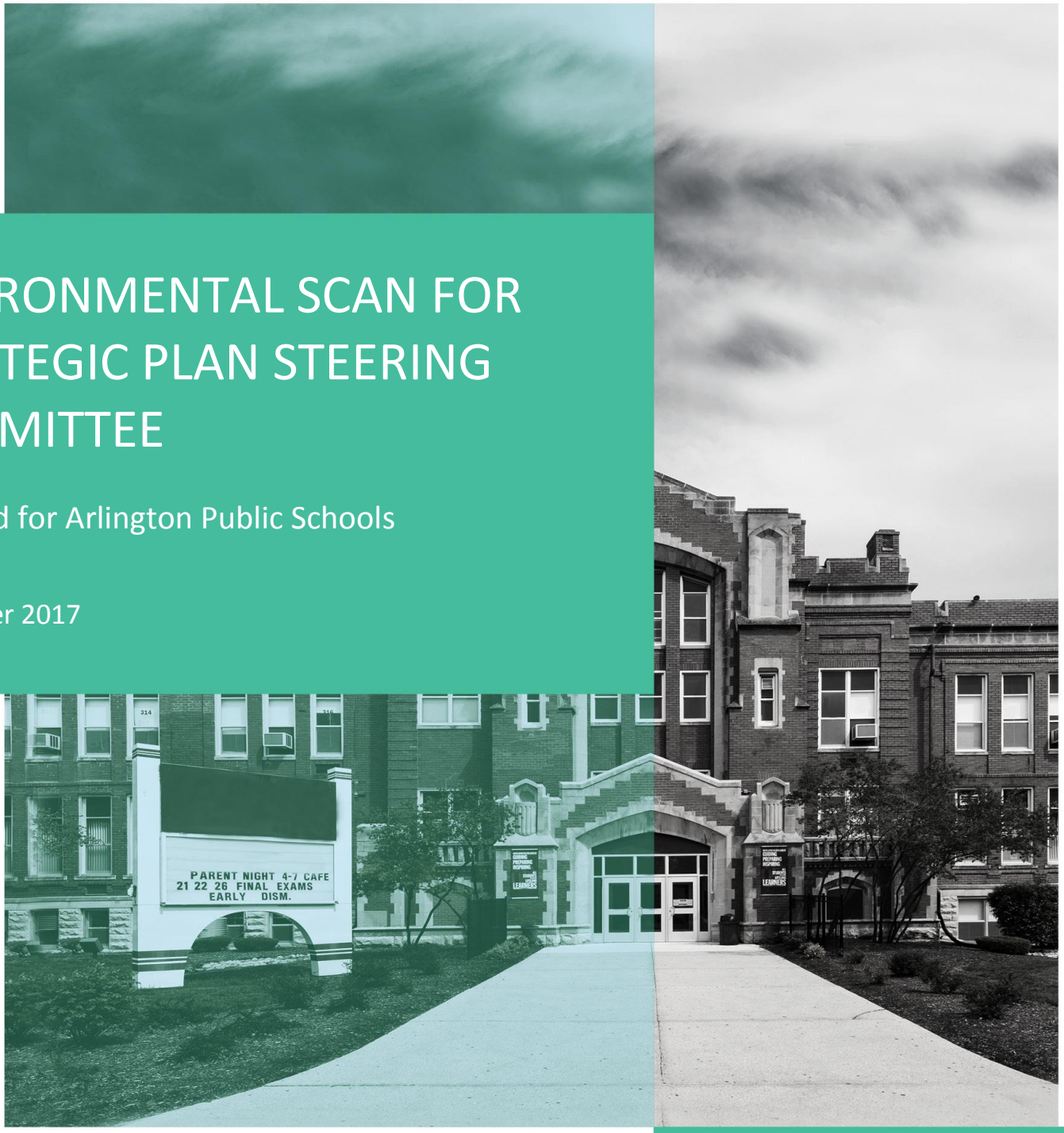
ENVIRONMENTAL SCAN FOR STRATEGIC PLAN STEERING COMMITTEE

Prepared for Arlington Public Schools

November 2017



The following report seeks to inform Arlington Public Schools' strategic planning process by reviewing local, state, and national trends that will affect Arlington Public Schools' future operations and sustainability.

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INTRODUCTION

Arlington Public Schools (APS) has requested Hanover Research's assistance in supporting the district's new strategic plan, beginning in 2018. Specifically, APS has tasked Hanover with identifying external factors—such as economic trends, education policies, and demographic trends—that could affect the district's short- and long-term operations and sustainability.

In support of this effort, the following report summarizes major trends relevant for APS's strategic planning process in eight major categories, summarized as follows:

- **Socio-demographics –** including changes in Arlington County's resident make-up and characteristics of the student population (age, race, sex, income, disabilities, etc.).
- **Economics –** including trends related to employment, state and federal funding, and local tax revenue.
- **Political and Regulatory** – including local, state, and federal policies and regulations affecting APS.
- **Technological and Scientific –** including trends in the use of technology or scientific advances for operations and learning.
- **Educational Trends –** including any "recognized patterns or directions" in educational practices.
- **Customers and Citizens –** including trends in the needs, interests, desires, and concerns of Arlington stakeholders, such as students, parents, and community members.
- **Competition –** including trends related to organizations or companies providing the same services as APS
- **Enrollment Change Management** – including strategies to address rapid enrollment growth in the district and identifies case studies of the efforts of other districts experiencing similar enrollment growth as APS.

In each category, Hanover considers three *levels* of opportunities and threats that may affect the district: national, state, and local factors. Each subsection provides a brief review of relevant trends and provides a list of additional data sources that may be relevant for the local strategic planning process.

SOCIO-DEMOGRAPHIC FACTORS

Arlington's population is growing, and the proportion of young children and high-income households is increasing. Housing costs in the county have also increased in recent years.

Arlington County's government estimates that the population will grow to 289,500 by the year 2040, an almost 40 percent increase in population from 2010.[1] Demographics have been shifting over the past 15 years, with children ages 0 to 5 currently among the fastest-growing age groups in Arlington.[2] After enrollment declines from the mid-1960s to the 1990s, enrollment in APS began increasing by around 1 to 2 percent each year from the 1990s to the mid-2000s, and by 2 to 5 percent each year from the mid-2000s to present.[3] By 2024, the student population is expected to increase by 7,800 students, bring total enrollment to over 30,000.[4] The county's 2015 Community Facilities Study notes that APS will need "additional facilities to meet the educational needs of students."[5]

The average value of Arlington residences doubled from 2000 and 2015.

