

SCHOOLS

OVERVIEW

National Grade 2013

In its *2013 Report Card for America's Infrastructure* the American Society of Civil Engineers graded school systems nationwide a **D+**. This is a slight improvement over the 2009 grade of **D**.



Almost half of America's public school buildings were built to educate the baby boomers – a generation that is now retiring from the workforce. Public school enrollment is projected to gradually increase through 2019, yet state and local school construction funding continues to decline. National spending on school construction has diminished to approximately \$10 billion in 2012, about half the level spent prior to the recession, while the condition of school facilities continues to be a significant concern for communities. Experts now estimate the investment needed to modernize and maintain our nation's school facilities is at least \$270 billion or more. However, due to the absence of national data on school facilities for more than a decade, a complete picture of the condition of our Nation's schools remains mostly unknown.

School facilities exist to provide students a productive learning experience, but poor facility conditions have been shown to affect student performance. School facilities also play a role in the community as emergency shelters during natural and man-made disasters, and they must be resilient and maintained to meet standards for emergencies.

The condition of K-12 school facilities in the United States is primarily a local and state responsibility, and there is limited national information. The most recent comprehensive report on school facilities collecting similar state-by-state information was released more than a decade ago. This report, U.S. Department of Education Condition of America's Public School Facilities: 1999, identified an investment of \$127 billion needed to bring the nation's schools into good operating condition. School facilities experts estimate that today's necessary renovations and maintenance of the nation's school facilities could cost \$270 billion or more.

An update to the U.S. Department of Education Condition of America's Public School Facilities: 1999 has been started. The March 2014 report has updated tables, but the report write-up was not modified. The data shows the following updates:

Data	1999	2014
Average age of the main instructional building	40 years	44 years
Average functional age of schools based on the most recent renovation	16 years	19 years
The renovation occurred on average	11 years ago	12 years ago
Percent of schools needing to spend money to put the school's onsite buildings into good overall condition	75%	50%
Cost per student at these school to bring into overall good condition	\$3,800	Not provided
Total amount needed by the schools	\$127 billion	\$197 billion
Public Schools with Written Long-Range Facilities Plans	65%	60%
Original Building in Adequate or Better Condition*	81%	76%
Permanent Additions in Adequate or Better Condition*	84%	Not Provided
Temporary Buildings in Adequate of Better Condition*	81%	55%
% Reporting Permanent Buildings in Poor Condition*	4 to 6%	3%
% Reporting Temporary Buildings in Poor Condition*	1 to 2%	9%

Note * – The data in the tables are not provided in the exact same format.

School construction projects are not only driven by a facilities' condition, but also by capacity needs. In the fall of 2012, more than 49.8 million students entered public schools, up modestly from 49.3 million in 2009. These students attend school in more than 98,800 public school facilities. The 1999 Condition Report showed that close to 10% of schools reported enrollment 25% greater than the permanent building capacity. Student populations are still projected to grow gradually over the next 5 years. Total elementary and secondary enrollment is anticipated to set new records every year from 2010 to 2019, but funding is not projected to be as readily available, suggesting that the number of schools experiencing excess capacity may increase.

Highlighting a need for significant operations and maintenance, the 1999 Condition Report identified that over 59,000 schools – representing 76% of America's schools – needed to “spend money on repairs, renovations, or modernizations to put the school into good overall condition.” Some states and localities have made great strides to reduce their facilities' investment needs and modernize their schools, and even at the federal level some action is being considered. In 2011, a federal school facilities modernization effort was introduced in Congress to fund \$30 billion against the current investment backlog and upgrade about 35,000 deteriorating school buildings. Although there are no current data, these efforts show wide recognition that school facility repair and upgrade needs in the nation are significant.”

In 1995 the GAO did an extensive survey and analysis and found that America needed \$113 billion (\$216 billion in today's construction dollars) to bring its school building inventory into good repair.

