

Commonwealth of Virginia

Giles County Public Schools

Facility Evaluation & Efficiency Review

Site Visit:
October 25-26, 2017

Report:
March 2, 2018

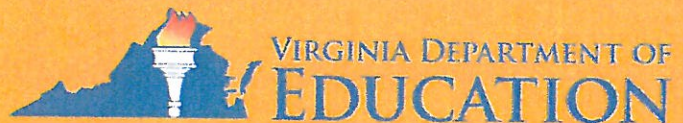




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Foreword

The division superintendent of Giles County Public Schools, Dr. Terry E. Arbogast, II, requested the assistance of the Department of Education in having a team of professional specialists conduct an evaluation and efficiency study for Giles County Public Schools. The scope of the team's evaluation included the operational costs in the areas of school facilities and pupil transportation, as well as making recommendations based on its review of the current condition and needs of the division's school buildings. The Department of Education team visited Giles County on October 25-26, 2017, and met with the superintendent and staff on Wednesday, October 25 to discuss their expectations for the survey.

The school division is in the process of determining its long-range operational and capital needs and requested that the team evaluate the school division's current grade structures, use of its existing school buildings, and the potential impact to pupil transportation that any recommended changes may have. Another goal of the study was to assist the school division in identifying ways to become more efficient in terms of operational costs. The team was also asked to identify potential cost efficiencies and other needs in the areas of pupil transportation, maintenance, energy usage, staffing, and school facilities.

The superintendent asked the team to consider the school board's request to evaluate the existing school facilities and to recommend multiple options to more efficiently use the school sites and buildings in the future. That analysis required the team to evaluate the current use of the school buildings, the existing grade structure, current and projected enrollment, building conditions, site conditions, and bus routes that would more efficiently support the current and future education needs of the county.

The team hopes that the results of this efficiency study will be a foundation for Giles County School Board as it moves forward in examining its operational cost, pupil transportation needs, and use of school buildings. The team members express their sincere appreciation to Dr. Terry E. Arbogast, II, Division Superintendent, Richard R. Franklin, Assistant Superintendent, and the staff members of Giles County Public Schools for their hospitality and cooperation that made our visit a pleasurable and productive one.

Executive Summary

Prior to the team's visit to Giles County, the team provided a Self-Review Form to the Giles County School Division administration. This self-review document, dated August 30, 2017, was returned to the Department of Education for review by team members prior to the visit. (See Appendix A)

The Department of Education survey team visited Giles County on October 25-26, 2017, to gain an objective view of the conditions of the division's school facilities and its operations. The team, accompanied by the division superintendent and maintenance staff, visited all school sites to examine them for issues regarding school safety, security, vehicular traffic, disability accessibility, and their adequacy to support a modern educational program. This survey included looking at all spaces of each school as well as the play, athletic fields, playground equipment, site parking, and existing traffic patterns at each school site. The team reviewed annual utility costs for each school building, pupil transportation operations, bus routes, the school division's annual maintenance and operational costs and also reviewed and discussed the schools' current and projected enrollment provided by the school division.

The results of the team's survey of the school facilities, and review of Giles County school division's current enrollment trends, did not indicate the need to provide additional classroom spaces at the existing school sites or to provide any additional new buildings for any potential growth. This finding is further supported by the fact that the school board has done major renovations and additions at every school in the county and these building improvements make it difficult to abandon any school in operation. As the team began to develop its school facility options contained in this report, an overriding consideration became how to more efficiently utilize the existing school sites so as to provide the school division various options for grade structuring and more efficient use of the existing classroom spaces and schools of comparable student population.

The most recent renovation and addition projects for the Eastern Combined School and the Giles County Vocational Center represented to the team the level of commitment of the school board to the quality that the county aspires for all its school facilities. As the school board considers any possible future school construction projects, it should be the goal of the school board to provide school facilities that are similar or equal to these facilities.

Evaluation of School Facilities

The team compiled the following information on each school from observations made during school site visits, building data information provided by the school division, and the Virginia Department of Education records for each school:

Narrow's Elementary/Middle School:

Grades preschool-7; current enrollment 480 students; site acreage: 10.9 acres.
Constructed 1945; addition and renovations: 1998 and 2002.

- HVAC system needs to be upgraded
- Recently renovated kindergarten classrooms are undersized and lack individual classroom toilets
- Boys' and girls' toilets are in need of ADA upgrades
- The recently added new metal roof has blocked several windows on the upper level and there are water stains on the building's exterior wall
- Staff parking requires staff to cross public street to enter school building
- Site acreage deficient for a combined elementary/middle school of this size
- Limited outside play areas could be improved
- ADA upgrades needed
- Parent drop-off and bus parking limited by site size
- School building and grounds are well maintained
- Windows and roofing are in good condition
- Several renovation and addition projects have been done over the years

Macy McClaugherty Combined:

Grades preschool-7; current enrollment 507 students; site acreage: 12.7 acres.
Constructed 1960; additions and renovations: 1976 and 1998.

- HVAC system needs to be upgraded
- Several renovation and addition projects done over the years
- Boy and girl toilets are in need of ADA upgrades
- Cars are backed-up from the loading area out onto the highway when parents are waiting to pick up students
- Much staff time is being used to keep students safe during student drop-off and pick-up
- Bus and vehicular circulation on the school site needs to be improved
- Site acreage deficient for a combined elementary /middle school of this size
- Limited outside play areas could be improved and are in need of ADA upgrades
- School building and grounds are well maintained
- Windows in good condition
- The building's interior walls are the metal partition type
- The building has a good media center

Eastern Combined:

Grades preschool-5; current enrollment 431 students, site acreage: 40.1 acres
Constructed 1982; additions and renovations: 2010

- HVAC system replaced seven years ago
- Doors, windows and roofing are in good condition from 2010 renovation
- Outside play areas could be improved and need ADA improvements
- Good gymnasium, kitchen and library
- Good separation of vehicular and bus traffic on school site
- School buildings and grounds are well maintained
- Staff expressed need for addition storage space

Narrow High: grades 8-12, current enrollment 347 students, site acreage: 18 acres
Constructed 1961; additions and renovations: 1979 and 2000.

- Windows are in good condition
- HVAC system needs to be upgraded
- Band room appeared to be underutilized
- Boy and girl toilets are in need of ADA upgrades
- Science labs need to be renovated and upgraded
- Outside play areas could be improved and need ADA improvements
- School building and grounds are well maintained

Giles High: grade 9-12, current enrollment 658 students, site acreage: 67 acres
Constructed 1962; additions and renovations: 2000.

- Windows are in good condition
- HVAC system needs to be upgraded
- Boys and girls toilets are in need of ADA upgrades
- Science labs need to be renovated and upgraded
- Outside play areas could be improved and need ADA improvements
- School building and grounds are well maintained
- Staff expressed need for improved science lab

Giles Technical Center: *(The team visited this site for benchmark purposes only)*

Building constructed in 1968, additions and renovations 2010; located on Giles High School site

From the team's survey and evaluation of Giles High, Narrows High, Narrows Combined, Macy McClaugherty Combined, and Eastern Combined, the team concludes the following:

- The recent addition and renovations done at Eastern Combined Elementary School should serve as the model for all the other school facilities in the county.
- The aging condition of the mechanical heating, ventilation, and cooling systems (HVAC) at all schools, except for Eastern Combined. These HVAC systems are reaching the end of their life cycles and are in need of major upgrades or replacement.