As Arlington's population has grown, the proportion of high-income populations has also grown substantially. Households with incomes over $200,000 accounted for almost 20 percent of households in 2013, a significant jump from around 6 percent in 2000.[6] This increase in high-income households has coincided with rising housing costs.[7] The average value of Arlington residences doubled from 2000 to 2015, from $202,770 ($280,000 in 2015 dollars) to $579,800.[8] Further, housing costs have outpaced wage increases in recent years; from 2014 to 2015, housing prices rose by 6.6 percent, while incomes increased by just 1.7 percent.[9] These rising housing costs may cause some groups to leave Arlington. Millennials currently make up the largest age group in the county, but they may not stay in Arlington in the long-term due to the lack of opportunities for affordable home ownership. Families with children are also affected by the lack of affordable, single-family homes—Arlington's condominiums and apartments, although in large supply, may be unappealing to families due to bedroom/occupancy limits.[10]

[1] "Population and Employment Forecasts." Arlington County Government. https://projects.arlingtonva.us/data-research/future-data-forecasts/
[2] "Arlington Community Facilities Study - Final Report." Arlington County Government, November 6, 2015. p. 82. https://projects.arlingtonva.us/data-research/future-data-forecasts/
[3] Ibid., pp. 43–44, 82.
[4] Ibid., p. 57.
[5] Ibid., p. 82.
[6] Ibid., p. 42.
[7] Ibid., pp. 83–84.
[8] Ibid., p. 42.
[9] Ibid., p. 88.
[10] Ibid., pp. 87–88.

These demographic and housing trends have several implications. First, there are potential implications for the county's tax revenue—if Arlington experiences significant declines in its millennial population, it may be less attractive to employers, which could reduce its commercial tax base.[11] Second, rising housing prices may further reduce diversity in the community and in schools, and lead to increasing disparities between various neighborhoods, especially between the northeast and southwest portions of the county.[12]

Figure 1: Additional Data Sources – Sociodemographic Factors

SOURCE	DESCRIPTION
Arlington County Community Profiles	
VA Employment Commission	The Virginia Employment Commission publishes community profiles for all counties in the state, providing demographic statistics of the population including age, race/ethnicity, and gender characteristics; unemployment rates; employment by industry; and educational attainment levels.
Arlington County Government	The Arlington County government also produces a similar Community Profile on an annual basis.
Other Demographic Data Sources	
American Community Survey – American Factfinder	Data from the American Community Survey can provide information on a wide range of population demographic characteristics (age, race/ethnicity, and gender), as well as data on household composition, income, employment, foreign-born population and migration trends, language spoken at home, housing status (e.g., rent or own), and receipt of public assistance. Data can be analyzed at various geographic levels, e.g. state, city, county, zip code, and census tract.
American Community Survey – Data USA	Data USA, a data visualization engine managed by Deloitte, Macro Connections, and Datawheel, also provides visualizations of ACS-derived demographic data at the county level.
Arlington Community Facilities Study	Arlington County completed a Community Facilities Study in 2015 that provides population projections for the county through 2040 and school enrollment projections through 2025.
County Demographic Projections	Arlington County's planning office also posts population and employment forecasts online on a regular basis.
Health and Quality of Life Data	
County Health Rankings	The County Health Rankings compare Arlington County's outcomes for a variety of health and quality of life indicators to other counties in the state and to Virginia as a whole.

[11] Ibid.
[12] Ibid., pp. 83–84.

ECONOMIC FACTORS

Local revenue for APS makes up nearly 80 percent of the district's general budget and is largely dependent on tax revenue from residential real estate. Real estate costs will likely continue to rise in the near-term (two to five years); however, long-term growth may depend on the growing millennial population's desire and ability to afford home ownership in the county.

As noted in the previous section, the cost of living in the Arlington area continues to rise, driven in part by rising housing costs within the county. The Northern Virginia Association of Realtors predicted in 2017 that the price of housing in Northern Virginia would likely *continue to increase* in the near-term (two to five years), as local wages continue to rise while the supply of housing remains somewhat limited.[13] However, the long-term status of the housing market in Arlington and the surrounding area depend on whether millennial residents, who currently make up approximately 47 percent of the population in Arlington County and many of whom are currently renters, are willing and able to become home-owners in the Arlington area.[14]

The local housing market and home prices have significant implications for revenue at APS. According to the Arlington County Government, residential real estate taxes currently make up about 35 percent of the County's annual budget; the county also notes that growing enrollment at APS requires increasing local financial support and that "the $484 million support for schools now consumes almost all of the $510 million in real estate taxes generated from single family homes, condos, and apartments."[15] As of academic year 2017-2018, local tax revenue made up approximately 80 percent of the school district's annual budget.[16]

Figure 2: Arlington County Employment Highlights

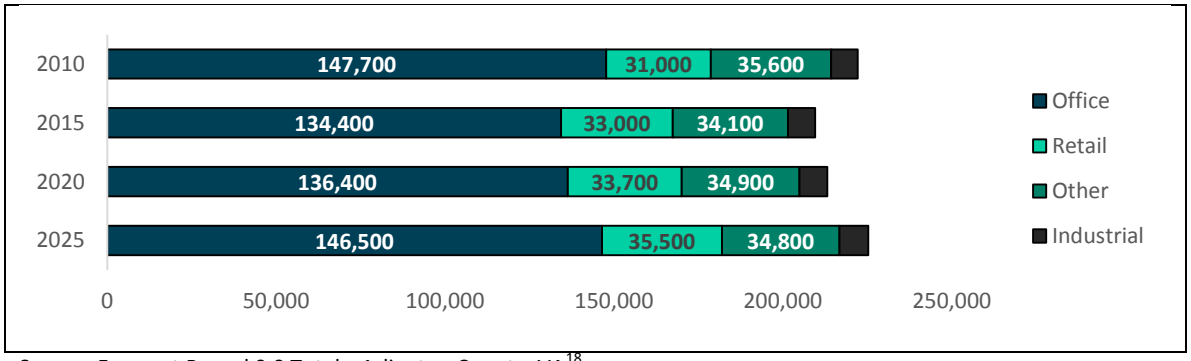
Five Fastest-Growing Occupations, 2014-2024	Five Fastest-Growing Industries, 2014-2024
✓ Occupational Therapy Assistants	✓ Health Care and Social Assistance
✓ Physical Therapist Assistants	✓ Professional, Scientific, and Technical Services
✓ Personal Financial Advisors	✓ Construction
✓ Physical Therapist Aides	✓ Accommodation and Food Services
✓ Home Health Aides	✓ Arts, Entertainment, and Recreation