Virginia Grade

Assignment of an overall grade of “C-” to Virginia's schools infrastructure was based on the following specific criteria:

- Virginia has a statewide infrastructure assessment
- Virginia has had an increase in infrastructure spending since 2009
- Enrollment trends in the state generally match nationwide trends since 2009



Contents

This 2013 Virginia Infrastructure Report Card on Schools includes the following contents:

- Summary
- Introduction and Background
- Condition and Adequacy
- Investment Needs and Funding Dedicated
- Basis of Grade and Results
- Conclusions, Recommendations & Policy Options
- References
- Acknowledgments

SUMMARY

The ASCE National Report card in 2013 provided the following figures:

- Public school districts in Virginia spent a total of **\$4.4 billion** on capital outlays for school construction, acquisition of land and renovating existing structures in fiscal years 2005–2008.
- It is estimated that Virginia schools have **\$8.5 billion** in infrastructure funding needs.

From the Virginia Department of Education - School Construction Cost Data webpage, Final Annual Reports are available for 2012-13 and years previous. A current active report for 2013-14 is also available and the final report will be generated after June 30, 2014 for the current fiscal year. From the Reports there is a trend upwards in spending from the low of \$189,530,014 in 2009-10.

The increase in spending since 2009 and the percentage of spending as compared to statewide needs shows that Virginia is investing more on average than many others throughout the nation. It also justifies an increase in the 2009 ASCE report card grade for Virginia Schools of D+. These facts balanced against the continued work that is needed and described below, results in a 2013 ASCE report card grade of C.

Summary of School Construction Cost Data	
Years	Total Spent on School construction
2007-08	\$611,726,460
2008-09	\$536,476,492
2009-10	\$189,530,014
2010-11	\$354,923,470
2011-12	\$472,075,573
2012-13	\$720,009,898
2013-14 ⁺	\$641,097,721

+ = In Progress

INTRODUCTION AND BACKGROUND

There are currently more than 1,800 public school buildings serving Virginia's K-12 students. The issues involved in providing and planning adequate school facilities are complex and require thoughtful consideration. To plan and construct school buildings that meet today's educational needs, are easy to maintain and are economical to build is an important and challenging task.

How the Virginia Department of Education (VDOE) helps

VDOE provides leadership and technical services to Virginia's public school facilities in the following key areas:

- School facility planning
- School building guidelines
- Energy efficiency and high performance buildings
- School construction cost data
- School construction project submission
- Facility conferences and training
- School safety
- Playground safety
- School facility studies
- Resources and information

National Enrollment Trends

Total public school enrollment is expected to rise from 2011 to 2020. Data from a U.S. Department of Energy fact sheet is as follows:

“Total enrollment in public and private elementary and secondary schools (pre-kindergarten through grade 12) grew rapidly during the 1950s and 1960s, reaching a peak year in 1971. This enrollment rise reflected what is known as the "baby boom," a dramatic increase in births following World War II. Between 1971 and 1984, total elementary and secondary school enrollment decreased every year, reflecting the decline in the size of the school-age population over that period. After these years of decline, enrollment in elementary and secondary schools started increasing in fall 1985, began hitting new record levels in the mid-1990s, and continued to reach new record levels every year through 2006. Enrollment in fall 2009 (54.9 million) was slightly lower than in fall 2006 (55.3 million); however, enrollments are projected to begin rising again after 2010.”

“Public school enrollment at the elementary level (pre-kindergarten through grade 8) rose from 29.9 million in fall 1990 to 34.2 million in fall 2003. After a decrease of less than 1 percent between fall 2003 and fall 2004, elementary enrollment generally increased to a projected total of 34.9 million for fall 2011. Public elementary enrollment is projected to continue a pattern of annual increases through 2020 (the last year for which NCES has projected school enrollment). Public school enrollment at the secondary level (grades 9 through 12) rose from 11.3 million in 1990 to 15.1 million in 2007, with a projected enrollment of 14.5 million for 2011. Public secondary enrollment is projected to show a decrease of 4 percent between 2007 and 2012, and then increase again through 2020. Public secondary school enrollment in 2020 is expected to be about 5 percent higher than in 2012. Total public elementary and secondary enrollment is projected to set new records every year from 2011 to 2020.”
(U.S. Department of Education)

Enrollment in elementary and secondary schools, by control and level of institution: Selected years, fall 1969 through fall 2020 [In thousands]

