floor area ratio calculation.*

Student Enrollment (# of students)

	2014	2020 Projection
Enrollment	817	841
Capacity	755	755

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

The data collected through this assessment reveal that Mount Vernon Community School meets only 53 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

High Priority Items

- Based on the 2020 projections, as it exists now, the school will be substantially over capacity, lacking space for nearly 86 students. The school is suffering

from a shortage of classrooms which is compounded by the fact that the recommended ratio of square feet per student is not met.

- The classroom conditions are also below satisfactory levels for reasons such as, inadequate classroom size, lack of storage space, poor acoustics and the absence of individual controllability of the HVAC and lighting systems.

School Site

Site Data	
Steep Slopes	*Isolated steep area*
Playgrounds	*3*
Recreation Features	*Open field, playground, baseball field and basketball court.*
Resource Protection Areas	*No*
Parking	*27*
Storm Water Management	*Multiple inlets, two underground detersion systems.*

Organization of vehicular and pedestrian traffic patterns are not efficiently organized about the site. Site circulation does not separate vehicular and pedestrian traffic creating potential life safety hazards for all users. Pedestrian paths cross vehicular thoroughfares during after-school pickup times. Additionally, the bus lane is also used as the kiss and ride drop off area which could create a dangerous situation for students. It was also observed, while appropriately located near the main entrance, on-site parking for staff and visitors is inadequate based on the number of spaces provided.

While the apparent rating of the fields is borderline, the two play fields, located adjacent to the gym, do not meet Virginia Guidelines but are adequate for the school's use. Finally, the field condition is deteriorating with observable divots and dry patches noted that could pose a hazard to students.

Instructional and Support Spaces

The most urgent items in this section are classroom capacity and HVAC mechanical issues.

The instructional and support spaces of the building earned a borderline rating. Some factors that contributed to this rating include: the rooms do not meet the size requirements; the lack of lighting and HVAC controllability, and noise interference from inside and outside the rooms was not mitigated. Numerous teachers reported humidity and moisture issues in their classroom which they indicate increases during the warmer months.

The average core classroom size for prekindergarten and kindergarten is 885 rather than the suggested 1,025 square feet. The measured average classroom size for grade one through five is 757 square feet rather than the desired 900 square feet needed to provide a flexible learning environment.

The overall capacity of specialty classrooms and small support rooms is approximately 28 percent smaller than the square foot minimums detailed in the educational specification. The facility had significant deficiencies with air temperature, humidity and acoustical elements. The lighting, in most classrooms, was adequate but not adjustable. Finally, several classrooms had no natural light or windows with a view outdoors.

Among the core classrooms, the item of greatest concern is the **acoustics**. Many of the classrooms are divided by a thin, operable partition which does not provide an adequate sound barrier between the two classrooms. The student and teacher program furniture, which includes shelving, cabinets, wardrobes and cubbies, is either not adequate or non-existent in most classrooms. Classrooms are not equipped with the required number of teaching walls and electrical outlets are not readily available on all walls. The shared spaces, including the gym, art room, and cafeteria are not centrally located.

Building Assessment

Most classrooms in Mount Vernon have the technology infrastructure and tools required to support a 21st century learning environment. However, overall space arrangements do not meet the standards for providing small learning environments and key classroom adjacencies. While classrooms are mainly organized by grade level groupings, there were no defined extended learning areas observed and not all shared programmatic spaces were centrally located.

The building organization also contributed to the school's low rating because the shared spaces such as: the gym, cafeteria and art room are not centrally located and did not meet their intended size or space requirements.

RECOMMENDATIONS

Mount Vernon currently lacks sufficient space to accommodate future enrollment. An addition and interior renovation is recommended after a building conditions assessment. Because of the age of the building, a partial demolition may be a more cost effective option to renovation. Currently the school building exceeds the allowed FAR for the building, which has implications on a future significant renovation and the feasibility of a future addition.

GROUP 1 — REQUIRED PLANNING

- **Site** assessment to determine whether the drop-off location for the school can be relocated/reconfigures (based on property boundaries, setbacks, etc.). It will also help inform opportunities for additional parking.
- **Explore** existing building conditions to determine if partial demolition is a more cost effective option to renovation due to the building's age.
- **Rezone** to rectify the existing FAR issue and allow room for an addition or major reconfiguration.

GROUP 2 — FIRST PRIORITY

- **Reconfigure** the spaces within the existing school to meet the recommended size requirements for individual academic spaces as outlined in the educational specifications incorporation of collaborative learning spaces ($35.9M).
- **Construct** an addition to the school which may be necessary to attain the additional square footage required but will be more accurately determined once the building reorganization and redistribution has been studied ($3.2M).

GROUP 3 — SECOND PRIORITY

- **Equip** all classrooms and support spaces with individual climate controls, and technology equipment and infrastructure.
- **Provide** additional storage for teachers and students as well as an upgrade to the furniture, fixtures and equipment.
- **Upgrade** existing playing areas .

GROUP 4 — LONG RANGE RECOMMENDATIONS

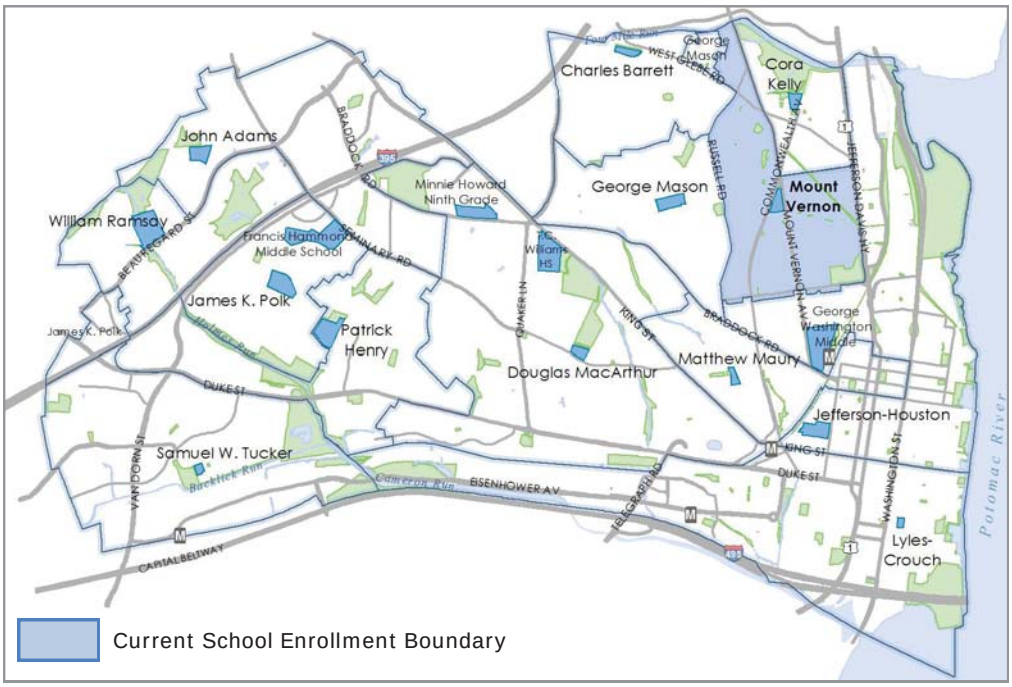
- **Relocate** tennis courts to allow for upgraded playing fields.

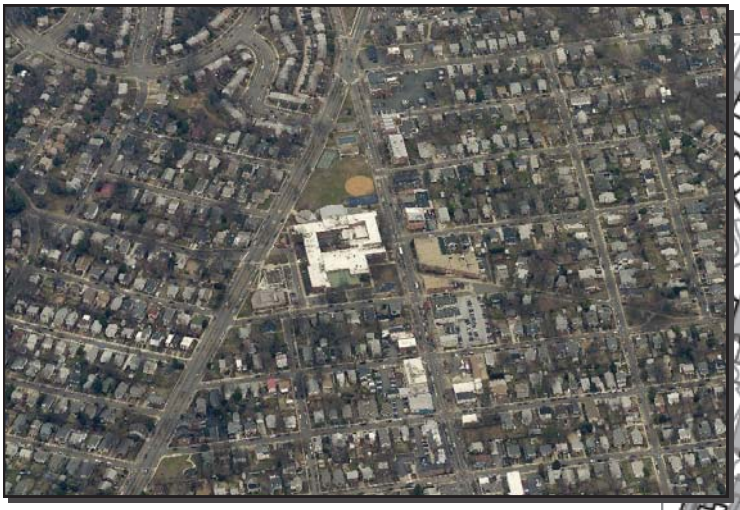
CONCEPTUAL COST ESTIMATES

- **Complete Master Plan Construction $39.1 (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **New 10,000 SF addition ($3.2M)**
- **Total renovation of existing building ($35.9M) including:**
  - All new mechanical, plumbing, electrical and window systems
  - New food service and a/v equipment for auditorium, cafeteria and classrooms
  - New interior walls, floors and ceilings

Mt. Vernon is not currently in the modernization program per the FY 2016-2025 CIP. Renovations, additions or the complete master plan projects will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.

Mount Vernon Elementary School





Neighborhood context looking north.