Source: Arlington County Community Profile[17]

[13] Shanholtz, S.A. "The Northern Virginia Economy and Housing Market Track Slightly Upward This Year Will That Stick? It Depends." Northern Virginia Realtor Association, July 2017. https://nvar.com/realtors/news/re-view-magazine/article/jul-aug/2017-07-08-Northern-Virginia-Housing-Market-econoy-to-track-upward
[14] Ibid.
[15] "Breaking Down the Budget." Arlington County. https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/18/2017/09/Budget-Infographic.pdf
[16] Ibid.
[17] Shanholtz, S.A. "The Northern Virginia Economy and Housing Market Track Slightly Upward This Year. Will That Stick? It Depends." Northern Virginia Association of Realtors, July/August 2017.

In terms of local employment, fast-growth occupations over the next ten years are largely clustered in health care occupations (see Figure 2). Likewise, the local industries with the fastest predicted growth over the next 10 years include Health Care and Social Assistance; Professional, Scientific, and Technical Services; and Construction. As shown in Figure 3 below, projected job growth in Arlington County through 2025 will largely create new office jobs, followed by growth in retail jobs.

Figure 3: Arlington County Employment Projections by Type of Employment, 2010-2025



Source: Forecast Round 9.0 Totals, Arlington County, VA[18]

Figure 4: Additional Data Sources – Economic Factors

Source	Description
Labor Market Data	
Labor Market Projections	The Bureau of Labor Statistics (BLS) provides long-term industry and occupational projections from 2014 to 2024 at the national level, while the Virginia Department of Labor provides long-term occupational and industry projections at the state level. Local-level projections are provided by the Virginia Employment Commission.
Unemployment Rates	BLS tracks the unemployment rates for the Washington metropolitan area (and other geographic areas) on a monthly basis.
Local and State Development and Housing Market	
Development Tracking– Arlington County Government	Arlington County tracks residential and commercial development activity in Arlington, and publishes an annual report highlighting trends development trends over the past 10 years.
Housing and Urban Development Housing Market Analysis	The Department of Housing and Urban Development (HUD) published a comprehensive housing market analysis of the Washington metropolitan area in January 2015, estimating supply and demand in both the sales and rental markets from 2015 to 2018.
Housing Price Index	The Federal Housing Finance Agency publishes monthly and quarterly reports of the House Price Index (HPI), which measures changes in the price of single-family homes for various geographic levels.

https://nvar.com/realtors/news/re-view-magazine/article/jul-aug/2017-07-08-Northern-Virginia-Housing-Market-econoy-to-track-upward

[18] "Forecast Round 9.0 Totals: Units, Households, Population, and Employment: Arlington County, VA." Arlington County. https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/31/2014/03/Round-9_0-Units-HH-and-POP_Employment-FINAL.pdf

Source	Description
MRIS and Northern Virginia Realtor Association	Organizations such as MRIS (a housing listing service) and the Northern Virginia Realtor Association provide information on average home sale prices on a yearly and monthly basis, respectively.
Transit Accessibility – Arlington County Government	Arlington County provides transit accessibility and density forecasts from 2010 to 2040 based on population and employment projections.
Local Taxes	
Local Tax Rates	Arlington County's FY2018 budget (including tax rates) and proposals for the FY2019 budget are posted on its website.
Spending and Inflation	
Consumer Price Index	The Consumer Price Index (CPI) provides information on inflation and the cost of various goods and services; BLS publishes CPI data for the Washington metropolitan area every other month.
Consumer Expenditure Survey	The Census Bureau conducts an annual Consumer Expenditure Survey, which collects data on the proportion of income that consumers spend on housing, transportation, insurance, food, healthcare, and other goods and services. The most recent CES data for the Washington metropolitan area is from 2015-2016. BLS also provides summaries of CES data that allow comparisons between selected regional MSAs.
Employment Cost Index	Finally, the Employment Cost Index (ECI) provides information on the price of labor (such as the cost of wages and benefits that employers provide), which can affect inflation in the price of goods and services. BLS reports this data on a quarterly basis.
Other National, State, and Local Economic Indicators	
State New Economy Index	A 2014 report by the Information Technology and Innovation Foundation rates each state on the degree to which its economy matches the ideal structure of the "New Economy," defined as availability of knowledge jobs, number of business startups and entrepreneurs, use of information technology to deliver goods and services, and "innovation capacity." These indicators can complement the above traditional economic indicators to provide APS with a more in-depth understanding of economic trends in Virginia.
U.S. Bureau of Economic Analysis	The U.S. Bureau of Economic Analysis publishes national, state, and metropolitan area-level GDP data on an annual basis. George Mason University's Center for Regional Analysis provides a more detailed analysis of GDP growth in the Washington, D.C. Metropolitan Area and Commonwealth of Virginia for 2016 using BEA data.
Brookings Institution Metro Monitor Dashboard	In addition, the Brookings Institution's Metro Monitor Dashboard provides key economic growth and prosperity indicators for the Washington metropolitan area on an annual basis, such as job growth and gross metropolitan product.
State and Local Key Economic Indicators	Arlington County and the state of Virginia track key economic indicators on a monthly basis and quarterly basis, respectively. At the county level, these indicators include office vacancy rates, housing listings and sales, housing prices, hotel occupancy rates, and retail sales. At the state level, these indicators include changes in job availability, unemployment rates, unemployment insurance claims, and average hourly earnings for metropolitan statistical areas throughout Virginia.