Year	Total	Public			Private ¹		
		Total	Pre-kindergarten -Grade 8	Grades 9-12	Total	Pre-kindergarten - Grade 8	Grades 9-12
1969	51,050	45,550	32,513	13,037	5,500 ²	4,200 ²	1,300 ²
1980	46,208	40,877	27,647	13,231	5,331	3,992	1,339
1985	44,979	39,422	27,034	12,388	5,557	4,195	1,362
1990	46,864	41,217	29,876	11,341	5,648 ²	4,512 ²	1,136 ²
1995	50,759	44,840	32,338	12,502	5,918	4,756	1,163
2000	53,373	47,204	33,686	13,517	6,169 ²	4,906 ²	1,264 ²
2005	55,187	49,113	34,204	14,909	6,073	4,724	1,349
2006	55,307	49,316	34,235	15,081	5,991 ²	4,631 ²	1,360 ²
2007	55,203	49,293	34,205	15,087	5,910	4,546	1,364
2008	54,973	49,266	34,286	14,980	5,707 ²	4,365 ²	1,342 ²
2009	54,862	49,373	34,418	14,955	5,488	4,179	1,309
2010 ³	54,704	49,306	34,637	14,668	5,398	4,092	1,306
2015 ³	55,836	50,659	35,829	14,830	5,176	4,042	1,134
2016 ³	56,214	51,038	36,161	14,877	5,176	4,073	1,103
2017 ³	56,617	51,430	36,491	14,939	5,187	4,110	1,007
2018 ³	57,009	51,803	36,803	15,000	5,206	4,146	1,060
2019 ³	57,438	52,204	37,121	15,083	5,234	4,181	1,052
2020 ³	57,939	52,666	37,444	15,222	5,273	4,216	1,056

¹ Beginning in fall 1980, data include estimates for an expanded universe of private schools. Therefore, direct comparisons with earlier years should be avoided.

²Estimated.

³ Projected.

NOTE: Elementary and secondary enrollment includes students in local public school systems and in most private schools (religiously affiliated and nonsectarian), but generally excludes homeschooled children and students in sub collegiate departments of colleges and in federal schools. Based on the National Household Education Survey, the homeschooled children numbered approximately 1.5 million in 2007. Excludes preprimary pupils in private schools that do not offer kindergarten or above. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics (2012). *Digest of Education Statistics, 2011* (NCES 2012-001), [Table 3](#).

State Enrollment Trends

Unlike the National Enrollment trend that dipped after 2006, Virginia public school enrollment increased steadily from 2000 to 2010.

Years	Total Enrollment for Virginia
2000-01	1,144,915
2001-02	1,163,091
2002-03	1,177,229
2003-04	1,192,092
2004-05	1,204,739
2005-06	1,213,616
2006-07	1,220,440
2007-08	1,230,857
2008-09	1,235,795
2009-10	1,245,340
2010-11	1,251,440
2011-12	Not Available
2012-13	Not Available
2013-14	Not Available

(U.S. Department of Education)
Common Core of Data (CCD), "State Non-fiscal Public Elementary/Secondary Education Survey"

Condition and Adequacy

Virginia ranked NO. 10 in a report entitled "Building Minds, Minding Buildings: School Infrastructure Funding Need". States were ranked from highest to lowest amount of funding needed. Virginia was estimated to need \$8,536,780,554. Virginia student enrollment in 2008 was listed at 1,246,549. It was predicted that the enrollment change from 2009 – 2016 would be 106,092. Virginia did have a statewide school infrastructure assessment, but the assessment did not meet the criteria for inclusion. Virginia was graded in this report was matched to North Carolina. A cost of \$7,086 base year per pupil need (\$) was used. The maximum need in the 50 states was \$25,400,000,000 in California, and the minimum need was \$325,741,824 in Vermont. The need identified in all 50 states totaled \$254,606,228,518.