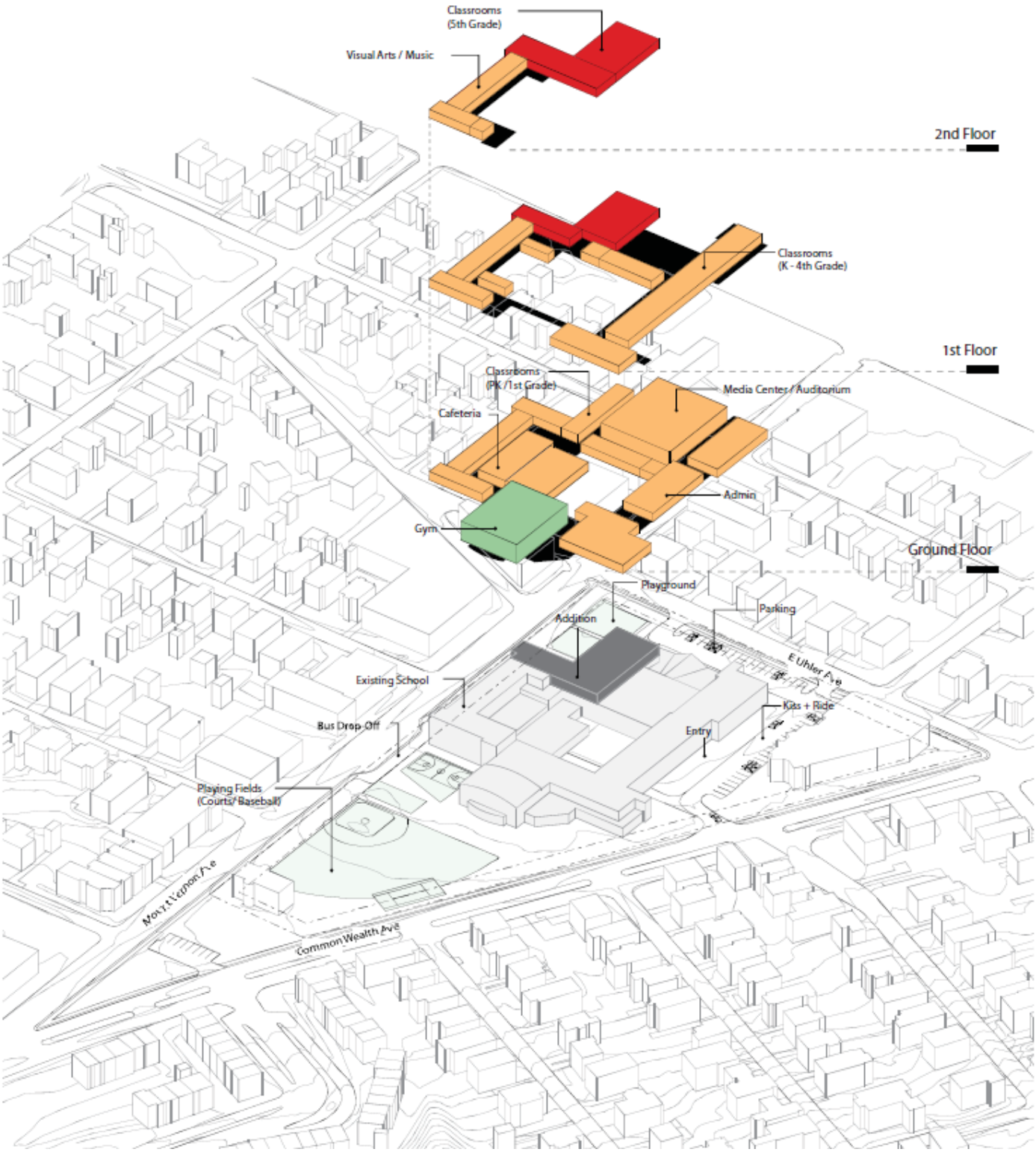
School site looking north. Commonwealth Avenue is on the left, and Mount Vernon Avenue on the right. Duncan Library is at the lower left.

Master Plan concept showing two-level addition on southeastern part of school site.

Mount Vernon

Conceptual Master Plan

New Construction/Addition
Existing
Renovation



Patrick Henry Elementary School

4643 Taney Avenue, Alexandria, VA 22304

At a Glance…		
Year Built **1953**	*Current Floor Area* **62,400 (school)** **8,850 (rec center)**	*Floor Area Permitted by Zoning (SF)* **176,418**
Zoning **R-12(039.03-05-14)**	*Lot Size (acres)* **15.0**	*Floor Area Ratio* **0.30**

Patrick Henry was not included in the educational adequacy analysis because there is a feasibility study under a separate effort.

Background

Patrick Henry Elementary School was originally constructed in 1953, classroom additions in 1995 and 2011. The City of Alexandria constructed a gymnasium addition in 1973 that included a full-time recreation center. In 1996, a media center was constructed. This site is shared with a full-time City recreation center and tennis courts.

ACPS currently has a Patrick Henry Capacity Project in the CIP. This project will create Pre K-8 program with additional capacity for ACPS on the west side of the city. Planning is underway to analyze the current school and recreation center conditions and site to review options for construction versus renovation. A recommendation will be made to the School Board in Spring 2015.

School Site

The Patrick Henry site includes two open fields, tennis courts and a playground. Student drop-off occurs along Taney Avenue which conflicts with local traffic during peak times. Buses use the parking lot which often conflicts with staff, visitor and Rec Center patrons. Analysis of these circulation issues is a part of the study currently underway.

Recommendation

Patrick Henry was not included in the educational adequacy analysis due to the fact that a study was currently underway. Results of the study should be incorporated into the next update of the Long Range Plan.

Samuel W. Tucker Elementary School

435 Ferdinand Day Drive, Alexandria, VA, 22304

At a Glance…

Year Built	*Current Floor Area*	*Lot Size (acres)*	*Core Classroom Surplus/Deficit (2020)*
2000	80,180	2.4	-7
Zoning	*Floor Area Permitted by Zoning (SF)*	*Floor Area Ratio*	*Total Program Square Feet (2020)*
CDD 9 (068.01-02-01)	80,000	0.35	-6,398
School Site	*Building Assessment*	*Instructional & Support Spaces*	*Projected Utilization (2020)*
Satisfactory	Satisfactory	Satisfactory	126%

Background

Samuel W. Tucker Elementary opened in 2000, making it the City's first new school in 30 years. The school is situated at the west end of the Cameron Station development and serves kindergarten through fifth grade students.

In 2014, Samuel Tucker had an enrollment of 750 students and a measured capacity of 620 students. By 2020, the school should increase to 780 students. Therefore, the existing school capacity will not accommodate the increase of students and the school will be over-utilized. The academic curriculum includes reading, language arts, mathematics, social studies, and science and also offers:

- Music instruction once a week
- Art instruction once a week
- Band and Orchestra beginning in 4th grade
- Two physical education classes a week
- Family life instruction at age-appropriate levels
- English as a second language classes
- Special education programs
- TAG pull out program
- Talented and Gifted program for grades K-5[1]

[1] *http://www.acps.k12.va.us/tucker*

Student Enrollment (# of students)

	2014	2020 Projection
Enrollment	750	780
Capacity	620	620

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

Based on the data collected through this assessment, Samuel Tucker meets 80 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

High Priority Items

- The inadequate measured size of the specialty classrooms

- Inadequate size and number of core classrooms to accommodate the projected enrollment

School Site

Site Data	
Steep Slopes	*No steep slopes*
Playgrounds	*2 (one in the adjacent Boothe*
Recreation Features	*Adjacent Boothe Park contains playgrounds, a shelter, a base-ball field, basketball court and tennis court*
Resource Protection Areas	*No natural areas*
Parking	*106*
Storm Water Management	*No known facilities onsite*

Samuel W. Tucker earns a satisfactory rating on the site assessment. The school meets all the requirements for site circulation and play areas except inadequate parking and lack of outdoor learning areas. Within the CDD zoning, the school site and park site are separately platted properties. The recreational features used by the school are on adjacent property. Because of this

distinction, it may be difficult add parking and outdoor learning areas to the school site.

It should be noted that the potential multi-modal bridge that may occur adjacent to Boothe Park could impact the size and number of recreational fields in close proximity to the school.

Instructional and Support Spaces

The instructional and support spaces at this school earn a satisfactory rating. **The highest priority item for this section is the measured size of the core classrooms.** Comprehensively, only 39 percent of the core classrooms meet the educational adequacy size requirements of 900 square feet. The average size of a specialty classroom is 437 square feet which is significantly higher than the desired 250 square feet. While the existing specialty classrooms are larger than the required size in the educational specifications, there is a deficit of three in the total quantity. Multiple teachers typically share these spaces to accommodate the student capacity needs. The classes often run concurrently in these spaces indicating a lack of quantity. Only 17 percent of the classrooms have temperature controls.

The second highest priority item, in this section, is the natural lighting in the shared spaces. Only one third of these spaces have adequate natural lighting. The gymnasium, for example, only has a few windows even though it is not an interior space and could potentially accommodate more.

Additional issues the specialty classrooms are the lack of storage, bubblers and fixed equipment. The specialty classrooms lack adequate student and teacher built-in storage and shelving. Many rooms do not have adequate teacher furnishings, such as a desk or wardrobe. The rooms are not equipped with interactive learning devices and secondary teaching walls, as required. In spite of the satisfactory rating for this section, the items discussed above need attention to ensure this school continues to be an excellent teaching and learning environment for its students.

Building Assessment

The building assessment of Samuel W. Tucker reveals a satisfactory rating. The only category that does not meet the educational adequacy standards is technology and supporting infrastructure. The inadequate rating for this section is due to electrical receptacles not being present in multiple locations along classroom and corridor walls. Additionally, the clocks and PA system throughout the building are not integrated, nor are the clocks digital, as desired. Finally, there is limited wireless connectivity in the hallways and corridors and the school does not provide wireless bandwidth at a one-to-one student-to-device ratio.

The other two categories: building organization and accessibility; both meet the standards. However, the school's noisier programmatic spaces are not adequately separated from the instructional classrooms, as required.

Recommendations

The school will continue to be over capacity by 2020. In order to accommodate the projected enrollment, an addition to the building would likely exceed the FAR allowed by the zoning. Considerations should be given to accommodating the projected increase in enrollment at another location due to the overall school size and site constraints.

Group 1 — Required Planning

- **Assess** opportunities to reconfigure existing instructional classroom spaces to meet the recommended size requirements outlined in the educational specifications.
- **Assess** building condition comprehensively through a facility condition assessment.

Group 2 — First Priority

- **Reconfigure** the existing interior to provide sufficient sized classrooms ($14.5M).
- **Renovate** the shared spaces to provide sufficient natural light.