- School buildings and sites generally do not fully meet the Americans with Disabilities Act (ADA) accessibility requirements in the areas of site accessibility, playground accessibility, athletic fields, student bathrooms, chair lifts used for floor level changes, and exterior ADA signage indicating accessible routes and interior braille signage.
- The vehicular congestion and circulation problems that exist at the Macy McClaugherty School site when parents drop off and pick up students. This issue will require additional study by a consulting engineer to provide more detailed options to improve overall site safety for staff, students, and parents.

Enrollment Trends

The Virginia Department of Education’s past enrollment data for Giles County indicates that the number of students in the county for all grades has decreased by 139 students from school year 2007-08 to year 2015-16. The largest decrease was at the elementary level with a drop of 165 students, which was offset by minor gains in the middle and high school membership. See the table below. As of September 30, 2017, total enrollment was 2,403 students. Current county enrollment projections as of October 2017 indicate a continuation of a slow decline in student enrollment of 120 students from school year 2017-18 to 2021-22. This trend was confirmed with another drop of seven (7) students in enrollment for school year 2016-17.

Based upon the past enrollment trends and the future enrollment projections, the team did not see a need to add more classroom space for future growth. Therefore, the impact on the county’s existing school facilities is demonstrated by how current classroom spaces are being used and how to more efficiently utilize existing classrooms and core support spaces.

Table 1

Average Daily Membership (full time students only)

Year	Average Daily Membership				Change from Previous Years			
	Elementary	Middle	High School	Total	Elementary	Middle	High School	Total
2007-08	1,178	588	781	2,547	0	0	0	0
2011-12	1,078	589	778	2,445	-100	1	-3	-102
2015-16	1,013	596	799	2,408	-65	7	21	-37

Evaluation of Facility Energy Cost

The team reviewed the utility cost for one year for each school building, and used each school's total square footage to determine the overall energy cost per square foot of each school building. This cost per square foot was compared to data provided by the Commercial Building Energy Consumption Survey (CBECS) 2012 Expenditures by Census Region. (Appendix C). The cost for water consumption per year is also listed for each school. The utility data used by the team for the energy usage evaluation is as follows:

Giles High School:

Total building square footage:	124,352 square feet
2016 electrical cost:	\$119,384
2016 natural gas cost:	\$ 27,332
2016 Total energy cost:	\$146,716
<u>Energy cost</u>	<u>\$1.18 per square foot</u>
2016 total water use in gallons:	1,822
2016 Total water cost:	\$ 20,502

Narrows High School:

Total building square footage:	94,323 square feet
2016 electrical cost:	\$ 93,689
2016 natural gas cost:	\$ 29,481
2016 Total energy cost:	\$ 123,170
<u>Energy cost</u>	<u>\$1.31 per square foot</u>
2016 total water use in gallons:	717
Total 2016 water cost:	\$8,812

Narrows Elementary/Middle School:

Total building square footage:	66,009 square feet
2016 electrical cost:	\$ 85,466
2016 natural gas cost:	\$ 10,454
2016 Total energy cost:	\$ 95,920
<u>Energy cost</u>	<u>\$1.45 per square foot</u>
2016 total water use in gallons:	2,405
2016 Total water cost:	\$12,519

Macy McClagherty Combined School:

Total building square footage:	73,186 square feet
2016 electrical cost:	\$64,647
2016 natural gas cost:	\$13,032
2016 Total energy cost:	\$77,679
<u>Energy cost</u>	<u>\$1.45 per square foot</u>
2016 total water use in gallons:	543

2016 Total water cost: \$ 6,587

Eastern Elementary/Middle School

Total building square footage: 70,413 square feet
2016 electrical cost: \$108,799
2016 natural gas cost: None (all electric)
2016 Total energy cost: \$108,799
Energy cost \$1.55 per square foot

2016 total water use in gallons: 540
2016 Total water cost: \$ 3,012

2016 Total square feet of five schools: 428,283
2016 Total energy (gas/electric): \$552,283

2016 Average energy cost per square foot for school division: \$1.29

2016 Total water cost: \$51,432
2016 Total cost of all utilities: \$603,715

By totaling each school building's 2016 utility cost for electricity and gas, and dividing this total dollar amount by the total square footage of all school buildings, the team calculated an average energy cost per square foot \$1.29. This average energy cost per square foot compares very favorably to the \$1.35 per square foot cost in the south region. See the table provided by the Commercial Building Energy Consumption Survey (CBECS) 2012 Expenditures by Census Region. (See Appendix C).

Since all school facilities have been updated with energy efficient windows, and the mechanical systems of four out of the five school facilities have been converted to natural gas, it is no surprise that the Giles County School Division energy cost per square foot is slightly below the national average energy cost per square foot.

The team, however, recommends that the school division begin tracking future energy costs using The U.S. Environmental Protection Agency's (EPA) online Energy Star Portfolio Manager Energy management tool, for the tracking and assessment of its energy and water consumption usage. This tool will allow the school system to compare and rate school building energy performance and set energy investment priorities. The neighboring Montgomery County school system is currently using this tool and, if needed, could serve as a resource for Giles County with regards to this recommendation.

Evaluation of Facility Maintenance & Operating Cost

The team reviewed the Virginia Department of Education's 2016-2017 Annual School Report for Giles County's reported Operation and Maintenance costs. The total cost as reported was \$2,492,394.97 and this total cost is composed of a collective sum for buildings, grounds and security services cost. (See Appendix D)

Using the data provided by the school division of the total number of students currently enrolled 2,403, and a total square footage of 428,283 for all five school facilities, the team was able to calculate the following division-wide breakdown in cost for operation and maintenance. The team also compared Giles County school division's maintenance and operating costs to Virginia's average annual spending for maintenance and operating spending as was reported in the 2016: State of Our School America's K-12 Facilities, publication. (See Appendix E)

See Table 2 below showing a comparison of the Virginia averages and the Giles school division averages.

Table 2
Average maintenance and operating cost

Virginia 2013 average Per student cost = \$1,052	Giles County average Per student cost = \$1,037
Virginia 2014 average Per square foot cost = \$6.95	Giles County average Per square foot cost = \$5.82

Based on this comparison, one can conclude that the maintenance and operating costs for the Giles County school division would be considered to be efficient.

Evaluation of Pupil Transportation Operations

The Giles County Public Schools transportation and maintenance department personnel were very courteous and helpful during the assessment. The transportation department had all needed files for review. The department is well run and very engaged with the staff to provide safe student transportation. The buses were clean. There is a good relationship between the shop and office staff and outstanding cooperation with the county to affect savings on the cost of bus parts and bus maintenance.

The team found a few deficiencies during the bus inspections that should be checked by the driver on the school bus pre-trip inspections (seat bottoms unattached, brake valve sticking, stop arm not fully extending). One bus had to be put out of service due to the parking brake valve operating incorrectly and because parts were not available to fix the bus while the team was conducting the assessment. We recommend that the transportation department have refresher classes on pre and post trip school bus inspections to avoid potential safety problems while providing student transportation.