POLITICAL AND REGULATORY FACTORS

The implementation of the *Every Student Succeeds Act* (ESSA) will be the most impactful political/regulatory factor in the next several years for school systems throughout the United States. The Act requires states to adopt accountability indicators that consider both academic and school quality indicators and places an increased emphasis on ensuring the success of English Learners (ELs).

The Every Student Succeeds Act (ESSA) was passed in December 2015. The Act maintains many existing requirements related to state standardized testing, but "offers the prospect of new flexibility and a lighter federal rein on how states shape the specifics in such contentious areas as teacher evaluation and the proper weighting of indicators that go into measuring school quality."[19] As of October 2017, Virginia's ESSA plan was submitted for review to the U.S. Department of Education, but not has not yet been approved.[20]

Figure 5: ESSA Accountability Indicators Summary

State Accountability Systems Must Address:
✓ Academic achievement
✓ Academic progress
✓ Graduation rates
✓ Progress in English Learners gaining proficiency
✓ School quality

Source: Virginia Department of Education[21]

The largest accountability-related change required by the new law is the incorporation of one of more non-academic measures of school success and/or student opportunity into the accountability system, in addition to more traditional indicators such as academic achievement and academic progress. [22] Nonacademic measures may include a variety of factors, including student engagement and school climate. Virginia, along with 33 other states, aims to include chronic absenteeism or attendance into their school accountability systems.[23]

The law also places additional emphasis on the performance of English Learners (ELs), making "accountability for those students a priority."[24] Thus, local school districts should expect to direct greater resources to support this student population.

[19] "Scrambling to Fill Out ESSA's Policy Details." *Education Week, Quality Counts 2017*, December 30, 2016. https://www.edweek.org/ew/articles/2017/01/04/scrambling-to-fill-out-essas-policy-details.html?intc=EW-QC17-AP

[20] [1] "Every Student Succeeds Act." Virginia Department of Education. http://www.doe.virginia.gov/federal_programs/esea/essa/index.shtml [2] Klein, A., Sawchuk, S., and Ujifusa, A. "A Guide to State ESSA Plans: Goals, Teacher Quality, and More." *Education Week*. https://www.edweek.org/ew/section/multimedia/a-guide-to-state-essa-plans-goals-teacher-quality.html

[21] "ESSA: Highlights and Implementation Updates." Virginia Department of Education, p. 6. http://www.doe.virginia.gov/federal_programs/esea/essa/essa_highlights_and_implementation_updates.pdf

[22] Klein, A. "The Every Student Succeeds Act: An ESSA Overview." *Education Week*, March 31, 2016. https://www.edweek.org/ew/issues/every-student-succeeds-act/index.html?intc=content-exlaineressa

[23] Klein, Sawchuk, and Ujifusa, Op. cit.

[24] Klein, A. "The Every Student Succeeds Act: An ESSA Overview," Op. cit.

Figure 6: Additional Data Sources – Political and Regulatory Factors

SOURCE	DESCRIPTION
ESSA Guidance and Information Sources	
***Education Week* Quality Counts Report**	*Education Week* publishes an annual report on state-level efforts to improve public education. The 2017 report focuses on state-and district-level efforts to prepare for implementation of the Every Student Succeeds Act (ESSA).
***Education Week* Guide to ESSA Plans: Goals, Teacher Quality, and More**	*Education Week* maintains a webpage as of October 2, 2017 tracking the progress of each state's ESSA proposal, as well as summarizing high-level trends in state level plans.
Virginia's ESSA State Plan	Virginia's ESSA plan is posted on the Department of Education's website. The plan was submitted to the U.S. Department of Education in September 2017.

TECHNOLOGICAL AND SCIENTIFIC FACTORS

As the availability of educational technology continues to increase, APS must consider how to prepare students for participation in an increasingly digital 21st Century world and workforce. Last year, Virginia became the first state in the nation to require computer science as a core subject at the elementary and secondary levels.

Technological and scientific advances will continue to have a significant impact on K-12 education over the coming years and decades; increasing technology integration at the school and classroom level results in changes in both *how* educators teach and *what* students are expected to learn and be able to do. For example, national organizations such as Future Ready Schools are leading a national effort to support both high-quality teaching and dynamic technology integration in a personalized learning framework.[25] These approaches require teachers to incorporate instructional strategies such as collaborative learning, blended learning, and learning analytics into the classroom.

> *"We will be sending a clear message… to all the businesses around the globe that we're very serious about… computer science, and what we need to do to build those skill sets of the future."*
>
> *- VA Gov. Terry McAuliffe*

Similarly, the Partnership for 21st Century Learning emphasizes the need for students to learn information, media, and technology skills such as: Information Literacy; Media Literacy; and Information, Communications, and Technology (ICT) Literacy.[26] Technology initiatives in K-12 education increasingly involve developing students' technology skills, with a particular focus on computer coding as a literacy.[27] The annual New Media Consortium/CoSN report, most recently published in 2017, identifies several "key trends" likely to drive technological innovation in K-12 education based on a national survey with experts and practitioners. Most recently, the report highlighted "coding as a literacy" as a rising trend over the next two years.[28]

At the state and local level, increasing attention is also being allotted to computer science and computer coding in particular. In 2016, Virginia became the first state in the United States to require computer science as a core academic course at the elementary, middle,

[25] "Future Ready Framework." Future Ready Schools. https://dashboard.futurereadyschools.org/framework/framework-overview
[26] "Framework for 21st Century Learning." Partnership for 21st Century Learning. http://www.p21.org/storage/documents/docs/P21_framework_0816.pdf
[27] See, for example:
[1] Schaffhauser, D. "What's Hot: 9 Major Ed Tech Trends for 2017." *THE Journal*, January 12, 2017. https://thejournal.com/articles/2017/01/12/whats-hot-9-major-ed-tech-trends-for-2017.aspx
[2] "NMC/CoSN Horizon Report 2017 K-12 Edition." NMC/CoSN, 2017, pp. 10-11. https://cdn.nmc.org/media/2017-nmc-cosn-horizon-report-k12-EN.pdf
[28] Ibid.