Group 3 — Second Priority

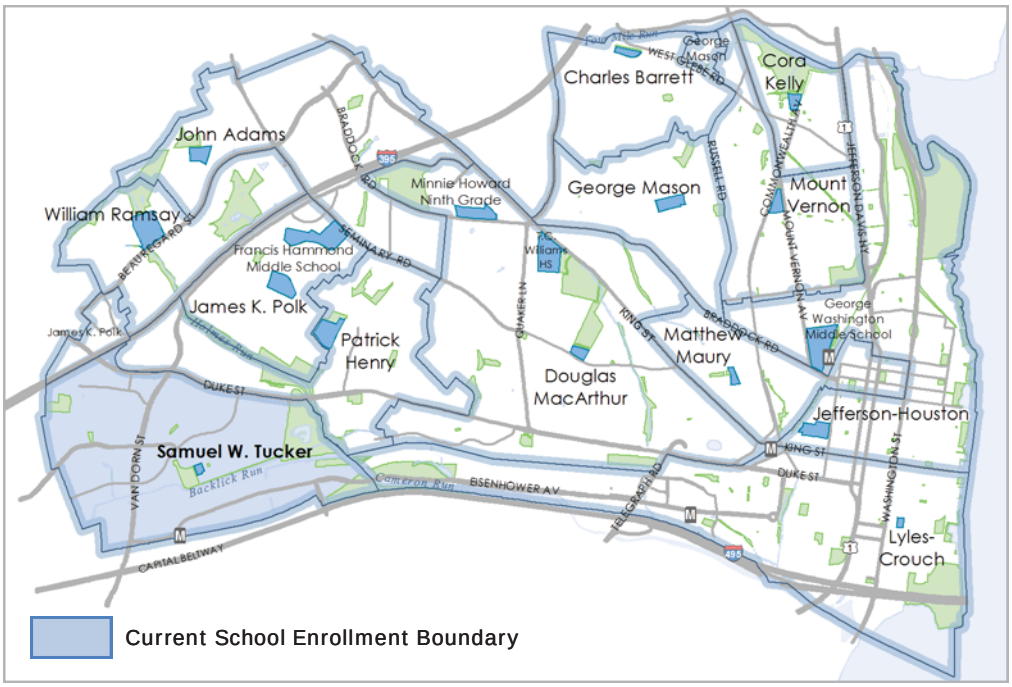
- **Assess** the possibility of equipping all classrooms and support spaces with individual climate control.
- **Provide** additional storage for teachers and students in the reconfigured classrooms.
- **Equip** all classrooms with two teaching walls and technology

Group 4 — Long Range Recommendations

Conceptual Cost Estimates

- **Complete Master Plan Construction $14.5M (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **Limited renovation of existing building including:**
  - New floor and ceiling finishes
  - New walls and MEP systems as necessary for new classroom configuration
  - Renovation of cafeteria and gymnasium
  - New plumbing and light fixtures

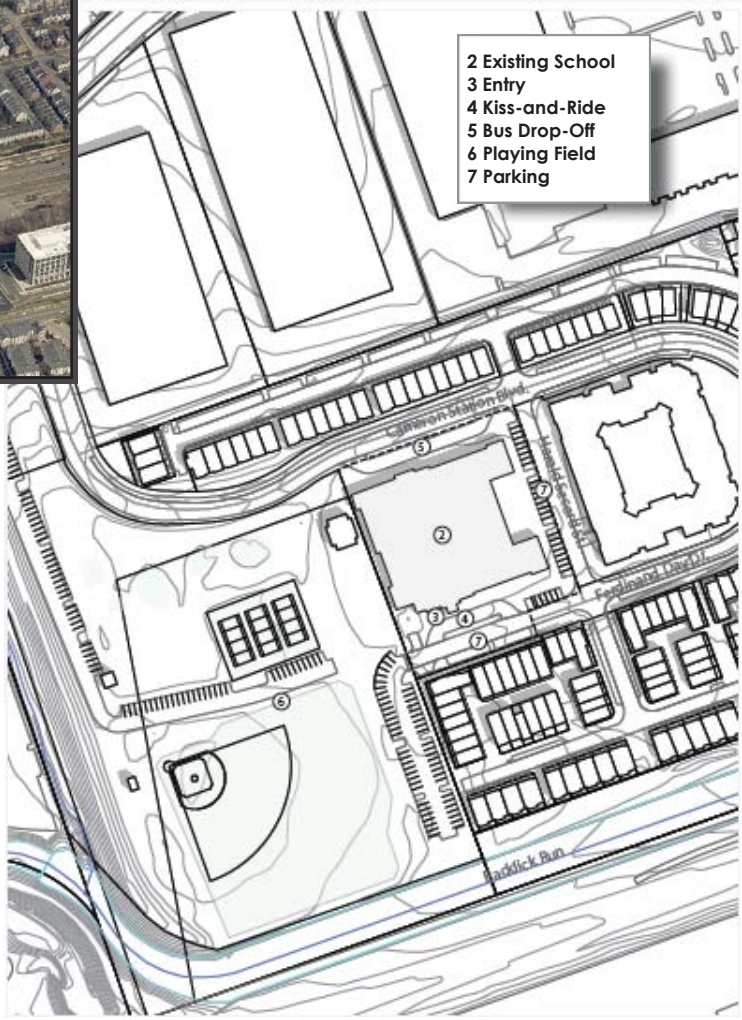
Tucker is not currently in the modernization program per the FY 2016-2025 CIP. This project will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.



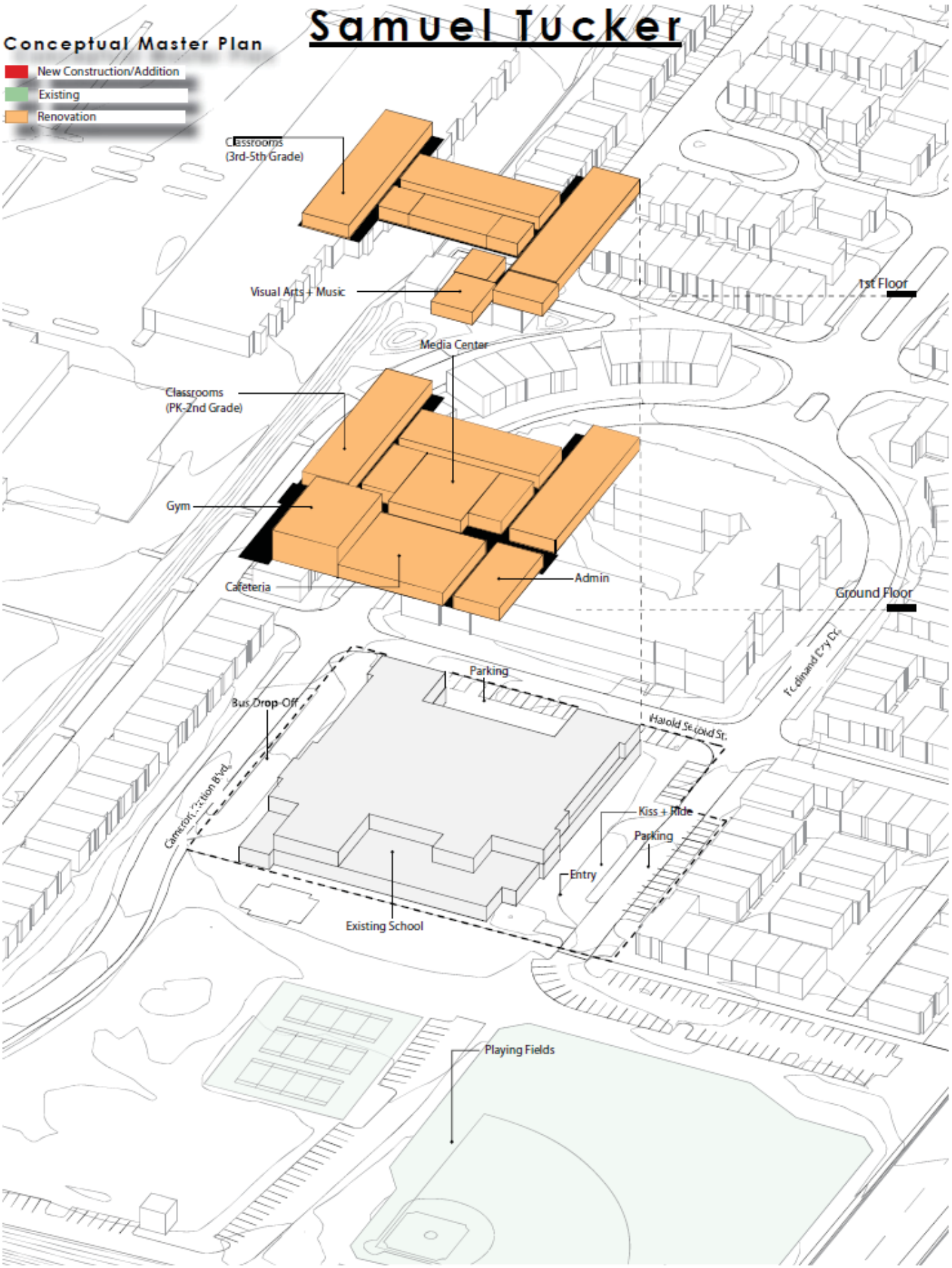
Samuel W. Tucker Elementary School

Neighborhood context. The Norfolk Southern tracks and Cameron Run separate the site from uses along Eisenhower Avenue, shown at bottom right in this photo. Pickett Street runs along the upper left. The Cameron Station residential development is to the right of the school.

School site looking north, showing adjacent park and ball field. Cameron Run runs along the lower part of this photo.



Master Plan concept showing renovations within the existing school footprint only.


Samuel Tucker
Conceptual Master Plan
New Construction/Addition
Existing
Renovation
Classrooms
(3rd-5th Grade)
Visual Arts + Music
1st Floor
Media Center
Classrooms
(PK-2nd Grade)
Gym
Cafeteria
Admin
Ground Floor
Parking
Bus Drop-Off
Harold Seigold St.
Ferdinand Day Dr.
Cameron Station Blvd.
Kiss + Ride
Parking
Entry
Existing School
Playing Fields

William Ramsay Elementary School

5700 Sanger Avenue, Alexandria, VA 22311

At a Glance…

Year Built	Current Floor Area	Lot Size (acres)	Core Classroom Surplus/Deficit (2020)
1958	87,650 (school) 18,150 (rec center) 5,700 (nature center)	20	-18
Zoning	**Floor Area Permitted by Zoning (SF)**	**Floor Area Ratio**	**Total Program Surplus/Deficit (Sq.Ft.) (2020)**
R-12 (028.02-03-34)	99,989	0.30	-23,857
RA (028.02-03-34)	58,432	0.75	
POS (028.02-03-34)	0	0.0	
School Site	**Building Assessment**	**Instructional & Support Spaces**	**Projected Utilization (2020)**
Borderline	Inadequate	Satisfactory	133%

Background

William Ramsay Elementary was built in 1958 and received building additions in 1963, 1977, 1990 and 2001. The school is bordered by an adjoining nature and recreation center. The school supports the community through Campagna Extended Day Care Programs, nature center programs, PTA reflections programs, and recreation center activities. The nature center and recreation center have an independent entrance; therefore, the community can access them without going through the school. Additionally, the projected enrollment will exceed the recommended maximum school size for elementary schools.