The communication between the maintenance and transportation departments is exceptional. The Giles County cost structure to provide school bus maintenance for Giles County Public Schools is outstanding; the county maintenance department cost shops for all parts, tires and services. They also use the state fuel purchasing contract to provide low fuel costs for transportation. The maintenance files and pre-trip inspections were found to be in order.

Due to the rural nature, local knowledge, and small land area size of Giles County, we feel that incorporating automated routing software would not provide any added benefits for pupil transportation planning and bus routing. Based on proposed school facility options as outlined in this report, any changes in school attendance zones or the reconfiguring of school grade structures will not have a great impact on pupil transportation savings, or result in increased costs. In one of the options presented later in this report, there may be some limited cost savings with the elimination of the need to transport students from Narrow High to the Giles County Technical Center, should Narrows High be consolidated with Giles High School.

Giles County Public Schools may want to consider the possibility of replacing older diesel engine powered school buses with clean propane engine powered school buses. All three school bus manufacturers now offer propane fuel powered buses. With a multi-year contract, propane companies may install the fueling infrastructure at little or no cost. Compressed Natural Gas (CNG) powered school buses are another alternative fuel purchase option, however upfront infrastructure costs may be prohibitive.

The team recommends that Giles County Public Schools explore different purchasing options for school buses. Lease to own options may provide the ability to purchase more buses and reduce maintenance costs. Purchasing used buses should be another option for consideration. It is also recommended that the Virginia bus dealers are involved to ensure any used bus meets Virginia minimal required specifications, if the division considers used buses as an option.

Preface to School Facility Options

As the Giles County school division evaluates various options to gain efficiency in its operational costs in the areas of school facilities, energy costs, and pupil transportation, many factors must be taken into consideration. Issues that surfaced as the team conducted its review were: the condition of school facilities, school sites, attendance zones, utilization of space of school buildings, current grade structure, enrollment trends, and the current number of buses and bus routes. Virginia Department of Education's enrollment data indicates that the number of students in the county for all grades has decreased by 139 students from school year 2007-08 to school year 2015-16. The largest decrease was at the elementary level with a drop of 165 students, which was offset by minor gains in the middle and high school membership. As of September 30, 2017, total enrollment was 2,403 students. Current county enrollment projections through 2022 show a continued slight decline in student enrollment. (See Table 1)

The efficient use of school buildings is affected not only by the number of educational spaces it contains but by other factors as well. Other factors that the school division should consider are the existing facilities' ability to accommodate and support current and future educational programs, the community's needs, as well as the financial resources needed to provide equitable facilities within the division.

In studying the current use, grade structure, and transportation needs of its current school facilities, the school division should examine the aging conditions of the building systems, the current use of classrooms, and number of classroom spaces available for instructional purposes. The division should also consider whether these buildings can be re-adapted economically to support current and any future reorganized school grade structures and educational programs. Other factors that should be taken into consideration are the costs of new construction compared to the costs of renovation and re-adaptation of existing facilities for different educational programs or functions.

Construction cost estimates are indicated in the report for the purpose of providing general cost estimates for the team's recommended options. As the school board makes decisions on how to proceed, the school board is advised to hire an architect to develop more detailed planning and cost estimates. This additional information will provide the Giles County school division with critical information needed for deciding on whether to proceed with new or renovated school facilities. The team believes that the Giles County schools can realize savings in operational and maintenance costs by adopting the recommendations contained in this report.

Schools are designed to meet the educational program developed at the time that they are planned and constructed and their operating capacity will change over time because of external factors. Some of these factors may include the following:

- Instructional program changes and increases in course offerings
- Changes in the Virginia Standards of Accreditation
- Growth in programs for exceptional and gifted students
- Growth of remedial programs
- Growth in special education programs and their facility needs
- Increase need for additional computer labs and other specialized course offerings
- Lower pupil/teacher ratios adopted by the school division

- Growing need to provide space for more team sports and other extracurricular activities

Any single, or combination of these factors, can change the operating capacity of a school building. In most cases, this can result in the school division relying on supplemental classrooms to meet the increased need for instructional space, or the use of non-instructional spaces as classrooms.

The primary objective of the facility evaluation was to determine whether the school division should consider renovating the existing school buildings or build new schools, consolidate schools, make changes to the current grade structure, or to continue to operate the system as is. The team considered several factors before coming to its conclusions and these include:

- The facility's compliance with the Americans with Disabilities Act (ADA)
- The buildings' ability to support the educational program
- Adequacy of existing spaces
- Adaptability of the buildings
- Location of the school within the county
- Aesthetic and historical significance of the facility
- Condition of the building's structural, plumbing, mechanical, and electrical systems
- Condition and maintenance of existing roofs
- The presence of asbestos or other hazardous materials
- Operational and maintenance efficiency of the building
- Site size and characteristics, including parking, pedestrian, and vehicular traffic control
- Safety and security concerns in the building
- Safety concerns of playgrounds and playground equipment
- Size of current bus fleet
- Current attendance zones and bus routes
- Total number of students transported by bus and the travel time to reach the schools
- Projected cost to renovate the building for another 20 to 25 years of useful life (Typically, when renovation costs are expected to exceed 50 percent of the cost of similar new construction, renovation would not be recommended.)
- Availability of municipal water and sewer services

The team's recommendations are supported by a brief rationale on the pages that follow. Factors that the team considered in making these recommendations were: the current enrollment at each facility, projected growth in enrollment, location of the existing school buildings within the county, each school's student operating capacity, grade structure, and the current use of instructional and non-instructional spaces to support the instructional program.

While the team recognizes that the school board may consider and prefer other options, the team has made an attempt to provide a report with recommendations that can effectively meet the educational and operational efficiency goals of the division in the future. The team was also aware of the unique characteristics of the Giles County school division and these characteristics were given serious consideration as the team formulated its recommendations. Some of the characteristics include:

1. The commitment expressed on the part of the division superintendent to maximize the efficiency of school facilities and pupil transportation operations.
2. The trend in average daily membership of the full-time student enrollment since school year 2007-08 and projected enrollment. (See Table 1).
3. The major renovations and addition projects done to all school facilities in operation.
4. The more recent renovation projects at Eastern Combined and the Giles County Technical Center.
5. The efficient use of itinerant teaching staff for music and art.
6. All schools conveniently located along the 460 highway corridor, in the more highly populated areas of the county.

The superintendent provided the team with a summary of each school's current enrollment, projected enrollments, bus routes, current attendance zones, and an appraisal report of all school properties, utilities expenses of each school building, and overall floor plan layout of each school. This information greatly assisted the team in developing options and recommendations for Giles County school facilities.

The team encourages the school division to continue to study both the timing and feasibility of renovating the school facilities which were the focus of this survey. This is often a difficult task since an objective and logical analysis of the existing conditions and construction cost is not always easily developed. It is hoped that the recommendations and rationale contained in this report will help the Giles County School Board achieve and obtain a plan that is both economical and best suited to meet its future education and facility needs.

School Facility Options

The continued improvements and renovations done to all Giles school facilities over the past 15 to 20 years have contributed to enhancing the quality of these buildings, thus making the task of the team more difficult in considering which buildings are worth retaining. The team, in making its recommendations, considers many factors including the quality of the facility, enrollment, efficiency, programs that can be sustained by the building, and flexibility of the facility to adapt to future program needs. However, it rests upon the school division's management and the local school board to respond to the changing needs of the schools and the buildings' suitability to support the programs offered.