Virginia

Schools Infrastructure Funding Needs = **\$8,536,780,554**

Over 60% of Virginia Schools Could Potentially Benefit in Years Ahead From Change to Federal Historic Rehabilitation Tax Credit

Governor McDonnell Releases Comprehensive Study of All K-12 Facilities in the Commonwealth

817 Facilities 50 Years or Older; Additional 410 Facilities are 40 to 50 Years Old

RICHMOND – 1,227 of Virginia’s school buildings and facilities, more than 60%, are 40 years or older according to a new comprehensive study ordered by Governor Bob McDonnell and concluded at the beginning of this month. The governor today released the results of the study that looked at all existing Virginia public school buildings, including those not currently being used. The study was compiled by the Secretary of Education and the Department of Education. The governor [ordered the report in August](#) in order to gain a more accurate picture of the current state of the Commonwealth’s educational infrastructure, and to demonstrate how a change to the Federal Historic Rehabilitation Tax Credit, to allow for its use in the renovation of older school buildings for continued service as public educational facilities, could benefit the Commonwealth specifically, and the nation in general. To benefit from the Tax Credit a building must be considered historic, and facilities 50 years or older are most likely to qualify.

The governor’s state inventory found:

Summary of divisions/schools reported:

• Number of School Divisions reporting (100%):	132
• Number of schools reported:	2,030
• Number of schools 50 years <u>or older</u> *:	817
• Number of schools <u>40-50 years old</u> *:	410
• Total student capacity of buildings:	842,481

Speaking about the inventory, Governor McDonnell commented, “The Department of Education’s review of Virginia’s public school buildings found 1,227 school buildings and facilities in Virginia that could potentially be eligible, now or in the next ten years, for the Federal Historic Rehabilitation Tax Credit. These buildings exist in every region of the state, and service hundreds of thousands of Virginia students. Eliminating the ‘prior use’ rule is a commonsense, bipartisan issue supported by Senator Mark Warner, Senator Tim Kaine, Majority Leader Eric Cantor, Governor-elect Terry McAuliffe, and many others. It would enable the private sector to invest in modernizing our schools, while simultaneously saving our localities money. This inventory demonstrates in real numbers what establishing equity in this existing federal tax policy would mean for our communities and our students, and I hope it will prove to be helpful in the ongoing efforts to get this legislation passed at the federal level.”

Paul Goldman, former Chairman of the Democratic Party of Virginia, advisor to Governors Mark Warner and Doug Wilder, and longtime proponent of modernizing the federal law, commented, “By fixing a bureaucratic glitch in the IRS code - stuck there for 27 years - Virginia localities could have modern 21st century K-12 facilities at a cost of 35-40% less than the federal government requires them to pay now.”

An investment in public school maintenance, repair and renewal will yield valuable benefits for our public education system, for our environment, and for our economy:

- **For Education** - There is consistent evidence that if you provide a quality physical environment for teaching and learning, student performance is improved. Quality teachers are attracted to and remain in better facilities, attendance for students and teachers is improved, and students can concentrate and learn better in quality buildings. Investing in school maintenance and repair can support our nation’s efforts to dramatically improve the results of our public education system.

- **For the Environment** - The labor and natural resources embodied within our public school buildings – most of which are over 40 years old – are important assets, which can be sustained or squandered. Maintenance and renewal of existing buildings means lower operating costs for energy use and preserves valuable resources, reducing landfill waste and demand for new construction materials.

- **For our Economy** - The work of maintaining, repairing and renewing our public school buildings will be labor intensive. Making progress on the most critically needed maintenance, repair and renewal efforts with a federal investment of \$27 billion, just 10% of the minimum estimate for deferred maintenance, repair and renewals can provide important productive work to between 160,000 to 235,000 people in the private and public sectors. This would essentially be employment for 2-3 people per school across the country – a manageable infusion of labor for school districts all with projects ready to be undertaken immediately. If we match these investments to those districts most in need of maintenance and repair efforts, these funds will also be targeted at low-income communities most in need of educational improvements and economic support.

In the Earthman report, the author reaches four conclusions illustrating that the school environment does affect academic achievement. They are listed below:

1. School building design features and components have been proven to have a measurable influence upon student learning. Among the influential features and components are those impacting temperature, lighting, acoustics and age. Researchers have found a negative impact upon student performance in buildings where deficiencies in any of these features exist. In addition, overcrowded school buildings and classrooms have been found to be a negative influence upon student performance, especially for minority/poverty students.
2. The overall impact a school building has on students can be either positive or negative, depending upon the condition of the building. In cases where students attend school in substandard buildings they are definitely handicapped in their academic achievement. Correlation studies show a strong positive relationship between overall building conditions and student achievement.
3. Ethnographic and perception studies indicate that poor school facilities negatively impact teacher effectiveness and performance, and therefore have a negative impact on student performance.