In 2014, Ramsay's enrollment was 885 students with a measured capacity of 748. The 2020 enrollment projection indicates the school's population will increase to 998 students.

The academic curriculum at Ramsay includes reading, language arts, mathematics, social studies, and science and also offers:

- Art instruction with a certified art teacher
- Vocal music
- Band, Orchestra and Instrument music lessons beginning in fourth grade
- Two physical education classes per week
- Family life
- English as a second language
- Special education programs
- TAG pull out program
- Talented and Gifted program for grades K-5[1]

[1] *http://www.acps.k12.va.us/ramsay*

Student Enrollment (# of students)

	2014	2020 Projection
Enrollment	885	998
Capacity	748	748

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

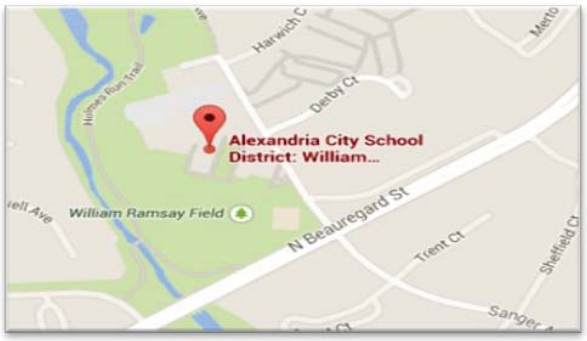
William Ramsay meets 58 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

High Priority Items

- Accessibility sub-section which received a very inadequate rating.
- Inadequate measured size of the core and specialty classrooms.

School Site

Site Data	
Steep Slopes	*Steep Slopes*
Playgrounds	*2*
Recreation Features	*Baseball field, tennis court, asphalt play area, and open field*
Resource Protection Areas	*Adjacent to Dora Kelly Natural Park & dense trees*
Parking	*135*
Storm Water Management	*Storm filter & storm captor at western end of parking lot*



Based on the assessment, the school site received a borderline rating. The site circulation received a borderline rating because the school's kiss-and-ride driveway and the bus lane share the same vehicular entrance. The shared driveway also provides the school with limited stacking area which can cause congestion on adjacent streets. Finally, the on-site parking is not adequate based on the size of the school.

The play fields and play areas are in safe locations, but not adequate in size, nor do they possess the required equipment per the educational specifications. Included in the Beauregard Small Area plan is a multi-purpose field that will provide adequate field space for the school. This will be located in the area of the existing tennis courts at the corner of Sanger Avenue and North Beauregard Street. The school is located between the William Ramsay Recreation Center and the Dora Kelly Nature Center.

Instructional and Support Spaces

While the instructional and support spaces rank satisfactory, there are a few areas of concern in this section. **The most important issue to note is the lack of sufficient square footage in the core and specialty classrooms.** The measured average size for pre-kindergarten and kindergarten class is 924 square feet instead of the desired 1,025. The measured average size for first through fifth grade class is 816 square feet instead of the desired 900.

Instructional rooms lack temperature controls with more than 60 percent of the occupants reporting humidity issues. In specialty classrooms, there is minimal student and teacher program furniture includes shelving, cabinets, wardrobes, and cubbies. These items are either not adequate or non-existent in most instructional spaces. The majority of these specialty spaces are also missing an interactive electronic device. Lastly, the shared spaces would benefit with additional windows increasing natural light levels.

Building Assessment

The comprehensive building assessment of William Ramsay reveals an inadequate rating. The school lacks extend learning areas and public restrooms for visitors. Additionally, the shared programmatic spaces are not appropriately clustered nor located away from academic classrooms.

Electrical outlets are not present in multiple locations along classroom and corridor walls. The clocks and PA system throughout the building are not integrated, nor are the clocks digital, as desired. Additionally, there is limited wireless connectivity in the hallways and corridors. Finally, the school does not provide wireless bandwidth at a one-to-one student-to-device ratio.

This school lacks judicious use of ramps, elevators, and signage to allow a handicapped student, teacher, or visitor access to the entire school. The school has two separate floors and multiple split levels. There is an elevator at the school, but poorly located at one corner of the school, and only provides access to four resource classrooms on the second floor addition. The second floor addition is a separate building from the first and second floor of the main school.

RECOMMENDATIONS

The school will be over capacity by 2020. In order to accommodate the projected enrollment, an addition to the building would likely exceed the FAR allowed by the zoning. Considerations should be given to accommodating the projected increase in enrollment at another location due to the overall school size and site constraints.

GROUP 1 — REQUIRED PLANNING

- **Site** assessment to determine whether the drop-off and bus entrance for the school can be separated (based on property boundaries, setbacks, etc.) in coordination with the Recreation and Nature Centers.
- **Assess** building condition comprehensively through a facility condition assessment.

GROUP 2 — FIRST PRIORITY

- **Install** an elevator near the main entry to address existing ADA accessibility issue. Assess possible solutions to address existing ADA accessibility issues within the corridors.
- **Reconfigure** the existing school to meet the recommended size requirements and key organizational adjacencies outlined in the educational specifications ($18.3M).

GROUP 3 — SECOND PRIORITY

- **Equip** all rooms with individual climate control.
- **Equip** all core classrooms and support spaces with additional electrical receptacles to meet educational adequacy standards.
- **Upgrade** the building technology to meet the educational adequacy standards.
- **Provide** additional storage for teachers and students as well as an upgrade to the furniture, fixtures and equipment.

GROUP 4 — LONG RANGE RECOMMENDATIONS

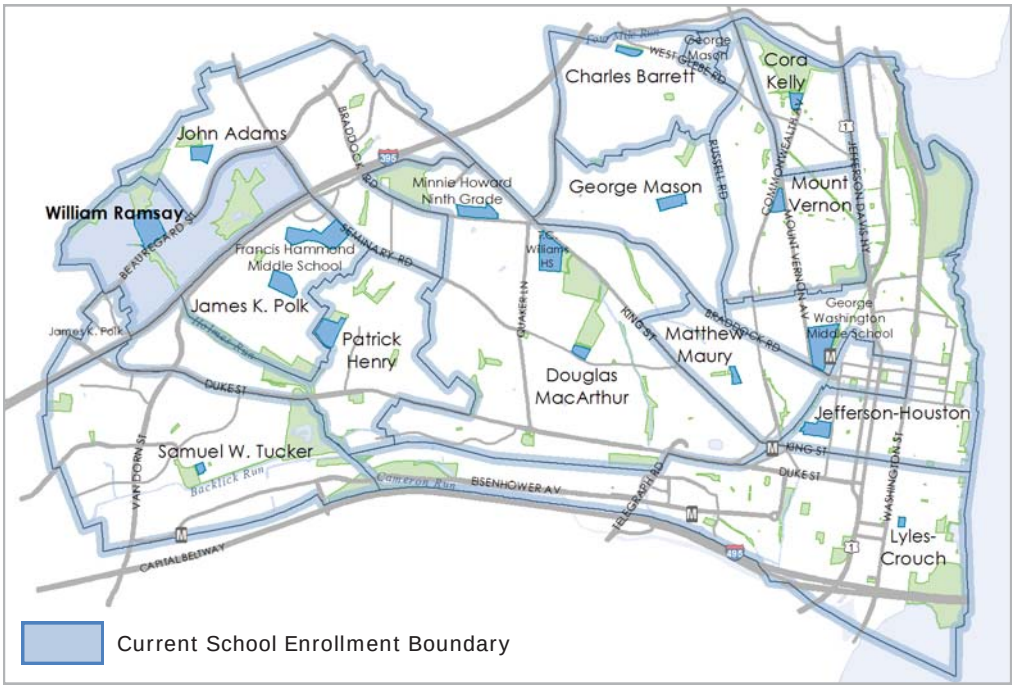
- **Reconfigure** parking to improve efficiency.
- **Included** in the Beauregard Small Area plan is a multi-purpose field that will provide adequate field space for the school.
- **The implementation of the Beauregard Small Area Plan** will reconfigure the area's road network and the surrounding neighborhoods. An addition could be considered to accommodate the projected enrollment increase, if expansion beyond the recommended school size is warranted. This addition would likely exceed the FAR and require a rezoning ($18.1M).

CONCEPTUAL COST ESTIMATES

- **Complete Master Plan Construction $36.4 (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **New 53,000 SF addition ($18.1M)**
  - Demolition of the portion of the existing building to be replaced
- **Total renovation of 68,000 SF of the existing building ($18.3M), including:**
  - All new mechanical, plumbing, electrical and window systems
  - New food service and a/v equipment for gymnasium, cafeteria and classrooms
  - New interior walls, floors and ceilings
  - New elevator

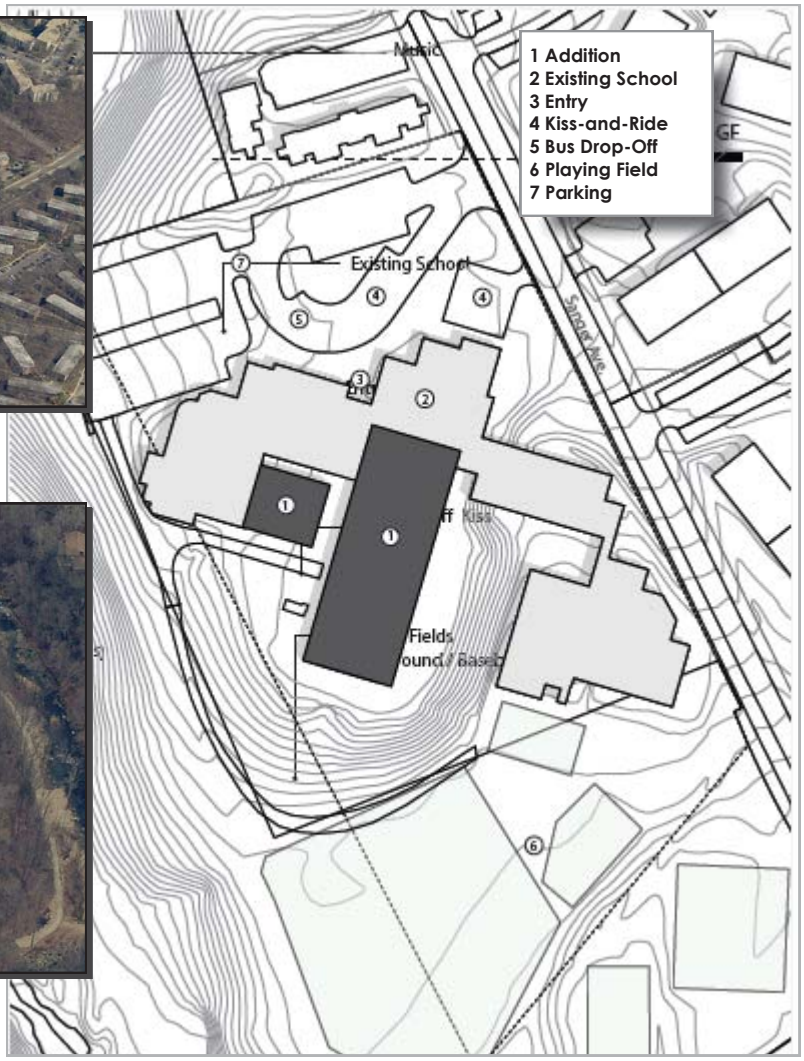
Ramsay is not currently in the modernization program per the FY 2016-2025 CIP. This project will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.