As the team began to evaluate the Narrows Combined, Narrows High, Macy McClaugherty, Giles High, and Eastern Combined facilities and their sites, it considered the following: current grade structures, enrollment trends, disability accessibility, the cost to maintain and renovate building systems and their ability to support a modern educational program, as well as to provide a healthy and safe environment for students and staff.

Based on the data provided and a survey of all school buildings, the team developed the following three (3) options and recommendations for the school facilities. All three options recommended involve the relocation of Narrow High School students to the Giles High School site, a reconfiguring of the school division's current grade structure, and a possible realignment of some school boundaries. The options that follow are supported by rationale (see page 16 in the report).

Option 1

- Narrows High School site:
 - Close Narrows High School and Narrows Combined
 - Move Narrows High School students (grades 9-12) to Giles High School site
 - Create an elementary PK-5 (370 enrollment) and 6-8 middle school (about 172 enrollment) on the former Narrows High School site
- Eastern Combined:
 - Add an 8th grade wing and move 8th grade students from Giles High School to create a grade 6-8 middle school (enrollment 373) and a PK-5 elementary school (enrollment 327) at the Eastern school site
- Macy McClaugherty Combined:
 - Re-assign grades 6-7 students currently at this site to the new Narrows Middle or to Eastern Middle
 - Convert Macy McClaugherty Combined into a PK-5 school (enrollment 441)
 - To mitigate the vehicular back up problem at this site, hire an engineering professional to study site vehicular congestion at Macy McClaugherty and make recommendations for site vehicular circulation improvements to alleviate vehicular back up from the site onto the public streets.
- Giles H.S. Site:
 - Current Giles High School site converts into a central high school (enrollment 814) for the school division

- Add four laboratory spaces to meet additional needs resulting from new student enrollment.

Option 1 Cost Estimate

- **Narrows HS Site:** Renovate the Narrows High School site and convert to a PK-5 and 6-8 facility
Add primary classroom, renovations and alterations needed

Add 5 rooms (KG & 1 st grade rooms): 6,250 SFT @ \$200/SFT	\$1,250,000
Renovations including ADA/HVAC: 94,323 SFT @ \$70/SFT	\$6,602,610
Total for Narrows site:	\$7,852,610

- **Eastern Combined Site:** Add grade eight and renovate Eastern Combined site into a PK-5 elementary school, and a grade 6-8 middle school site

Add a six classroom room pod: 6,000 SFT @ 230/SFT:	\$1,380,000
Total for Eastern Combined site:	\$1,380,000

- **Giles High School site:** add four science labs, renovate

Add four new science labs 5,000 SFT @ \$250/SFT:	\$1,250,000
Renovations including ADA/Library/HVAC: 110,305 SFT @ \$70/SFT	\$7,721,350
Total for Giles High School site:	\$ 8,971,350

- Macy McClaugherty Combined site: Hire an engineering company to study site vehicular circulation issues and propose solution to traffic problems.

Estimated Cost:	\$1,000,000
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<u>Option 1 Total Cost:</u>	<u>\$19,203,960</u>
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Summary Option 1:

- School division will operate on four school sites verses five sites currently
- Provides annual savings on utilities (electricity, gas, water) by closing Narrows Combined of \$108,000
- Potential additional facility operations savings by operating four facilities
- Other potential savings from reduced building maintenance, school administrative staffing
- Provides a grade PK-5 elementary, 6-8 middle, and 9-12 high school grade structure

Option 2

- Narrows High School site:
 - Build a new PK-5 elementary for 370 students on the Narrows High School site
 - Convert Narrows HS to a 6-8 middle school countywide
 - Close Narrows Combined

- Giles High School Site:
 - Move grades 9-12 students from Narrows High School to Giles High School site
 - Move 8th grade from Narrows and Giles High School and the grades 6-7 students from Narrows, Macy McClagherty, and Eastern Combined schools to a new county-wide central middle school at the Narrows High School site.

- Macy McClagherty Combined site:
 - Macy McClagherty site: Hire an engineering company to study site vehicular circulation issues and propose solution to traffic problems.

Option 2 Cost Estimate

- **Narrows High School site:** build a new Pre-K elementary school, convert Narrows High School to a grade 6-8 middle school

New PreK-5 elementary School for 370 capacity:

370 students @ 110 SFT/Student	48,000 SFT
Cost for 48,000 SFT @ \$220/SFT	\$ 10,560,000
Other costs @ 20%	\$ 2,112,000
Cost for New Elementary School	\$ 12,672,000

Cost to renovate and convert Narrows High School to grades 6-8 middle

General renovation/ADA/HVAC 94,323 SFT @ \$70/SFT	\$ 6,602,000
Total for Narrows site:	\$ 19,274,000

- **Giles High School site:** add four science labs, renovate

Add four new science labs 5,000 SFT @ \$250/SFT:	\$ 1,250,000
Renovations including ADA/Library/HVAC: 110,305 SFT @ \$70/SFT	\$ 7,721,350
Total for Giles High School site:	\$ 8,971,350

- **Macy McClagherty Combined site:**
 - Macy McClagherty site: Hire an engineering company to study site vehicular circulation issues and propose solution to traffic problems.

Estimated Cost: \$1,000,000

Option 2 Total Cost: \$29,245,350

Summary Option 2:

- School division will operate on four school sites as compared to the current five school sites

- Provides annual savings on utilities (gas, electricity, water) by closing Narrows Combined of \$108,000
- Other savings from reduced building maintenance, transportation of Narrows technical students to the Giles Technical Center, some reduction in school administrative staffing (no teachers)

Option 3

- Narrows High School site:
 - Close Narrows High School and move the 9-12 grade students to the Giles County High School site
 - Create a new central Junior High with grades 7-9 at the Giles High School site (grade 9 students can be accommodated into current HS building)
- PreK-6 Elementary schools
 - Narrows ES/MS, Macy McClaugherty Combined and Eastern Combined become PK-6 elementary schools
- Macy McClaugherty Combined site:
 - Hire an engineer to study site vehicular congestion at Macy McClaugherty Combined then make recommended site improvements

Option 3 Cost Estimate

- **Giles High School site:** build new 360 student capacity junior high; renovate existing High School;

New 360 students Jr. High:	360 student @160 SFT/Student:	57,600 SFT
	Cost for 57,600 SFT @ \$240/SFT	\$13,824,000
	Other costs @ 20%	\$ 2,764,800
	Total cost for new Jr. High.	\$ 16,588,800

Add four science labs, renovate

Add four new science labs 5,000 SFT @ \$250/SFT:	\$1,250,000
Renovations including ADA/Library/HVAC: 110,305 SFT @ \$70/SFT	\$7,721,350
Total for renovations @ Giles H.S. site:	\$ 8,971,350
Total for Giles HS site	\$25,560,150

- **Macy McClaugherty Combined site:**
 - Macy McClaugherty Combined site: Hire an engineering company to study site vehicular circulation issues and propose solution to traffic problems.