and high school levels.[29] Furthermore, Virginia is one of just "a handful of states actively working to develop K-12 computer science standards;" a law passed in 2016 requires that Virginia's K-12 standards address computer science, computational thinking, and computer coding. *The Atlantic* reported in October 2016 that the state plans to use the K-12 Computer Science Framework—released in 2016 as a result of collaboration between The Association for Computing Machinery, Code.org, Computer Science Teachers Association, Cyber Innovation Center, and National Math and Science Initiative—as the basis for Virginia's new learning standards. The state plans to review and adopt the proposed learning standards in October 2017.[30]

Finally, a recent survey of K-12 IT leaders working in school districts across the country found that cyber security and student data privacy are also growing priorities among district technology leaders, as well as ensuring sufficient technology infrastructure to support increased use of mobile devices in the classroom.[31]

Figure 7: Additional Data Sources – Technology and Scientific Factors

SOURCE	DESCRIPTION
Sources Related to State Trends in Technology Education	
Proposed Virginia K-12 Computer Science Learning Framework and Standards	The K-12 Computer Science Framework emphasizes equity in computer science, outlining what students should know and be able to do to become technologically literate citizens. **The K-12 Computer Science Standards** focus on topics that students should understand by various grade levels, including computing systems, networks and the internet, data and analysis, and algorithms and programming.
Strategic Review of Technology Education	The Virginia Department of Education conducted a "Strategic Review of Technology Education" in the state in 2017. Ultimately, the report recommended taking advantage of the current climate of "unprecedented" support for STEM education to promote technology and engineering education for all students K-12.
Sources Related to National Trends in Technology Education	
NMC/CoSN Horizon Report – 2017 K-12 Edition	This report from NMC/CoSN examines opinions from experts and practitioners in K-12 education and educational technology to identify and predict near-term and long-term trends in K-12 education, with a particular emphasis on innovative technology trends.
CoSN K-12 IT Leadership Survey Report	This 2017 survey of IT leaders in school districts across the country captures both the demographic trends in IT leadership as well as key priorities of IT leaders, including district priorities for technology integration and major areas of concern in expanding technology in the classroom.

[29] Heitin Loewus, L. "Va. Gov. Signs K-12 Computer Science Bill, Making the Subject a Requirement for All." *Education Week*, May 19, 2016. http://blogs.edweek.org/edweek/curriculum/2016/05/virginia_governor_signs_k-12_computer_science_bill.html

[30] "Standards of Learning (SOL) & Testing - Computer Science." Virginia Department of Education. http://www.doe.virginia.gov/testing/sol/standards_docs/computer-science/index.shtml

[31] "K-12 IT Leadership Survey Report." CoSN, 2017. http://cosn.org/sites/default/files/CoSN_ITLdrship_Report_2017_040317.pdf

EDUCATIONAL TRENDS

Among the most important recent educational trends at the national and state levels include a rising focus on social-emotional learning and increased emphasis on high-quality career and technical education.

Districts planning for the future should consider the growing importance of a number of trends in K-12 education. Three of these key trends are summarized in Figure 8, including social-emotional learning, career and technical education, and technology integration.

Figure 8: Summary of National Trends in K-12 Education

Rising Focus on Social-Emotional Learning (SEL)	In recent years, school districts across the United States have increasingly focused on supporting students' social-emotional learning, or SEL. Recent research suggests that SEL skills such as self-awareness, self-management, and responsible decision-making correlate with positive academic outcomes,[32] and that employers increasingly emphasize "soft skills" as desirable traits for future employees.[33] Organizations such as the Collaborative for Academic, Social, and Emotional Learning (CASEL) have lead the effort to measure social and emotional learning skills among K-12 students.[34]
Emphasis on Career and Technical Education (CTE)	States nationwide have taken a new interest in revitalizing career and technical education (CTE) programs that aim to prepare students for the 21st Century workforce.[35] Research suggests that recent emphasis on CTE aims to meet the needs of the modern labor market, in which employers often struggle to fill "middle-skill" technical jobs in IT, healthcare, and advanced manufacturing.[36] It should also be noted that CTE ranked fourth among the top 10 critical shortage teaching endorsement area in Virginia for academic year 2017-2018, potentially presenting a challenge for local districts as they expand and improve CTE programming.[37]
Technology Integration in the Classroom	As districts invest in more technology infrastructure, the integration of technology into classroom learning is a growing trend in K-12 education. These may include technological innovations such as cloud computing, mobile learning, bring-your-own-device initiatives, learning analytics, open content, and coding as a literacy.[38]

[32] "Core SEL Competencies." CASEL. http://www.casel.org/core-competencies/
[33] [1] Blad, E. "Teachers Weave Social-Emotional Learning into Academics." *Education Week,* March 5, 2017. http://www.edweek.org/ew/articles/2017/05/10/teachers-weave-social-emotional-learning-into-academics.html [2] "Social and Emotional Learning." The Future of Children, 27:1, Spring 2017. http://www.wallacefoundation.org/knowledge-center/Documents/FOC-Spring-Vol27-No1-Compiled-Future-of-Children-spring-2017.pdf
[34] "What is SEL?" CASEL. http://www.casel.org/what-is-sel/
[35] [1] Gewertz, C. "Growing Number of States Embrace Career Education." *Education Week*, October 4, 2017. https://www.edweek.org/ew/articles/2017/10/04/growing-numbers-of-states-embrace-career-education.html [3] Jacob, B.A. "What We Know About Career and Technical Education in High School." Brookings Institute, October 5, 2017. https://www.brookings.edu/research/what-we-know-about-career-and-technical-education-in-high-school/
[36] Schwartz, R. "Memo: Career and Technical Education." Brookings Institute, December 13, 2016. https://www.brookings.edu/blog/brown-center-chalkboard/2016/12/13/memo-career-and-technical-education/
[37] "Commonwealth of Virginia Critical Shortage Teaching Endorsement Areas for 2017-2018. School Year," Op. cit.
[38] See subsection "Technology and Scientific Factors" for more information.

Within Virginia, school districts will also be affected by teacher shortage areas, listed in Figure 9 below for academic year 2017-2018. The need for special education teachers as well as elementary, middle school, and CTE teachers may impact the way school districts must recruit and retain certified staff members.