William Ramsay Elementary School



Neighborhood context looking north across Beauregard Street.

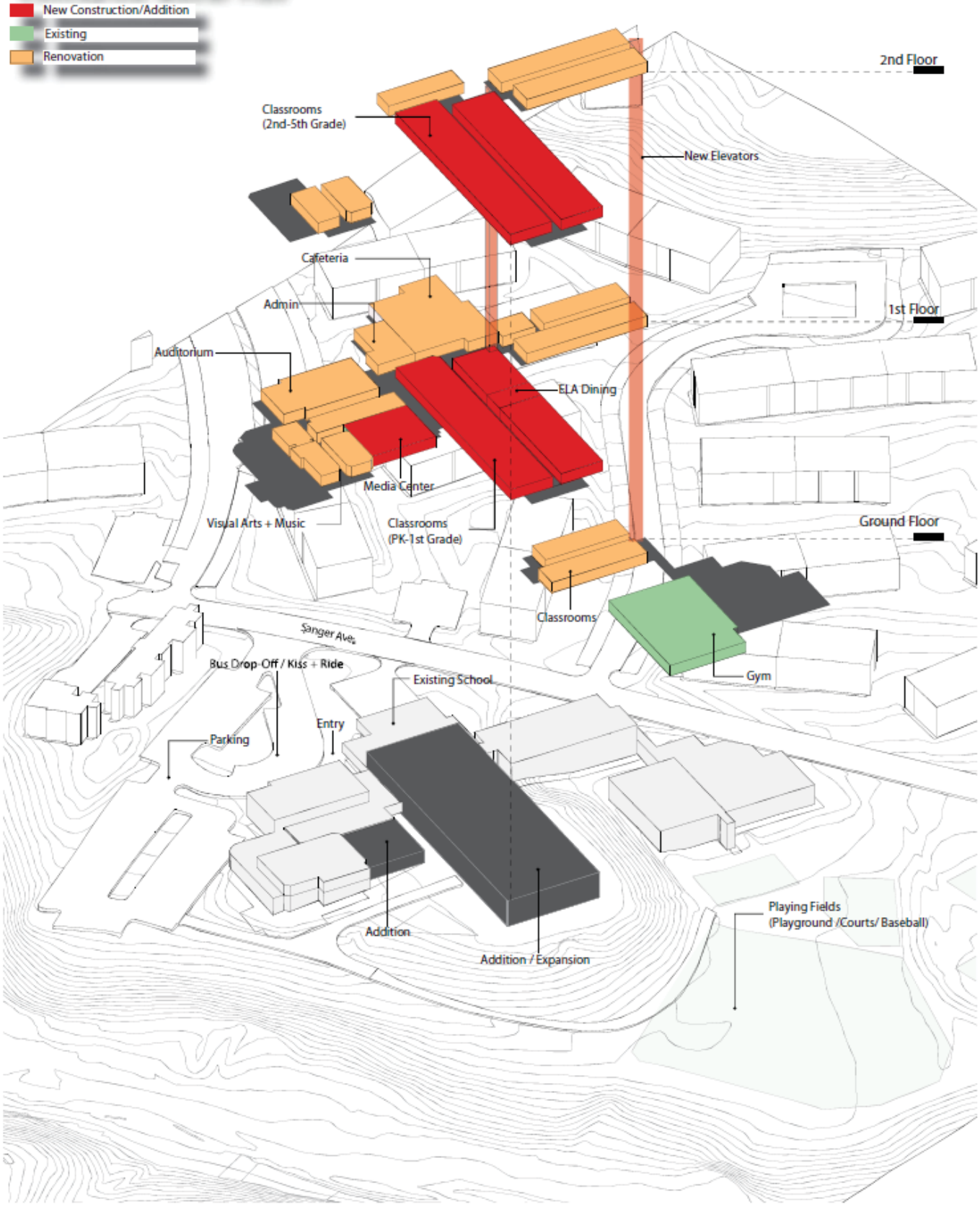
School site looking south across Sanger Avenue with Holmes Run on the right.



Master Plan concept showing potential enlargement of south wing and media center addition.

William Ramsay

Conceptual Master Plan



Francis C. Hammond Middle School

4646 Seminary Road, Alexandria, VA 22304

At a Glance…

Year Built 1956	*Current Floor Area* 236,125	*Lot Size (acres)* 25	*Core Classroom Surplus/Deficit (2020)* -11
Zoning R-8 (030.01-01-03)	*Floor Area Permitted by Zoning (SF)* 364,659	*Floor Area Ratio* 0.45	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* -29,368
R-20 (030.01-01-03)	69,811	0.25	
School Site Satisfactory	*Building Assessment* Inadequate	*Instructional & Support Spaces* Borderline	*Projected Utilization (2020)* 131%

Background

Francis C. Hammond was originally built in 1956. The building operated as a high school from 1956 through 1971. In fall 1979, Hammond Junior High School opened and served grades seven through nine. In fall 1993, the junior high was reorganized into a middle school for grades six through eight.

In 2014, Hammond had an enrollment of 1,436 students and a capacity of 1,396 students. By 2020, enrollment is expected to increase to 1,832 students. Therefore, the existing school capacity will not accommodate the increase of students and will be over utilized and it will exceed the recommended size for a middle school.

The academic curriculum at Francis Hammond includes reading, language arts, mathematics, social studies, and science and also offers:

- Art, Band, Orchestra, Choir
- Health/Physical Education
- Family life instruction at age-appropriate levels
- Computer Applications
- Foreign Languages (Chinese, German, French, Spanish and Latin)
- Technology
- ELL programs for students learning English as a second language
- Opportunity to participate in numerous after school programs[1]

[1] *http://www.acps.k12.va.us/fch*

Student Enrollment (# of students)

	2014	2020 Projection
Enrollment	1,436	1,832
Capacity	1,396	1,396

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

The data collected through this assessment revealed that Hammond meets only 61 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

High Priority Items

- Based on the 2020 projections, Hammond will be significantly undersized if it remains in its current condition.
- Core classroom lack square footage.
- Shared spaces are not supplied with proper fixed equipment.

School Site

Site Data	
Steep Slopes	*Significant drop in grade from the front of the school to the rear.*
Playgrounds	*None*
Recreation Features	*Synthetic turf field, track, exercise area, roller rink, tennis courts and open field*
Resource Protection Areas	*Onsite conservation area, dense trees surrounding open field*
Parking	*143*
Storm Water Management	*Filters, two underground detention systems, underground sand filter*

Hammond is located on a busy main road in Alexandria. The front of the school is dedicated to school bus and kiss-and-ride traffic. As required by the educational specifications, these two types of vehicular traffic should be separated. There are three main areas for staff parking which causes inefficiencies.

The main play field is easily accessible from the school and does not require students or staff to cross any vehicular traffic paths. The visitor parking is located close to the main entrance, as required. There is currently a paved skate rink that could serve as a future revenue generator for the school.
There are no formal outdoor learning spaces, but could be accommodated in the courtyard between the original school and new addition. Lastly, the site is lacking adequate outdoor security lighting.

Instructional and Support Spaces

The overall instructional and support spaces scored borderline. Areas of concern include insufficient classroom sizes, absence of adequate storage and furnishings, and poor internal organization of the spaces. **Very few core classrooms and shared spaces met the square footage requirement.** The academic classrooms at Hammond have an average square footage of 651, rather than the desired 850 square feet or 30 percent undersized. The lack of space in these capacity driving rooms reduced each room's ability to support all the recommended arrangements and teaching program activities. The rooms would also benefit from additional storage.

The next high priority issue is the lack of fixed equipment in shared spaces which included marker boards and tack boards, electronic interactive boards, sound enhancement devices, and support furniture. Over 56 percent of the classrooms did not have an interactive electronic presentation device and 92 percent did not have sound enhancement systems. The support furniture missing in most shared spaces are itinerant desks. Additionally, shared spaces lack proper technological infrastructure.

The rooms lack temperature controllability and therefore making the learning environment substandard and inadequate. Humidity is a noticeable issue in over half the spaces. Most occupants report extreme temperature shifts in classrooms ranging from too hot to too cold throughout the school year.

Building Assessment

Accessibility within the school needs to be addressed. The building lacks ramps. To access a classroom adjacent to the main office and accessible by a short staircase, a person in a wheelchair must travel three times the same distance to arrive at the same destination.

Shared spaces including the media center, resource classrooms, and cafeteria are not centrally located as required.

RECOMMENDATIONS

The school will be significantly over capacity by 2020. Considerations should be given to accommodating the projected increase in enrollment at another location due to the building capacity and the overall school size.

GROUP 1 — REQUIRED PLANNING

- **Plan** to accommodate the projected increase in enrollment at another location due to the building capacity and the overall school size.
- **Assess** building condition comprehensively through a facility condition assessment.