Estimated Cost: \$1,000,000

Option 3 Total Cost: \$26,560,150

Summary Option 3:

- School division will operate on four school sites as compared to the current five school sites
- Annual savings on utilities achieved by closing Narrows High School of \$127,000
- Other savings from reduced building maintenance, transportation of Narrows technical students to the Giles Technical Center, some reduction in school administrative staffing (no teachers).

Rationale for School Facility Options

The narrative which follows will serve to support the three school facility options outlined in this report. All three options contain recommendations to move the school division towards a more uniform school grade structure, and the closing of Narrows High School and transferring its students to the Giles High school site. It is hoped that the rationale that follows will provide to the Giles County School Board some additional insight into the thought process and analysis the team went through to arrive at its conclusions and recommendations.

To gain an objective view of the conditions of the schools, the team visited every school facility. The team looked at all spaces in each school building as well as play fields and athletic fields, playground equipment, site parking and existing traffic patterns at each school site. Based upon the information gathered from these visits and a review of the enrollment data (Attachment B), the team began to formulate some ideas regarding the five school facilities.

With the exception of Eastern Combined, the team noted many conditions that were similar at all school facilities across the county. The school buildings were constructed in the 1960's and were renovated in the 1990's or early 2000's. These renovations provided more energy efficient windows and the building heating systems were converted to natural gas. Other facility issues also noted were that the science labs at the high schools were in need of renovation and modernization; except for Eastern Combined, the bathrooms at the schools do not fully comply with the requirements of the Americans with Disability Act and the schools' plumbing and lighting systems are in need of an upgrade as well. Additionally, it was expressed to the team that the mechanical systems in these schools, now nearly twenty years old, are in need of upgrades or replacement as they are more difficult to maintain and replacement parts for these units are becoming less available.

When the team looked at the 2017 school enrollments for Giles County schools, it found comparable enrollment totals for the three combine schools; however, this was not the case for the high schools. The Giles High School's current enrollment is 658 students in grades 8-12 and Narrows High School's enrollment is 347 students for grades 8-12. During its visit, the team noted that in both high schools a large number of classrooms have been converted into computer labs and special education rooms, and based on its observations during its visits to these two facilities, the team felt that these classroom spaces were not being used optimally.

In high schools with smaller enrollments, school divisions face difficulties in their efforts to provide a rich and diverse academic program. Smaller enrollments make it harder for a school division to adequately support academic programs that offer a varied number of course offerings, and this in turn can affect the opportunity for students to be exposed to diverse course offerings, including advanced courses. Consequently, the team felt that the school board should consider creating one centralized high school for the school division. By creating a central high school with a larger student body, the Giles County school division will be able to expand its course offerings and provide all its high school students the same opportunity to enroll in a wider variety of classes if they so choose.

Considering all these factors, as well as the location of the Technology Center, the team concluded that the Giles High School site would be an ideal location for a centralized county high school. This site could easily absorb the Narrows High School students with minimal additions and renovations to

the high school facility, and the fact that the technology center is already on this site would also support this centralization. The team felt that there may be a need to also upgrade or add new science labs at the Giles High School facility to support the new student enrollment.

The creation of a central high school will provide an upgraded facility for all high school students in Giles County and enable cost savings to the division as well. As mentioned earlier in this report, under Options I and II, the Narrows High School students would be moved to the Giles High School site. The Narrows Combined facility is proposed to be closed in both these options. With the closing of Narrows Combined, there will be an annual energy cost savings of \$108,000 and additional cost savings due to decreased operational and maintenance costs with one less operating facility in the school division. Under Option III, the students from Narrows High School would also be moved to the Giles High School and the Narrows High School facility would be closed. This option would result in an annual energy costs savings of \$131,982 and additional operational and maintenance cost savings as well. In all the options proposed, there may be additional cost savings that could occur in other areas as well.

As the team toured the schools, two principals expressed to the team the desire to separate the 6th, 7th, and 8th grade students from the elementary and high school students. The rationale for providing a separate 6th, 7th, 8th grade middle school program has been well documented in the past, and the prevailing grade structure being offered in Virginia's schools today support a separate middle school concept. Much research has been done to support establishing a middle school curriculum for students in this age group. Advocates of a middle school program have long supported the middle school model as the most appropriate way to educate young adolescents. The following reasons have been advanced by educational experts to support the middle school rationale*:

- The age of puberty has been declining.
- The differences in physical and emotional maturation of students in this age group should be reflected in different educational methods that are needed to teach adolescent students.
- Given the differences in the cognitive and psycho-social levels of middle school students, they are not ready to perform higher intellectual levels that are necessary for high school or college work.
- The need for the curriculum to offer a wider variety of learning skills and exploratory educational experiences.
- A full exploratory program will help to address the short attention span of middle school students.
- Middle schools are free to offer programs that are distinctly different from elementary and high schools that can result in a positive effect in student achievement.
- The middle school can offer a curriculum that is balanced on both academic goals and human developmental needs of adolescent students.
- The middle school concept can offer an education program that is better suited to dealing with the unique physical needs and cognitive skill levels of adolescents, which will help students to better apply what is learned to their own lives.

**(References)*

Instruction in the Middle School; Thomas E. Curtis, Wilma W. Bidwell
Middle School Rational; H. Jurgen Combs

It is acknowledged that while the Option III junior high concept does not fully move the county to a true grade 6-8 middle school program, it does move the county closer towards the middle school model than what is currently being offered with its grades PK-7 and grades 8-12 grade structures. The three proposed options will require both renovations and additions, or new construction, renovations and additions as well as ADA and HVAC upgrades at most school sites. The cost and scale of these projects as outlined in the report is very preliminary. It is recommended that the school board hire an architect to further study the number and types of educational spaces that will be needed to meet the option selected, and to provide a more detailed construction cost analysis.

All three options proposed also recommend that the school board hire a professional consulting civil engineering firm to study and remediate the traffic situation that the team observed at the Macy McClagherty school site at the end of the school day. Parents were in line waiting to pick up students, and the waiting vehicles were backed up from the school building and out of the school site to the adjoining highway. Not only does this situation create unsafe areas around the school's drop-off and pick-up zones, it also requires school staff to spend much of their time each day controlling and managing the parent pick-up and drop-offs daily for safety. The team therefore recommends that the school board hire an engineering firm to study this problem and provide a solution to the vehicular circulation congestion that is unique to the Macy McClagherty site. This study would also provide to the school board the estimated costs to make the necessary civil engineering changes that would be proposed.

Commendations

The team wishes to commend the Giles County School Board and the division superintendent and staff for the following:

- The overall quality of the housekeeping and maintenance of the grounds of all the school facilities.
- Vision to renovate and recreate the Giles Technical Center with high quality course offerings.
- Building envelope improvements to all buildings, new windows, and natural gas replacing coal fired boilers at most schools.
- The recent addition and renovation projects at Eastern Combined and the Giles County Vocational Center and the school board's past commitment to continually improve and renovate all school facilities.
- Principals and staff were well engaged and pro-active and enthusiastic leaders.
- The dual enrollment program offerings.
- STEM curriculum offered division-wide.
- Outstanding cooperation with county government.
- Installing new metal roof at Narrows Combined.
- The cooperation and support of the central office staff in conducting the survey and Dr. Arbogast in leading the team on its survey of the schools.