Figure 9: Top 10 Critical Shortage Teacher Endorsement Areas in VA, 2017-2018

- 1. Special Education
- 2. Elementary Education, Grades PreK-6
- 3. Middle Education, Grades 6-8
- 4. Career and Technical Education
- 5. Math Grades 6-12 (including Algebra I)
- 6. School Counselor PreK-12
- 7. English (Secondary)
- 8. Foreign Languages, PreK-12
- 9. Health and Physical Education PreK-12
- 10. History and Social Science (Secondary)

Source: Virginia Department of Education[39]

Figure 10: Additional Data Sources – Educational Trends

Source	Description
Sources Related to State Trends in K-12 and Higher Education	
Teacher Shortage Data	A 2016 report by the Virginia Department of Education summarizes the teacher shortage problem in the state and provides recommendations for addressing the shortage.[40] The most recently available list of critical teacher shortage areas is for academic year 2017-2018.
2017-18 Tuition and Fees Report: Virginia's State-Supported Colleges and Universities	Recent reports by the State Council of Higher Education for Virginia and the Joint Legislative Audit and Review Commission provide an overview of trends in tuition costs at Virginia's public colleges and universities—costs have risen in recent years as state funding for higher education has decreased.
Community College-University Articulation Agreements	Virginia's Community Colleges' website lists guaranteed admissions agreements between the state's 23 community colleges and more than 30 public, four-year colleges and universities.

[39] "Commonwealth of Virginia Critical Shortage Teaching Endorsement Areas for 2017-2018. School Year." Virginia Department of Education. http://www.doe.virginia.gov/teaching/workforce_data/shortage_areas/2017-2018.pdf

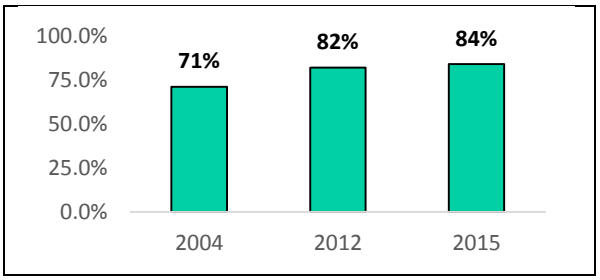
[40] "The Shortage of Qualified Teachers in the Commonwealth of Virginia and Recommended Strategies for Addressing the Shortage." Virginia Department of Education, January 4, 2016. http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/RD642016/$file/RD64.pdf

CUSTOMERS & CITIZENS

Arlington County residents report increasing satisfaction with public school offerings in the district over the last decade. However, the District faces new challenges to effectively serve students, including rising rates of bullying, increasing levels of self-reported stress, and need for mental health support among adolescents.

According to the Arlington County Resident Satisfaction Survey—most recently conducted in 2015—84 percent of residents report satisfaction with the county's public schools (see Figure 11). Nationwide, ETC Institute's Direction Finder survey finds that approximately 70 percent of residents in counties across the nation are satisfied with their public schools, suggesting that **APS is above average in terms of customer satisfaction.**

Figure 11: Satisfaction with Quality of Public Schools in Arlington County



Note: Percentage represents respondents selecting a 4 or 5 on a 5-point satisfaction scale.[41]

However, while overall satisfaction with public schools is relatively high, APS faces a number of challenges for effectively meeting the needs of the current student population. The 2017 Youth Risk Behavior Survey (YRBS), conducted by Arlington County since 2001, reveals several trends that may impact APS's school climate and student academic and emotional development. Compared to the 2013 survey, students report higher instances of bullying at multiple grade levels; furthermore, 50 percent of female students in Grades 8, 10, and 12 report being sexually harassed at school.

> *"Youth who report being the victim of bullying has increased across multiple grades."*
>
> *- Executive Summary, Arlington County YRBS 2017*

Student-reported stress levels and mental health also display concerning trends; the survey finds that "the number of youth who report feeling sad or hopeless for two weeks or more during the past year has increased" compared to 2013 levels. Moreover, the majority of students in Grades 12, 10, and 8 report feeling stressed by school work "often or very often."[42]

[41] "Arlington, Virginia 2015 Direction Finder Survey Final Report." Conducted for Arlington County, Virginia by ETC Institute, 2015, p. 12. https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/6/2015/06/Arlington2015DF_final-report_Sections-1-4.pdf

[42] "Executive Summary." Arlington County. https://arlingtonva.s3.dualstack.us-east-1.amazonaws.com/wp-content/uploads/sites/41/2017/10/EXECUTIVE-SUMMARY.pdf

Figure 12: Additional Data Sources – Customers

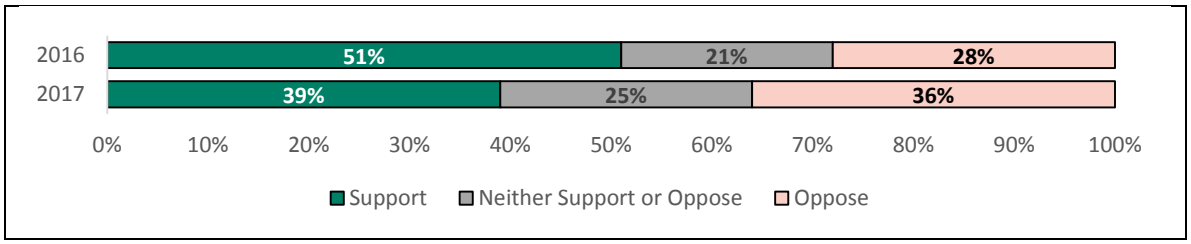
SOURCE	DESCRIPTION
Arlington Partnership for Children, Youth, and Families	The Partnership works closely with APS and the Arlington County Government and could be a good potential source of information regarding stakeholders' beliefs and perceptions.
Arlington Resident Satisfaction Survey	Arlington County conducted a resident satisfaction survey in 2015, assessing satisfaction with a variety of county services, including public schools.
Youth Risk Behavior Survey	The Youth Risk Behavior Survey (YRBS) is an annual survey administered to students in Grades 6, 8, 10, and 12. The survey asks questions about students' drug and alcohol use; experiences with bullying, violence, and abuse; mental and sexual health issues; and nutrition and physical activity.

COMPETITION

APS faces competition for students from local private schools as well as nearby public school districts who accept tuition-paying students. Over the last five years, the percentage of students in the county who attend public school has *decreased* slightly, suggesting increased competition from alternative schooling options.