GROUP 2 — FIRST PRIORITY

- **Reconfigure** the existing instructional classroom spaces to meet the recommended size requirements outlined in the educational specifications ($33.4M).
- **Address** the ADA accessibility issue through the installation of ramps and/or elevators.

GROUP 3 — SECOND PRIORITY

- **Equip** all classrooms and support spaces with individual climate controls.
- **Provide** additional storage for teachers and students in the reconfigured classrooms.

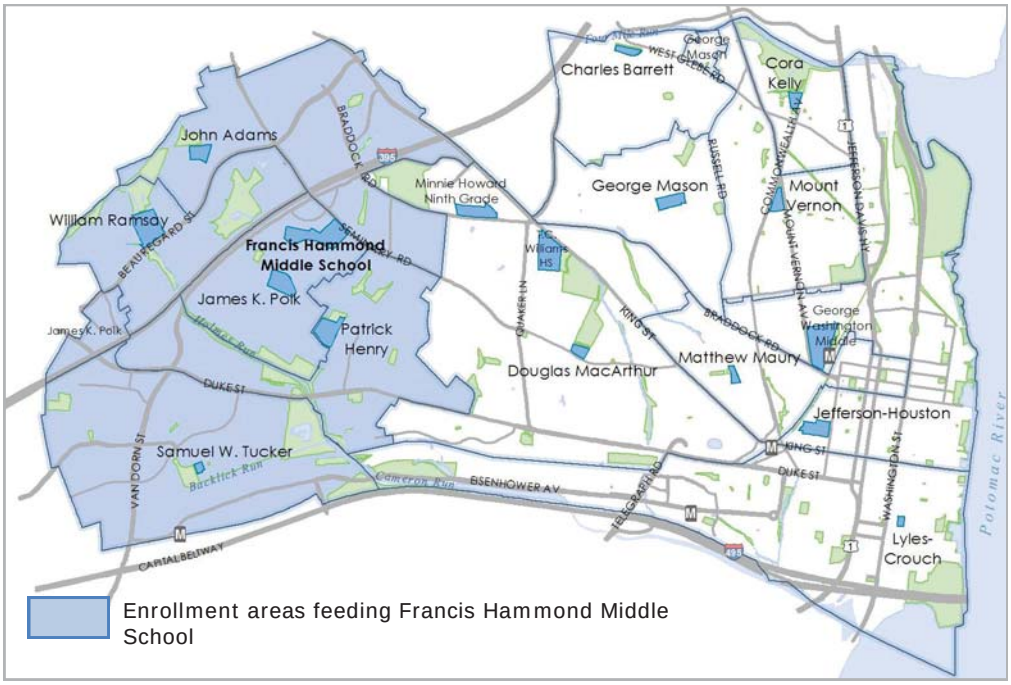
GROUP 4 — LONG RANGE RECOMMENDATIONS

- **Reconfigure** site circulation to consolidate the staff parking and separate the bus drop off from the kiss and ride and to improve site efficiency.
- **Utilize** the lower field/roller rink area as a site for a future school.

CONCEPTUAL COST ESTIMATES

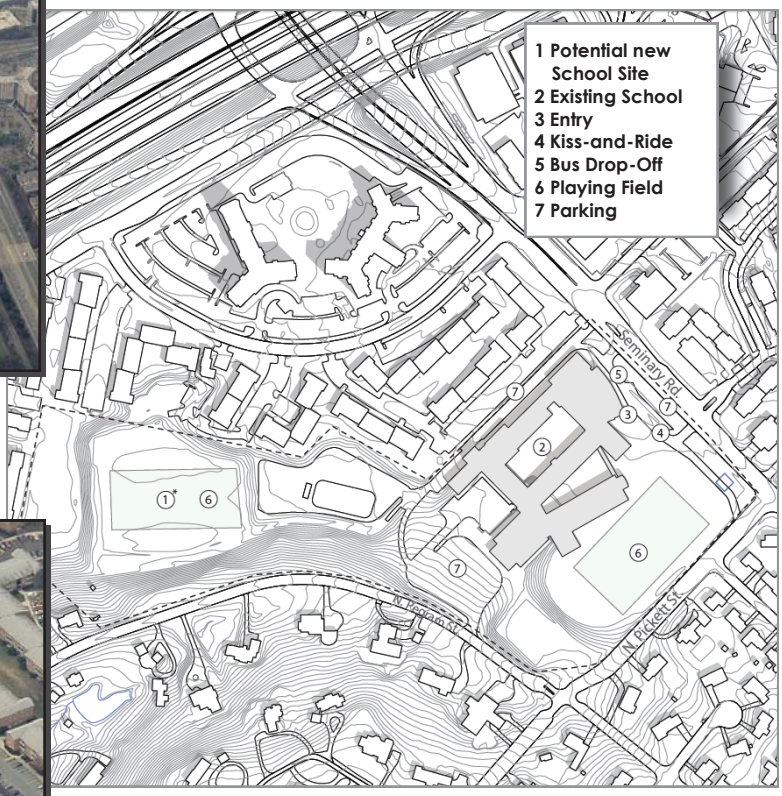
- **Complete Master Plan Construction $33.4M (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **Total renovation of the existing building including:**
  - All new mechanical, plumbing, electrical and window systems
  - New food service and a/v equipment for classrooms
  - New interior walls, floors and ceilings
  - New elevator

Hammond is not currently in the modernization program per the FY 2016-2025 CIP. This project will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.



Francis Hammond Middle School

Neighborhood context looking south along I-395 across Seminary Road. Inova Hospital is at the far left.

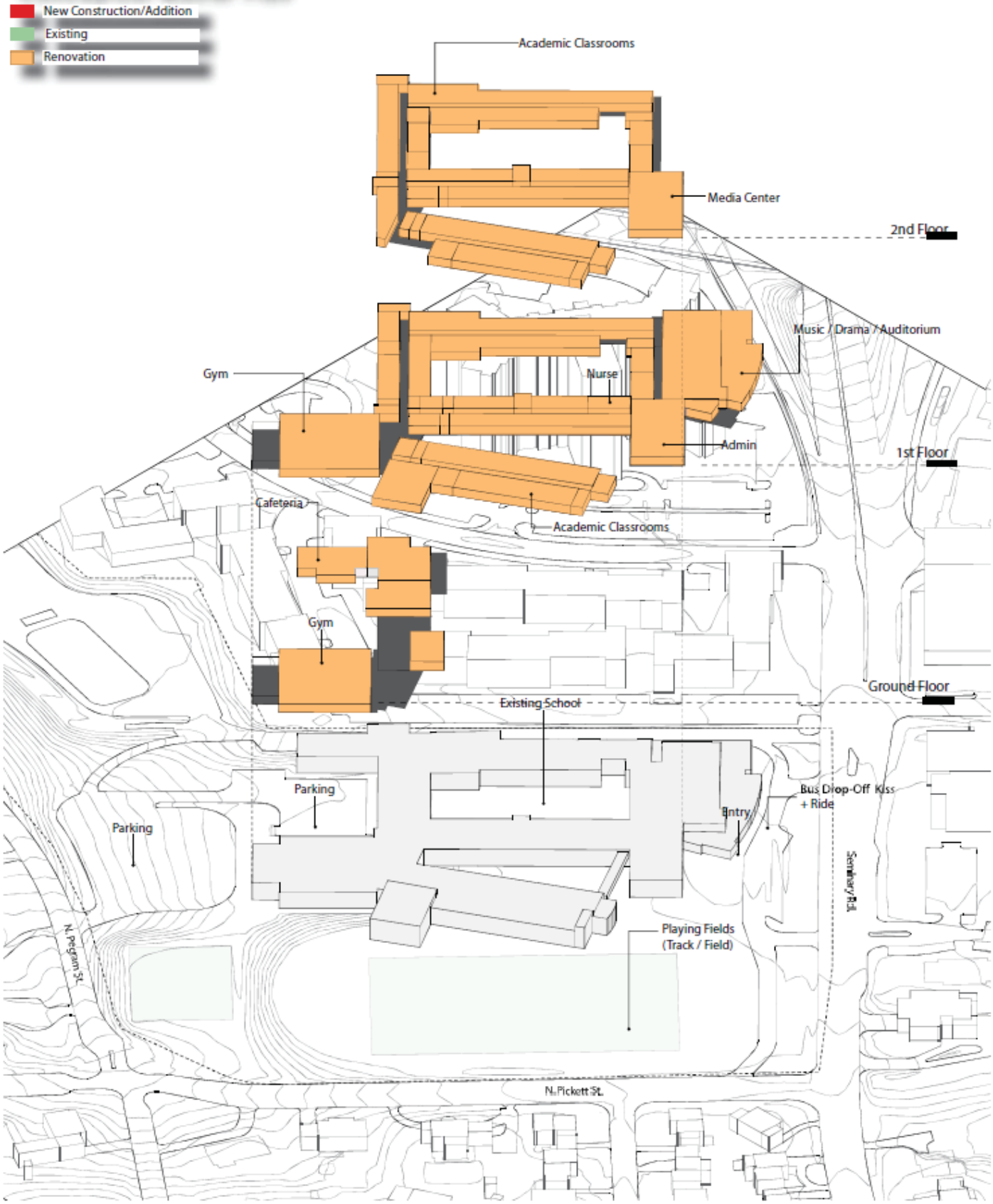


Master Plan concept showing potential new school on unimproved lower playing field at left.

School site looking south across Seminary Road with Seminary Hills Apartments at right and North Pegram Street behind the school at upper left.

Francis C. Hammond

Conceptual Master Plan



George Washington Middle School

1005 Mount Vernon Avenue, Alexandria, VA 22301

AT A GLANCE…			
Year Built 1935	*Current Floor Area* 237,332	*Lot Size (acres)* 23.2	*Core Classroom Surplus/Deficit (2020)* -1
Zoning R-B (054.01-01-01)	*Floor Area Permitted by Zoning (SF)* 574,090	*Floor Area Ratio* 0.75	*Total Program Surplus/Deficit (Sq.Ft.) (2020)* +3,546
POS (054.01-01-01)	0	0.0	
CDD #10 (044.03-07-02)			
School Site Satisfactory	*Building Assessment* Borderline	*Instructional & Support Spaces* Satisfactory	*Projected Utilization (2020)* 122%

Background

George Washington was built in 1935 and operated as a high school until 1971. In 1971, George Washington and Francis Hammond (FH) schools were reorganized to serve ninth and tenth graders while T.C. Williams served eleventh and twelfth grade. George Washington was reorganized again in 1979 to serve seventh, eighth and ninth graders. George Washington finally became a middle school in 1993. In 2014, George Washington had an enrollment of 1,223 students with measured capacity of 1,150 students. By 2020, enrollment is expected to increase to 1,399 students. Therefore, the existing school will be over capacity by 249 students.