4. Recent studies regarding the number of students in schools as compared with its capacity provide ample evidence that overcrowding conditions are a negative influence upon students and teachers.... (Earthman)

Investment Needs and Funding Dedicated

From the Virginia Department of Education - School Construction Cost Data webpage, Final Annual Reports are available for 2012-13 and years previous. A current active report for 2013-14 is available and the final report will be generated after June 30, 2014 for 2013-14. Funding dedicated:

School Construction Cost Data for 2007-2008				
Type	# of	Building Cost	Site Cost	Total Cost
New Elementary School(s)	14	\$193,747,969	\$30,333,690	\$224,081,659
New Middle School(s)	2	\$54,843,234	\$8,278,669	\$63,121,903
New High School(s)	2	\$73,787,522	\$15,163,071	\$88,950,593
New Combined or Other Schools	6	\$146,873,075	\$13,542,882	\$160,415,957
Additions and Renovations Under Contract	Many			\$75,156,348
Total for 2007-08				\$611,726,460

School Construction Cost Data for 2008-2009				
Type	# of	Building Cost	Site Cost	Total Cost
New Elementary School(s)	4	\$53,162,535	\$13,029,974	\$66,192,509
New Middle School(s)	4	\$99,400,579	\$19,102,352	\$118,502,931
New High School(s)		\$243,181,003	\$52,163,660	\$295,344,663
New Combined or Other Schools				\$0
Additions and Renovations Under Contract	Many			\$56,436,389
Total for 2008-09				\$536,476,492

School Construction Cost Data for 2009-2010

Type	# of	Building Cost	Site Cost	Total Cost
New Elementary School(s)	6	\$72,993,048	\$14,201,317	\$87,194,365
New Middle School(s)	3	58,703,578	10,586,422	\$69,290,000
New High School(s)	0			\$0
New Combined or Other Schools	0			\$0
Additions and Renovations Under Contract	Many			\$33,045,649
Total for 2009-10				\$189,530,014

School Construction Cost Data for 2010-2011

Type	# of	Building Cost	Site Cost	Total Cost
New Elementary School(s)	3	\$38,686,665	\$7,444,335	\$46,131,000
New Middle School(s)	0			\$0
New High School(s)	3	\$137,945,376	\$34,516,623	\$172,461,999
New Combined or Other Schools	2	\$26,699,604	\$5,254,196	\$31,953,800
Additions and Renovations Under Contract	Many			\$104,376,671
Total for 2010-11				\$354,923,470

School Construction Cost Data for 2011-2012

Type	# of	Building Cost	Site Cost	Total Cost
New Elementary School(s)	6	\$82,168,085	\$14,675,843	\$96,843,928
New Middle School(s)	0			\$0
New High School(s)	1	\$58,909,096	\$15,013,694	\$73,922,790
New Combined or Other Schools	1	\$22,602,000	\$5,800,000	\$28,402,000
Additions and Renovations Under Contract	Many			\$272,906,855
Total for 2011-12				\$472,075,573

School Construction Cost Data for 2012-2013

Type	# of	Building Cost	Site Cost	Total Cost
New Elementary School(s)	7	\$86,081,899	\$18,626,712	\$104,708,611
New Middle School(s)	3	\$71,213,981	\$8,771,583	\$79,985,564
New High School(s)	4	\$186,129,914	\$39,780,091	\$225,910,005
New Combined or Other Schools	1	\$45,100,000	\$11,500,000	\$56,600,000
Additions and Renovations Under Contract	Many			\$252,805,718
Total for 2012-13				\$720,009,898

School Construction Cost Data for 2013-2014 (In Progress)

Type	# of	Building Cost	Site Cost	Total Cost
New Elementary School(s)	1	\$44,385,928	\$8,205,880	\$52,591,808
New Middle School(s)	0			\$0
New High School(s)	4	\$228,086,852	\$40,449,632	\$268,536,484
New Combined or Other Schools	1	\$31,961,348	\$4,695,397	\$36,656,745
Additions and Renovations Under Contract	Many			\$375,015,150
Total for 2013-14				\$732,800,187

Basis of Grade and Results

Basis of Grade

Assigning an overall grade to Virginia's school's infrastructure is based on the National grade and on the four specific criteria used to adjust the National grade.