APS faces competition for local students from multiple angles, including: private schools, homeschooling, and other public schools that accept students from outside of the district. While many districts throughout the country face increasing competition from local charter schools,[43] which are publicly-funded by privately-managed, this is unlikely to be a major concern for APS in the near future. Notably, Virginia charter school laws are some of the strictest in the country, and so the district is unlikely to face much competition from local charters.[44] As shown in the figure below, charter schools appear to have lost support among the general public over the last year according to a recent poll conducted by *Education Next.*

Figure 13: General Public Support for Charter Schools, *Education Next* Poll, 2016 and 2017



Note: Poll results presented are with the definition of "charter school" provided.
Source: *Education Next*[45]

Due to several years of rapidly growing enrollment, APS does not accept tuition-paying students from outside the district's boundaries. However, APS faces competition from some nearby districts that *do* accept tuition-paying students. For example, several dozen Arlington County families currently pay tuition to send their students to Duke Ellington School of the Arts (DCPS).[46] Several local districts accept tuition-paying students, including D.C. Public Schools, Montgomery County Public Schools, and Fairfax County Public Schools.

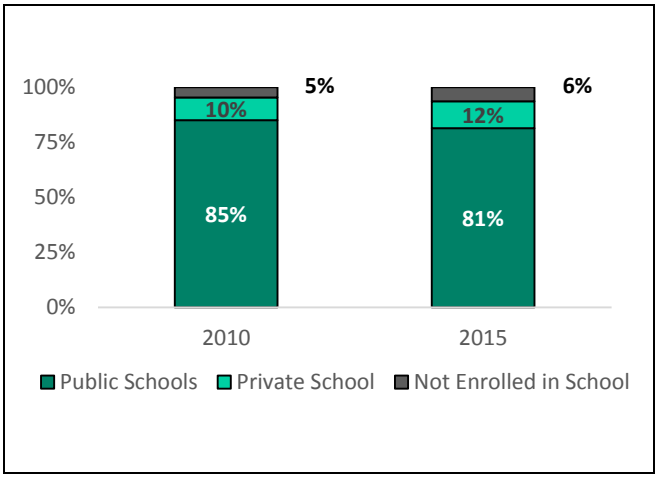
[43] Darville, S. "In More Than 200 School Districts, At Least 1 in 10 Students Attends a Charter." *Chalkbeat*, October 23, 2017. http://www.chalkbeat.com/posts/us/2017/10/23/in-more-than-200-school-districts-at-least-1-in-10-students-attends-a-charter/

[44] "Measuring Up - Virginia." National Alliance for Public Charter Schools. http://www.publiccharters.org/get-the-facts/law-database/states/va/

[45] [1] "Results from the 2016 *Education Next* Poll." *Education Next*, 2016. http://educationnext.org/2016-ednext-poll-interactive/ [2] "Results from the 2017 *Education Next* Poll." *Education Next*, 2017. http://educationnext.org/2017-ednext-poll-interactive/

[46] Mathews, J. "Look at all the Suburban Kids Paying Tuition to Attend D.C. Public Schools." *Washington Post*, July 30, 2017. https://www.washingtonpost.com/local/education/look-at-all-the-suburban-kids-paying-tuition-to-attend-dc-public-schools/2017/07/28/a546eede-7321-11e7-8f39-eeb7d3a2d304_story.html?utm_term=.c880ea653c1b

Figure 14: Percentage of Children Ages 5-17 by School Enrollment Type, Arlington Public Schools, 2010 and 2015



Note: Percentages may not sum to 100 due to rounding.
Source: American Community Survey[47]

Population trends derived from the American Community Survey also suggest a slight but noticeable increase in the percentage of families sending their children to independent schools over local public schools between 2010 and 2015 (see Figure 14). A 2015 article in *Arlington Magazine* investigating this phenomenon found that parents choosing private schooling options for their children often report that smaller class sizes and more individualized attention from teachers is a key factor in why they leave local public schools.[48] Class sizes at APS have increased in recent years due to the growing population and increasing school enrollments.

Figure 15: Additional Data Sources – Competition

Source	Description
Current State of Virginia Charter Schools	
Virginia Charter Schools Laws	In March 2017, Governor McAuliffe vetoed legislation to loosen restrictions on charter school authorizations, saying that the law would "undermine support for Virginia's public education system."
Local Trends in School Type Attendance	
American Community Survey – American Factfinder	The American Community Survey—also noted under "Sociodemographic Factors"—provides estimates of student attendance of public and private schools at the state, county, and school district levels.

[47] This data is drawn from the American Community Survey 5-year estimates via American Factfinder: "Table B14003 Sex by School Enrollment by Type of School by Age for the Population 3 Years and Over." American Factfinder, U.S. Census Bureau. https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_15_5YR_B14003&prodType=table

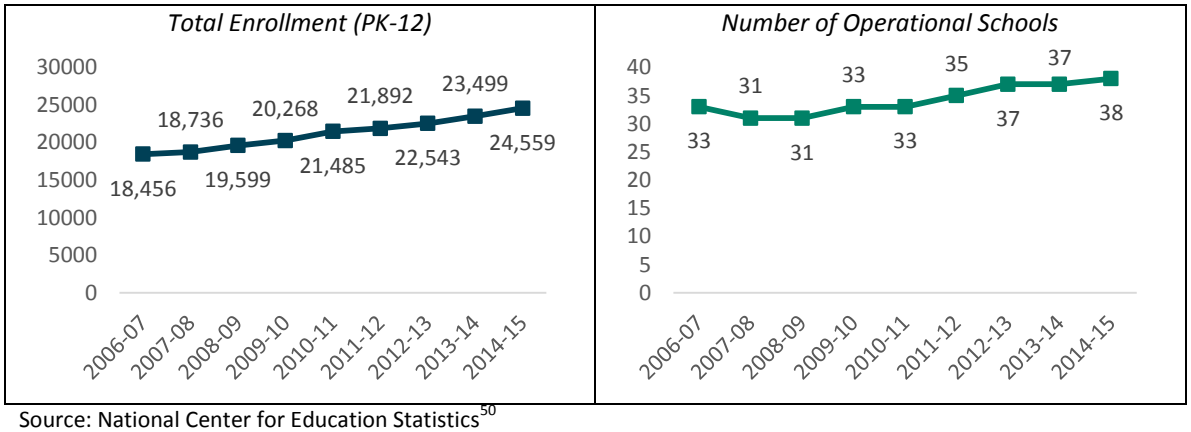
[48] White, A.B. "The Private School Option." *Arlington Magazine*, September 21, 2015. http://www.arlingtonmagazine.com/the-private-school-option/

ENROLLMENT CHANGE MANAGEMENT

Arlington Public Schools has experienced rapid enrollment growth over the last several years, a trend that is expected to continue. In order to accommodate growing enrollment, the district must implement a careful planning process to increase facility capacity and ensure equitable student experiences across the district.