Recommendations

The team recommends that Giles County School Board and the division superintendent explore the following:

- Consider lease to own options as an alternative means of acquiring school buses to be able to upgrade the fleet more easily.
- Consider the purchase of used buses through qualified Virginia vendors to replace current older buses in the fleet.
- Consider doing a detailed space utilization study of each school building to determine the usage of all spaces and the efficiency of each building.
- Review the impact on school attendance zones with the decrease of a school facility and the reorganization of the grade structures.
- Consider hiring an architect or engineer:
 - to do a detailed study of school facility construction needs and costs based on the proposed options in this report, or any other option that the school board adopts
 - to review and study ADA accessibility issues at all school sites, playgrounds and buildings
 - to review vehicular circulation and safety issues at the Macy McClaugherty site.
- Review the school division's curriculum to determine how the school buildings can better support the curriculum and grade structures that the school division adopts.
- Refer to the latest United States Consumer Product Safety Commission (CPSC) manual "Handbook for Public Playground Safety" and conduct an assessment to ensure school playground and playground equipment safety.

Bibliography: **(References)*

*Instruction in the Middle School; Thomas E. Curtis, Wilma W. Bidwell
Middle School Rational; H. Jurgen Combs*

Appendix



Facility Construction & Maintenance

Appendix A

8-2017

Division Name: ___ Giles County ___

Self-Review Form

School Division Facility Construction & Maintenance Program

Date: ___ August 30, 2017 ___

Review Process Recommendations

Select a review team, to include at least the following facilities department personnel:

- Director
- Supervisor of Maintenance Services
- Supervisor of Facilities Services
- Supervisor of Custodial Services
- Supervisor of Grounds
- Leads: HVAC / Mechanical / Electric / Plumbing / (etc.)

(Members of the team should have at least 3-years of experience, in their position, if possible.)

- A. Determine a timeline for the Review.
- B. Complete the written review and recommendations (comments) from the transportation team, for the VDOE efficiency assessment.
- C. Provide a written report to the division superintendent (or designee) including dates and names of team members.
- D. Provide any available information (examples of forms, handbooks, manuals, photos, etc.) with the report to substantiate the findings.
- E. Identify any areas that are good examples of best practice with the facilities team. Identify any areas that may need assistance or recommendations.

Review Sections:

- A. Organization & Management
- B. Plans, Policies & Procedures
- C. Personnel
- D. Facilities Management
- E. Maintenance Management
- F. Energy & Environmental Management
- G. Custodial Management
- H. Safety, Health & Security
- I. Outsourcing & Collaboration
- J. Summary Review



Division Name: _____ Giles County _____

Self-Review Form
School Division Facility Construction & Maintenance Program

Reviewer Name: _____ COMMITTEE _____ Date: August 30, 2017 _____

Section A: Organization & Management (Example - Team Lead: Director)

	YES	NO	NA	Comments
A 1		X		Maintenance & Custodians are County Employees
A 2	X			County Employee Handbook
A 3	X			

Reviewer Name: _____ Date: _____

Section B: Plans, Policies & Procedures (Example - Team Lead: Director, Supervisors)

	YES	NO	NA	Comments:
B 1	X			We have a policy (FB); in addition, it is discussed each year and included in the 6 year plan
B 2	X			This information is reviewed each year and discussed with the school board during the SB retreat each February.



Facility Construction & Maintenance

Self-Review Form

School Division Facility Construction and Maintenance Program

Division Name: Giles County

Reviewer Name: COMMITTEE Date: August 30, 2017

Section C: Personnel (Example - Team Lead: Director; Supervisors)

		YES	NO	NA	Comments
C	1	The department (or human resources department) maintains secured, separate personnel and medical files, for all department employees.	X		
C	2	Each employee is provided a written job description (with specific duties and required qualifications) and handbook.	X		
C	3	The department maintains an employee 'Position Control Report' indicating the number of filled and vacant positions and the number of substitute custodians.		X	They are county employees
C	4	Maintains data on staff turnover (left, terminated, retired, etc.) for the past 3-years.		X	County Employees
C	5	The department has an employment recruitment, incentive and recognition programs. If yes, please give examples.		X	
C	6	All department employees (administrative, maintenance & custodial) are provided (and documented) on-going safety training and certification programs; opportunities for staff development; and annual employee evaluations.	X		



Division Name: Giles County

Self-Review Form
School Division Facility Construction & Maintenance Program

Reviewer Name: COMMITTEE Date: August 30, 2017

Section D: Facilities Management (Example - Team Lead: Supervisor; Leads)

		YES	NO	NA	Comments
D 1	The school division has established written policies covering: Facilities Development	X			
D 2	Program Student Operating Capacity	X			
D 3	Division-level instructional technology systems	X			6-yr Technology Plan, http://sbo.gilesk12.org/Giles%20County%20Schools%20Technology%20Plan%20Addendum%2020162018.pdf
D 4	Playground Equipment and Installation	X			Policy FE & FE-R
D 5	Educational Facilities Specifications	X			VSBA Policy
D 6	Energy Conserving Construction		X		
D 7	Energy Management	X			We have a person that is responsible for this for our system (John Ross).
D 8	Lead Testing of Schools Potable Water	X			In the process of having this conducted by our Environmental Group – E & I.
D 9	Compliance with the accommodations for the Americans with Disabilities Act (ADA)	X			
D 10	Construction Planning			X	
D 11	Facilities and Grounds Inspections	X			This is part of the Safety Audit that is done each year.
D 12	The school division administrators: Provides the department with updated student enrollment projections by age group.	X			

D 13	Provides accurate student enrollment projections on an annual basis.	X			
D 14	Provides the department with past student enrollment trends for elementary, middle and high school age groups from the school division.	X			
D 15	<u>The department maintains and:</u> Provides written operating procedures manuals, for employees and school facilities administrators.		X		
D 16	Performs school asbestos inspections and maintains management plans, under the Asbestos Hazard Emergency Response Act (AHERA) as required.	X			This is done by our Environment group – E & I (3 rd Party).



Division Name: ___Giles County___

**Self-Review Form
School Division Facility Construction & Maintenance Program**

Reviewer Name: _____ COMMITTEE _____

Date: ___August 30, 2017___

Section D: Facilities Management (cont.) (Example = Team Lead: Supervisor; Leads)

		YES	NO	NA	Comments
D 17	Performs radon testing as required and reports test results to the Virginia Department of Health (VDH).	X			Testing is completed but not reported
D 18	The department has established procedures that: Updates records (using computer software) on each school building and school site.	X			Work order software maintains records of work that is completed at each facility
D 19	Maintains a current student operating capacity for each school building.	X			
D 20	Maintains an accurate facility inventory that identifies the use and size of each classroom.	X			
D 21	Considers supplemental classrooms to accommodate student capacity in school facilities.	X			
D 22	Maintains a technology-wiring infrastructure for all new and existing facilities to the same standards to support technology needs.	X			



Division Name: _____ Giles County _____

Self-Review Form
School Division Facility Construction & Maintenance Program

Reviewer Name: _____ COMMITTEE _____

Date: _____ August 30, 2017 _____

Section E: Maintenance Management (Example - Team Lead: Supervisor; Leads)