National School Infrastructure Grade | D+

Virginia ranked #10 nationally in school infrastructure costs.

Adequate existing and future funding to capitalize needs

This score is based on the increase in capital funds being spent on school infrastructure.

Virginia has a Statewide Infrastructure Assessment

The score on this criterion reflects Virginia having a statewide infrastructure assessment that could be used to compare Virginia's school infrastructure needs to those nationally however the assessment could not be used for this report card. Virginia's school infrastructure needs were determined in report by using North Carolina numbers.

Routine identification and report of existing and future funding needs

There is a continual need to inventory, assess and manage funding needs. The assessment includes identification of existing and future needs. Because the identification and reporting of needs are required on a routine basis, this criterion has been assigned a low score.

Enrollment Matches National Trends

Enrollment trends in Virginia closely match national trends. This criterion has been assigned a score of 84, Above Average, "B".

Weighting

The intention and goal is to continually make the grading criteria easily measurable and quantifiable. Similarly each criterion has been assigned a weighted value in recognition of their relative importance. This will allow for a uniform determination and comparison of results with future report cards. The 2009 Virginia Infrastructure Report Card only reported the national grade.

Results

The results of the 2013 Virginia Infrastructure Report Card for Schools are:

Rating of Virginia's Infrastructure			
Criteria	Score	Grade	Weight
National Grade	68	Below Average (D+)	40%
Funding Availability	90	Above Average (B)	20%
Statewide Assessment	75	Average (C)	15%
Identify Needs	50	Poor (F)	15%
Enrollment Matches National Trends	90	Above Average (B)	10%
RESULT	73	Average (C-)	100%



Conclusions, Recommendations and Policy Options

National Conclusions

With the significant decrease in school construction spending over the last four years and the increase in the number of facilities and the number of students attending those facilities, the lack of national and comparable data to assess the condition and capacity needs of school facilities is concerning. Even at the state level, often only a limited amount of information is collected from the school districts and a limited number of staff devoted to providing facility operators with asset management plans and project maintenance needs for the state. Databases and asset management plans outlining the condition of our nation's schools are essential to identifying issues system wide and making efficient school facilities investments as they are needed.

Raising the Grades: Solutions that Work Now

- **Publish regular updates of the report on the Condition of America's Public School Facilities** to ensure a clear view of conditions nationwide
- **Encourage school districts** to adopt regular, comprehensive major maintenance, renewal, and construction programs
- **Expand federal and state tax credits and matching funds** to support increased use of school construction bonds and simplify the process for local school districts to obtain facility construction financing for improvements and modernizations
- **Explore alternative financing**, including lease financing and financing as well as ownership and use arrangements, to facilitate school construction projects
- **Implement comprehensive preventive maintenance programs** for each school district's assets to extend the life of school facilities
- **Require life-cycle cost analysis principles** and multi-use possibilities to evaluate the total costs of projects to capture efficiency and promote sustainability
- **Encourage school facility reviews** on a state level and provide input to develop a national database of conditions and available funding"
- **Update 1995 GAO Study** to provide a current evaluation of our school infrastructure

Recommendations

The shared objective is to ensure that Virginia students are being taught in schools that are healthy and safe. Healthy and safe schools are in good repair and overcrowding is minimized or eliminated. . To accomplish this objective, it is recommended that Virginia engage in the following activities:

1. Continue to explore alternative financing.

2. Encourage school districts to adopt regular, comprehensive major maintenance, renewal, and construction programs.
3. Encourage school districts to participate in statewide and national infrastructure surveys.

Policy Options

1. Engage GAO in updating the 1995 report which is outdated.
2. Virginia Department of Education to utilize 1995 GAO report to develop and conduct a survey for the schools in Virginia
3. Reward school districts for participating in statewide and national infrastructure surveys