The academic curriculum at George Washington includes reading, language arts, mathematics, social studies, science and also offers:

- Art, Choir, Band and Orchestra
- Computer applications
- Speech and Drama
- Foreign Languages (Chinese, French, German, Spanish and Latin)
- Technology
- ELL program for students learning English as a second language
- Special education programs
- Health/Physical Education
- Opportunity to join many after school programs [1]

[1] *http://www.acps.k12.va.us/gw*

Student Enrollment (# of students)

	2014	2020 Projection
Enrollment	1,223	1,399
Capacity	1,150	1,150

Color	Enrollment as % of Capacity	
	Below 80% of capacity	Substantially underutilized
	80 to 90% of capacity	Underutilized
	>90 to 100% of capacity	Near or at capacity
	>100 to 110% of capacity	Over capacity
	>110 to 120% of capacity	Substantially over capacity
	Above 120% of capacity	Extremely over capacity

Key Findings

Summary

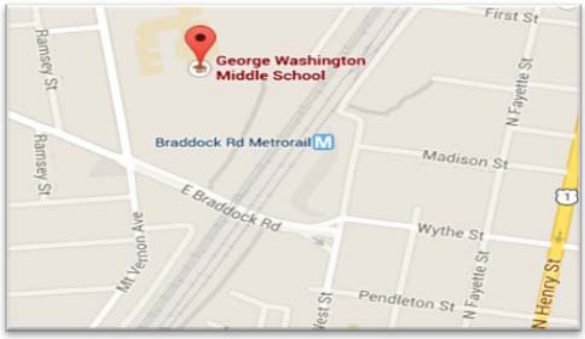
The data collected through this assessment reveals that George Washington Middle School meets 67 percent of the educational adequacy benchmarks for an ideal 21st century elementary school.

High Priority Items

- Core classrooms are undersized.
- Main entrance does not meet the recommended standards for access control.

School Site

Site Data	
Steep Slopes	*Isolated steep area*
Playgrounds	*2*
Recreation Features	
Resource Protection Areas	*No*
Parking	*271*
Storm Water Management	*Multiple inlets, two underground detersion systems.*



George Washington is not equipped with a dedicated vehicular traffic drop-off and pick-up area for students and visitors.
The school bus lane and the kiss-and-ride are located on the school premises, but essentially next to each other. Pedestrians being dropped off at the kiss-and-ride must cross the bus lane to access the school. The play areas, located behind the school, are in a good location and connect to a few pedestrian foot paths. However, to access the play fields, students must cross the thoroughfare road and parking lot. Outdoor learning areas were not observed.

Instructional and Support Spaces

George Washington earns a score of satisfactory for overall instructional and support spaces. This rating reflects areas of concern related to insufficient classroom sizes, absence of adequate storage and furnishings, and poor internal organization of the spaces. The most urgent items identified for this section of the assessment are core classroom size and capacity. Within the core classroom section, the academic classrooms are driving the overall rating to inadequate because the average size is 670 square feet, rather than the desired 850 square feet. While the average classroom is 22 percent undersized, which directly impacts capacity, the school has multiple un-used rooms that help improve the capacity score. The classrooms are also lacking temperature controls with many noting humidity issues.

The internal organization of a classroom defines its ability to support the recommended program activities within the space. Over 68 percent of classrooms do not have an interactive electronic presentation device.

Building Assessment

Over half the classrooms at George Washington do not have the technology infrastructure and tools to support a 21st century learning environment. Overall the school does not meet the division's expectations for small learning environments and key adjacencies. Academic clusters are present; however there are no extended learning areas or collaborative learning spaces within these clusters. The shared programmatic space is not centrally located nor appropriately clustered to allow for after-hours access as needed. Lastly, the faculty is unable to secure the rest of the school from the after-hours space as desired.

RECOMMENDATIONS

The school will be over capacity by 2020. In order to accommodate the projected enrollment, an interior renovation is required. Additionally, a small addition is recommended to provide a more visible and controlled access point.

GROUP 1 — REQUIRED PLANNING

- **Site** assessment to determine whether the drop-off location for the school can be relocated/ reconfigured (based on property boundaries, setbacks, etc.).
- **Explore** extending the main entry corridor to the existing gymnasium to help address the key shared space organization issues without the need for major reconfiguration or addition.
- **Assess** building condition comprehensively through a facility condition assessment.

GROUP 2 — FIRST PRIORITY

- **Reconfigure** the spaces within the existing school to meet the recommended size requirements for individual academic spaces as outlined in the educational specifications.
- **Reconfiguration/addition** of the main entry that would allow for a dedicated drop-off and entry point to the school from the existing bus lane. It would provide a more visible and controlled access point to the school for visitors as well.

GROUP 3 — SECOND PRIORITY

- **Equip** all classrooms and support spaces with individual climate controls, and technological equipment and infrastructure.
- **Provide** additional storage for teachers and students as well as an upgrade to the furniture, fixtures and equipment. The square footage from un -used spaces could be repurposed to increase the size of classrooms used throughout the day by students.

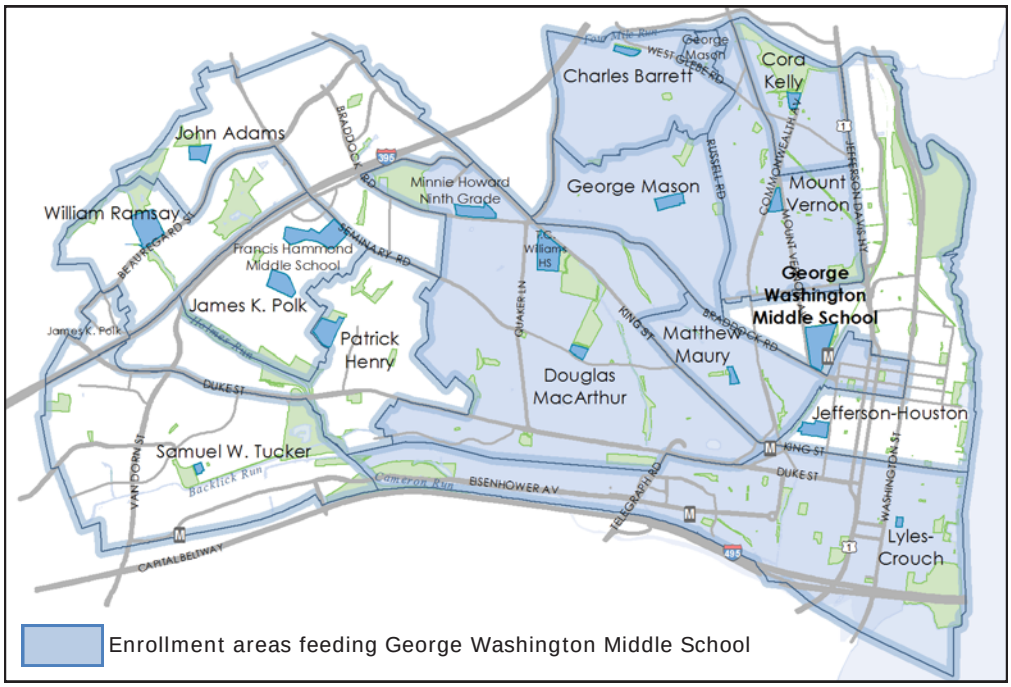
GROUP 4 — LONG RANGE RECOMMENDATIONS

CONCEPTUAL COST ESTIMATES

- **Complete Master Plan Construction $70M (in 2015 dollars)**
  - 15% contingency
  - 17% other fees, insurance, etc.
- **Total renovation of the existing building and 2,000 SF addition including:**
  - All new mechanical, plumbing, electrical and window systems
  - Façade rehabilitation
  - New food service and a/v equipment for gymnasium, auditorium, cafeteria and classrooms
  - New interior walls, floors and ceilings
  - New elevator

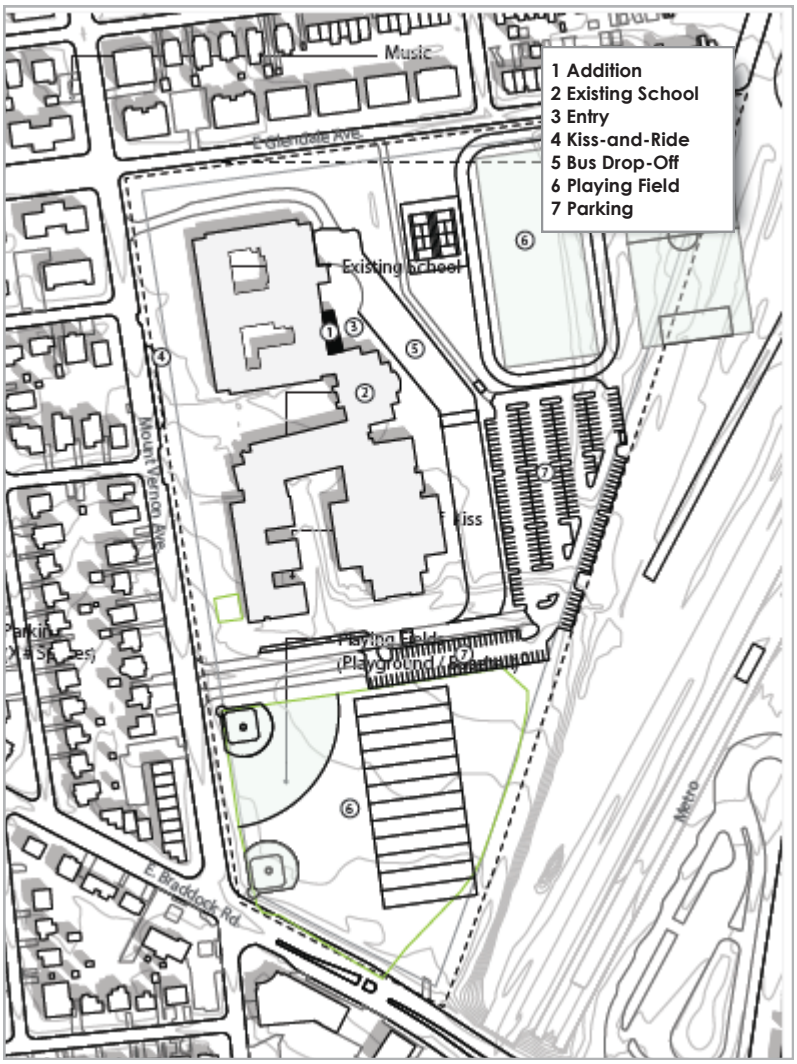
George Washington is not currently in the modernization program per the FY 2016-2025 CIP. This project will be evaluated based on ACPS priorities and funding constraints during the development of future CIPs.