	YES	NO	NA	Comments
E 1		<input checked="" type="checkbox"/>		
	<p><u>The department maintains and provides:</u> Written operating procedures manuals, for employees and school facilities administrators.</p>			
E 2	<input checked="" type="checkbox"/>			iWorq
	<p>Computer/software system to create and manage an effective work-order process and a preventive maintenance program for efficient and economic facility operations. If yes, please list the name/type of software.</p>			
E 3	<input checked="" type="checkbox"/>			Reviewed through iWorq
	<p>Written protocol and system for facility maintenance work orders as they come from the field.</p>			
E 4	<input checked="" type="checkbox"/>			Overtime is done on an "as needed basis" when something has to be completed or there is an emergency
	<p>Department employees routinely work overtime hours. If yes, please provide additional information.</p>			
E 5	<input checked="" type="checkbox"/>			i.e. - Weightroom/AEP building at NHS; Restroom Facility @ GHS; new parking lot @ Macy; new awnings @ Macy for the PreK classes; Modular units @ Macy & EEMS for our Pre-school programs;
	<p><u>The school division has:</u> Completed renovations, additions or new construction projects in the past 5-years.</p>			
E 6		<input checked="" type="checkbox"/>		
	<p>Closed a school in the past 10-years.</p>			
E 7		<input checked="" type="checkbox"/>		
	<p>Opened a new school in the past 10-years.</p>			



Facility Construction & Maintenance

Division Name: Giles County

Self-Review Form

School Division Facility Construction & Maintenance Program

Reviewer Name: COMMITTEE

Date: August 30, 2017

Section F: Energy & Environmental Management Example - (Team Lead: Supervisor; Leads)

		YES	NO	NA	Comments
F 1	<u>The department:</u> Established writing guidelines regarding to energy use, water consumption, and waste recycling programs for all facilities. (Example: A guideline to remind staff to turn off equipment when not in use.)	X			We have older policies in place from when our Energy Management program was started. The Energy Manager gives Shutdown checklist's to Administrators.
F 2	Replaced boilers, windows and lighting fixtures with more energy efficient equipment. If yes, please provide additional information.	X			NEMS Boiler; Gym Lighting; Lights @ the Garage
F 3	Constructed or renovated buildings in the past 10-years that meet "green" building standards.		X		
F 4	Tracks energy usage (using the EPA Energy Star Portfolio Manager or a similar tool), and has conducted division-wide energy audits on all facilities in the past 3-years.	X			eCap program that is utilized by our Energy Manager
F 5	Demonstrated a reduction in the total water consumption from an initial baseline.		X		
F 6	Developed sites or grounds for ecological uses such as rain gardens, native plant and outdoor classrooms.	X			Agriculture Lab behind GHS; GTC has 2 areas designated during renovations 8+ years ago.
F 7	Equipped some or all facilities with an automated system for controlling HVAC equipment.	X			All school except NEMS



Division Name: _____ Giles County _____

**Self-Review Form
School Division Facility Construction & Maintenance Program**

Reviewer Name: _____ COMMITTEE _____ Date: _____ August 30, 2017 _____

Section G: Custodial Management (Example - Team Lead: Supervisor; Leads)

		YES	NO	NA	Comments
G 1	<u>The department:</u> Provides written operating procedures manuals, for employees and school facilities administrators.	X			
G 2	Routinely inspects and documents the levels of cleanliness.	X			
G 3	Provides written guidelines for trash reduction, recycling or composting programs.		X		Site based recycling efforts
G 4	Implemented an integrated pest management program in all division facilities.	X			Contracted 3 rd party services
G 5	Implemented a "green" cleaning custodial program.		X		
G 6	Implemented a centralized procurement process for cleaning supplies and their delivery to individual school facilities in a timely manner. School storage areas are required to be secured at all times.	X			



Division Name: ___ Giles County ___

Self-Review Form
School Division Facility Construction & Maintenance Program

Reviewer Name: ___ COMMITTEE ___ Date: ___ August 30, 2017 ___

Section H: Safety, Health & Security (Example - Team Lead: Director; Supervisors; Leads)

		YES	NO	NA	Comments
H	1	To insure safety and health in the maintenance and operation of all school facilities, the department: Inspects the boiler systems annually and needed repairs promptly completed.	X		
H	2	Coordinates with the local city/county health department to periodically inspect individual school facilities (restroom, kitchens, etc.) for adherence to sanitation codes.	X		
H	3	Has a plan to test and if necessary, remediates potable water sources, water drinking fixtures, piping and supply sources to be free from lead and other harmful contaminants. (List any school facilities using well-water systems.)	X		Testing will be conducted during the early part of September, 2017
H	4	Local city/county Fire Marshalls to periodically inspect fire extinguishers, door exit sign lights, emergency lighting and fire alarm systems, and fire safety equipment for individual school facilities for fire hazards and adherence to fire codes.	X		
H	5	Periodically inspects the buildings, grounds and playground equipment to ensure they are maintained in a condition that reduces the possibility of injury to anyone using the facility and/or equipment.	X		
H	6	Complies with the <i>Code of Virginia and Standards of Accreditation</i> schedules for fire and lock-down drills, for all school buildings, annually.	X		



Division Name: _____ Giles County _____

**Self-Review Form
School Division Facility Construction & Maintenance Program**

Reviewer Name: _____ COMMITTEE _____ Date: _____ August 30, 2017 _____

Section I: Outsourcing & Collaboration (Example - Team Lead: Director; Supervisors)

	YES	NO	NA	Comments
1	X			NRV Food Coop (cafeteria's)
2		X		
3	X			
4	X			We currently have Combined Services with the county. The maintenance, garage, & custodial staff maintain and clean the school facilities (and vehicles), as well the county facilities. We have been doing the maintenance crew piece of this since about 2007 and the custodial piece for about 2 years.



Division Name: Giles County

Date: August 30, 2017

Reviewer Name: _____

Additional Comments:

Section A:

Section B:

Section C:

Section D:

Section E:

Facilities Review





Division Name: Giles County

Date: August 30, 2017

Reviewer Name:

Additional Comments:

Section F:

Section G:

Section H:

Section I:

Facilities Review

Appendix B

**Enrollment Projections
October 19, 2017**

	December 31 Enrollments										Projected Enrollments			
	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18**	18-19*	19-20*	20-21*	21-22*
EEMS	497	490	482	470	484	456	460	450	429	433	427	416	416	415
MMS	561	526	527	515	506	500	486	496	521	508	517	514	526	525
NEMS	560	537	511	484	505	490	463	457	432	462	464	467	469	477
Elementary	1618	1553	1520	1469	1495	1446	1409	1403	1382	1403	1408	1397	1411	1417
GHS	662	668	662	674	674	676	688	666	678	659	646	639	621	594
NHS	305	333	310	292	306	320	350	324	340	348	333	311	302	279
Secondary	967	1001	972	966	980	996	1038	990	1018	1007	979	950	923	873
TOTAL	2585	2554	2492	2435	2475	2442	2447	2393	2400	2410	2387	2347	2334	2290

* Enrollment projections for incoming KG classes equals the average size of that school's current KG-5 levels (52 for EEMS, 64 for MMS and 58 for NEMS).
 ** Enrollment based on October 19, 2017