As shown in Figure 16 below, APS enrollment has grown rapidly over the last several years. Between academic year 2006-07 and 2014-15, the district grew by more than one third; over the past five years, Arlington County notes that APS enrollment has grown by more than 850 students per year.[49] In its latest strategic plan, APS must consider strategies and practices to accommodate growing enrollment.

Figure 16: Arlington County Public Schools Total Enrollment and Number of Operational Schools, 2006-07 through 2014-15



Source: National Center for Education Statistics[50]

Much of the guidance surrounding district-level management of rapid enrollment growth deals with planning for and financing district facilities needs. For example, many districts experiencing rapid enrollment growth seek community bonds to invest in new facilities,[51] in addition to short-term strategies for adjusting to added student enrollment such as increasing class sizes and installing portable buildings (see Figure 17).[52]

[49] "Breaking Down the Budget," Op. cit.
[50] Elementary and Secondary Information System." National Center for Education Statistics. https://nces.ed.gov/ccd/elsi/default.aspx?agree=0
[51] See, for instance: [1] Lamakhouan, C.D. "Alvin ISD Plans 6 Schools, Stadiums to Accommodate Growth." *Houston Chronicle*, January 28, 2017. http://www.chron.com/neighborhood/pearland/schools/article/Alvin-ISD-plans-6-schools-stadium-to-accommodate-10891464.php [2] DeNisco, A. "Making Space in One of the Nation's Fastest Growing Districts." *District Administration*, January 16, 2015. https://www.districtadministration.com/article/making-space-one-nation%E2%80%99s-fastest-growing-districts
[52] See for instance: [1] Shroades, R.L. "When Enrollment Soars." *FacilitiesNet*. http://www.facilitiesnet.com/educationalfacilities/article/When-Enrollment-Soars-Facility-Management-Educational-Facilities-Feature--5438 [2]

Figure 17: Short-Term Strategies to Address Rapid School and District Enrollment Growth

Temporary Strategies to Increase Current Capacity

- Sharing Classrooms
- Adjusting Attendance Boundaries
- Using Portable Buildings
- Increase Class Sizes

Source: Fast Growth School Coalition[53]

Districts dealing with growing enrollment note that communication is a critical factor in ensuring effective planning for rapid enrollment growth. For example, district officials at rapidly-growing Rutherford County Schools in Tennessee emphasized the importance of coordination and collaboration between district and county leaders to avoid gridlock in decision-making that may hurt the district's ability to meet student needs.[54]

Furthermore, district leaders must also plan to engage the community in the planning process. For instance, Seattle Public Schools—which has grown by more than 7,000 students since academic year 2007-08[55]–seeks community engagement regarding changes to attendance boundaries as a result of new school construction and renovation, although final decisions are made by the local school board.[56] Furthermore, district leaders must consider issues such as how increasing class sizes or increasing the number of portable classrooms will impact the quality of students' education. One district leader at a rapidly-growing district in Virginia posed the question, "How many trailers will a site accommodate until the community gets in an uproar?"[57] Accordingly, districts should carefully plan to employ portable classrooms as needed, considering both facilities needs and community needs, using an equitable distribution of classrooms across the district as possible.

Finally, growing districts note the importance of equity of student experiences across different schools. Often, newly constructed schools offer better facilities that are specifically designed to address new educational trends and opportunities, such as computer labs. Thus, when districts design and create new schools, they should also expect to conduct needs assessments at existing schools to determine if renovations are needed to create an equitable student experience. For instance, one article on growing district enrollment explains:

[53] "Investing in a Better Texas." Fast Growth School Coalition, p. 27. http://fastgrowthtexas.org/wp-content/uploads/2016/12/Investing-in-a-Better-Texas.pdf
[54] DeNisco, Op. cit.
[55] Shaw, L. "More Students Expected in Seattle and Other Area School Districts." *The Seattle Times*, May 28, 2014. http://blogs.seattletimes.com/educationlab/2014/05/28/seattle-school-enrollment-keeps-on-rising/
[56] "2017-18 Boundary Changes." Seattle Public Schools. http://www.seattleschools.org/cms/one.aspx?portalId=627&pageId=9017326
[57] Shroades, Op. cit.

> Maintenance and engineering managers who focus solely on the construction of new schools to keep up with soaring enrollments run the risk of overlooking educational equality issues. So in carefully assessing their district's facilities, they can help ensure that all students have the opportunity to attend a school that provides a healthy indoor environment that paves the way for proper learning.[58]

Because guidance on managing rapid enrollment growth is somewhat limited, Hanover compiles the following list of potential case-study districts, rather than data sources, that may help inform APS's strategic planning process through future research:

Figure 18: Potential Case Studies – Enrollment Change Management

District	2004-05 Enrollment	2014-15 Enrollment	Initial Sources
Arlington Public Schools *Arlington, VA*	18,802	24,559	--
Alvin Independent School District *Alvin, TX*	12,588	20,866	▪ **"Alvin ISD plans 6 Schools, Stadium to Accommodate Growth"**
Northwest Independent School District *Fort Worth/Justin, TX*	7,602	19,831	▪ **"Student Enrollment Continues to Climb as Families Flock to Northwest ISD"** ▪ **"Growth Continues as Northwest ISD Starts Year"**
Rutherford County Schools *Murfreesboro, TN*	31,428	41,893	▪ **"Making Space in One of the Nation's Fastest Growing Districts"**
Seattle Public Schools *Seattle, WA*	46,746	52,834	▪ **"More students expected in Seattle and other area school districts"**

[58] Ibid.

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Arlington, VA 22203
P 202.559.0500 **F** 866.808.6585
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