George Washington Middle School



Neighborhood context looking south along I-395 across Seminary Road. Inova Hospital is at the far left.

School site looking south across Seminary Road with Seminary Hills Apartments at right and North Pegram Street behind the school at upper left.

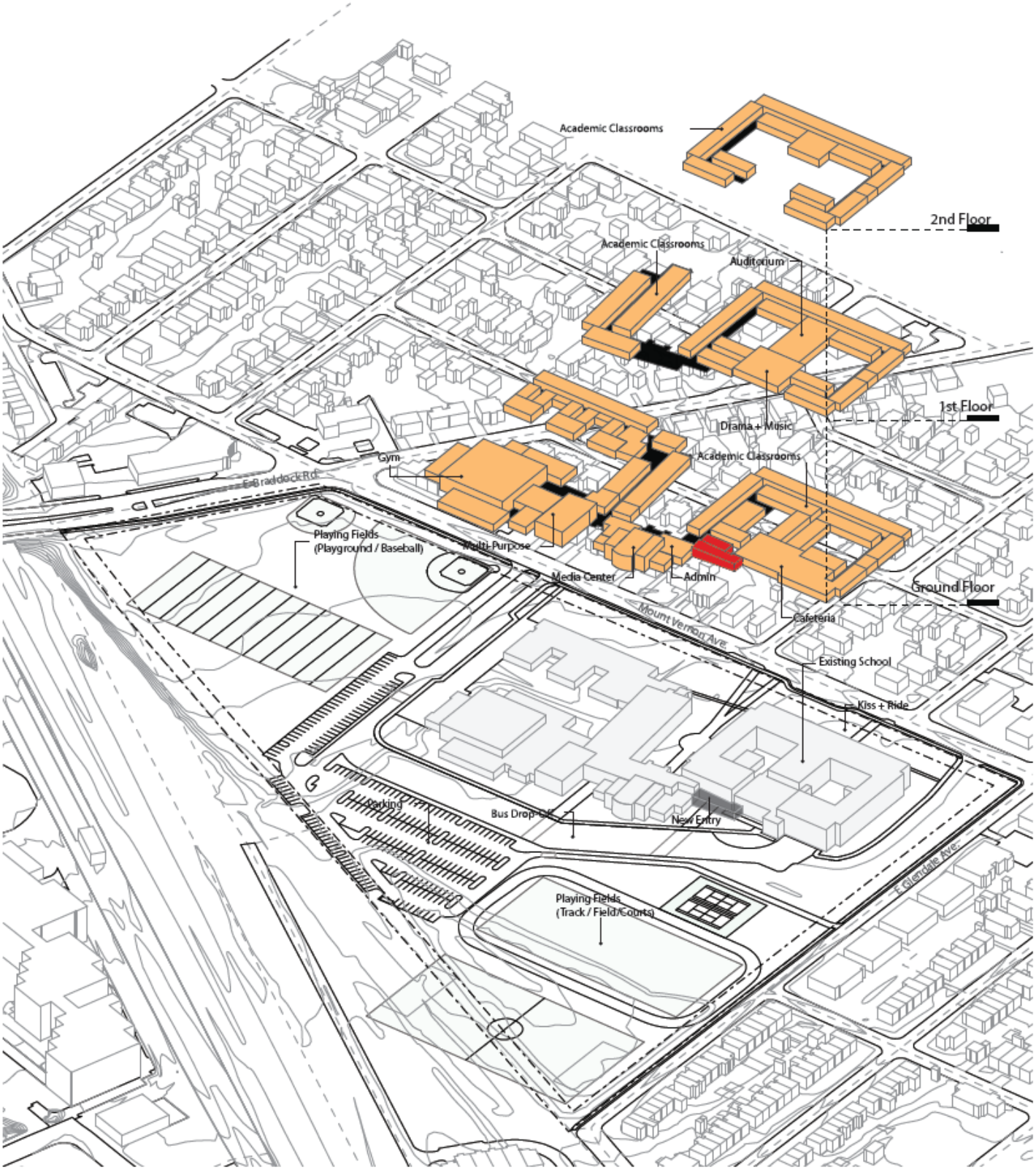


Master Plan Concept

George Washington

Conceptual Master Plan

New Construction/Addition
Existing
Renovation



T.C. Williams: Minnie Howard Campus

3801 West Braddock Road, Alexandria, VA 22302

At a Glance…		
Year Built 1954	*Current Floor Area* 130,435	*Floor Area Permitted by Zoning (SF)* 287,036
Zoning R-12(031.02-02-05)	*Lot Size (acres)* 6.6	*Floor Area Ratio* 0.549*
POS	5.4	0.0

T.C. Williams: Minnie Howard Campus was not included in the educational adequacy analysis.

Background

T.C. Williams is Alexandria's only high school. There are two campuses. The Minnie Howard Campus serves grade 9 and the King Street Campus serves grades 10-12. The Minnie Howard School building was originally constructed in 1954 as an elementary school. There was a major classroom and gymnasium addition in 1969 when it was converted to a middle school. The facility served as the central administrative offices from 1981 to 1993, when it was again renovated and became the Ninth Grade Center.

Technology & Greenovation

Since 2003, each high school student has been provided a laptop by ACPS. During the 2013 school year, ACPS piloted the use of Amplify devices, a customized Android™ tablet designed specifically for K-12 education, to more than 400 students.

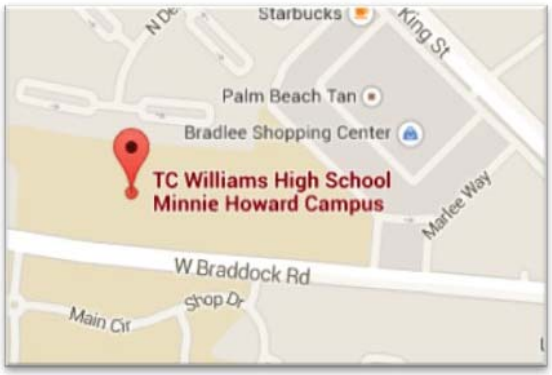
In 2009/2010, Minnie Howard received a *greenovation* project. Solar panels were installed and geothermal wells dug. The school rid itself of two huge, decades-old boilers and replaced them with one that is the size of a compact refrigerator. The project also featured low-flow plumbing fixtures to reduce water consumption, automated lighting controls to cut down on energy usage and solartubes, skylights that direct natural sunlight, from the rooftop to rooms below.[1]

** MPA2003-00010 and REZ2003-00066 granted the R20 zones to develop at 0.51*
FAR and increased the zoned size of the R20 lot (which normally allows 0.25)

[1] *http://www.acps.k12.va.us/tcw*

School Site

The Minnie Howard site has rolling topography. The site contains tennis courts, a turf field, pavilion and separate bathroom shelter. There are two vehicular accesses to the site. Both have parking areas.



Recommendation

The high schools were not included in the educational adequacy analysis. This work should be undertaken as a subsequent part of this planning effort.

T.C. Williams: King Street Campus

3801 West Braddock Road, Alexandria, VA 22302

At a Glance…

Year Built	*Current Floor Area*	*Floor Area Permitted by Zoning (SF)*
2007	461,147	547,000
Zoning	*Lot Size (acres)*	*Floor Area Ratio*
R-20 (032.04-09-08)	25.6	0.51*

T.C. Williams: King Street Campus was not included in the educational adequacy analysis.

Background

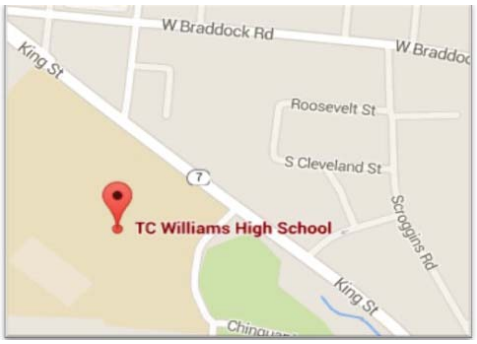
T.C. Williams is Alexandria's only high school. There are two campuses. The Minnie Howard Campus serves grade 9 and the King Street Campus serves grades 10-12. The King Street building is a state of the art facility that opened in 2007 and provides smaller learning communities as well as flexible academic space capable of meeting the evolving secondary school curriculum requirements. In Fall 2008, the second phase was complete and included an artificial turf sports field, renovated stadium, new athletic track, new playing field, new bus driveway, and a two story parking garage. The high school received a LEED Gold rating. The academic curriculum includes 188 courses. Special academic programs includes Academy of Finance, Advanced Placement/Honors, English as a Second Language, Special Education/Inclusion Program, STEM Academy and Vocational Programs.

Technology

Since 2003, each high school student has been provided a laptop by ACPS. During the 2013 school year, ACPS piloted the use of Amplify devices, a customized Android™ tablet designed specifically for K-12 education, to more than 400 students.[1]

School Site

The King Street campus includes high school football field and a six lane track. Six tennis courts are currently under construction and are expected to open spring 2015. Adjacent to the school is Chinquapin Park. Features of the park include athletic fields, basketball courts, garden plots, a picnic area and playground, tennis courts and a wooded area.



Recommendation

The high schools were not included in the educational adequacy analysis. This work should be undertaken as subsequent part of this planning effort.

**MPA2003-00010 and REZ2003-00066 granted the R20 zones to develop at 0.51 FAR and increased the zoned size of the R20 lot (which normally allows 0.25).*

[1] *http://www.acps.k12.va.us/tcw*