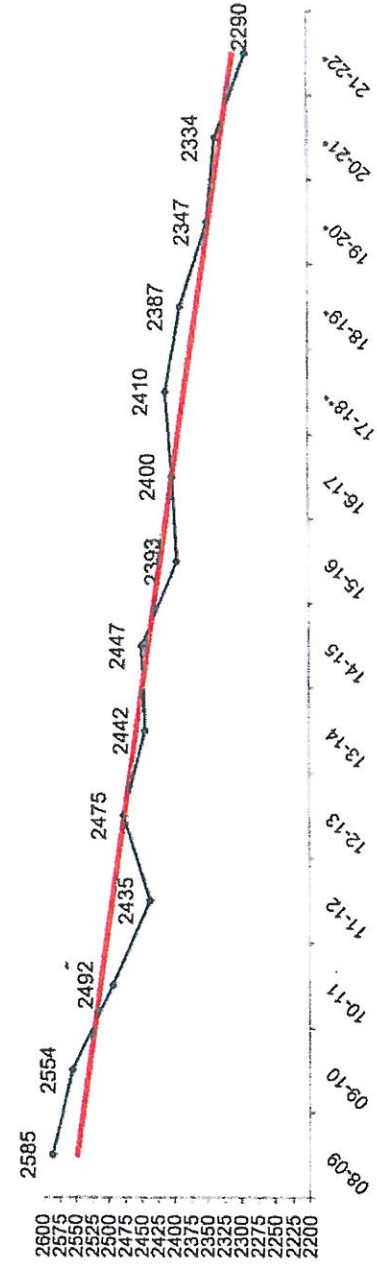


Table C6. Expenditures by Census region for sum of major fuels, 2012

Released May 2016

Appendix C

	Sum of major fuel expenditures (dollars)											
	Sum of major fuel expenditures (million dollars)				per million Btu				per square foot			
	North-east	Mid-west	South	West	North-east	Mid-west	South	West	North-east	Mid-west	South	West
All buildings	34,917	27,379	54,780	31,983	23.93	17.49	21.35	23.31	2.25	1.45	1.6	1.74
Building floorspace (square feet)												
1,001 to 5,000	2,672	3,026	7,166	3,478	25.18	19.54	22.38	24.58	2.53	1.63	2.12	1.99
5,001 to 10,000	2,251	2,490	5,336	4,154	25.29	17.04	21.31	25.86	1.8	1.33	1.51	1.85
10,001 to 25,000	4,259	3,578	7,083	5,001	26.62	18.46	22.16	24.63	1.77	1.24	1.36	1.39
25,001 to 50,000	2,846	3,804	6,772	3,876	23.09	17.25	21.35	23.98	1.73	1.26	1.5	1.43
50,001 to 100,000	5,547	4,382	9,138	3,456	22.1	17.28	22.2	22.87	2.07	1.61	1.49	1.46
100,001 to 200,000	6,448	3,488	7,317	4,654	21.37	18.12	21.3	23.6	2.54	1.45	1.42	2
200,001 to 500,000	6,007	4,029	6,640	4,204	24.53	16.27	20.07	20.71	2.69	1.48	1.8	2.02
Over 500,000	4,886	2,583	5,327	3,160	26.63	16.48	19.51	20.55	2.83	1.82	2.01	2.47
Principal building activity												
Education	3,432	3,825	6,955	2,606	20.35	16.25	21.63	22.44	1.67	1.21	1.35	1.41
Food sales	1,684	803	2,053	1,626	23.37	21.59	23.68	24.57	5.32	4.62	5.15	4.49
Food service	1,735	1,701	4,186	2,334	23.85	16.29	17.71	23.15	5.94	4.6	5.43	6.04
Health care	3,760	2,262	4,503	2,548	21.36	14.7	17.84	18.84	3.53	2.63	3.12	3.24
Inpatient	2,542	1,549	3,376	1,906	20.52	13.63	16.41	18.07	4.73	3.12	3.78	4.27
Outpatient	1,218	713	1,126	641	23.37	17.7	24.12	21.56	2.3	1.95	2.06	1.89
Lodging	2,143	1,800	3,950	3,104	21.74	16.77	19.48	19.92	2.13	1.7	1.72	2.13
Mercantile	3,919	3,864	9,228	5,694	25.55	18.4	23.21	23.09	2.37	1.81	1.95	2.02
Retail (other than mall)	1,675	1,682	3,224	2,402	30.01	19.65	24.21	26.93	2.01	1.47	1.52	1.8
Enclosed and strip malls	2,244	2,182	6,004	3,292	23	17.54	22.7	20.92	2.74	2.2	2.31	2.23
Office	9,791	5,289	9,276	6,426	26.49	19.82	25.19	27.19	2.64	1.59	1.69	1.88
Public assembly	2,276	2,457	3,674	1,810	24.6	17.77	20.85	24.8	2.39	1.55	1.83	1.78
Public order and safety	1,021	412	959	Q	27.29	14.01	19.3	Q	2.96	1.23	1.67	Q
Religious worship	717	599	1,451	571	19.26	14.18	21.58	21.49	0.8	0.65	0.72	0.79
Service	1,133	1,523	2,039	918	23.23	17.35	20.03	27.38	1.38	1.03	1.24	1.32
Warehouse and storage	1,426	1,729	4,040	2,500	22.6	18.57	22.95	25.86	0.81	0.68	0.77	0.71
Other	1,741	924	2,149	1,145	26.99	18.83	18.46	20.4	6.38	2.13	2.6	2.45
Vacant	Q	191	316	327	Q	17.88	24.03	25.69	Q	0.36	0.19	0.49
Year constructed												
Before 1920	2,438	875	1,528	353	25.24	16.35	21.06	22.8	1.49	0.84	1.56	1.07
1920 to 1945	4,349	1,804	2,137	1,409	26.21	16.29	24.33	26.2	2.22	1.02	1.42	1.77
1946 to 1959	3,279	2,421	3,205	2,111	23.45	16.69	20.53	21.99	2.07	1.46	1.22	1.4
1960 to 1969	5,029	3,509	5,716	4,133	25.03	16.27	18.82	22.76	2.25	1.31	1.63	2.13
1970 to 1979	5,685	4,814	6,342	3,760	21.59	18.54	19.82	22.3	2.91	1.84	1.72	1.46
1980 to 1989	3,784	4,056	11,967	6,367	25.84	17.4	21.91	26.71	2.17	1.55	1.72	1.62
1990 to 1999	5,175	3,893	9,559	5,136	23.15	18.45	22.03	21.98	2.53	1.39	1.55	1.84
2000 to 2003	2,301	2,626	5,381	2,292	23.25	19.57	21.86	23.04	2.35	1.76	1.62	1.61
2004 to 2007	1,170	1,847	4,379	3,913	22.03	18.27	22.01	22.39	2.34	1.49	1.54	2.01
2008 to 2012	1,707	1,535	4,567	Q	24.09	15.08	22.73	22.78	1.89	1.54	1.69	2.24
Climate region¹												
Very cold/Cold	21,580	23,441	N	7,558	23.12	17.24	N	16.68	2.05	1.45	N	1.45
Mixed-humid	13,338	3,938	32,164	N	25.35	19.13	20.92	N	2.65	1.43	1.6	N
Mixed-dry/Hot-dry	N	N	Q	19,168	N	N	14.97	26.77	N	N	0.85	1.83
Hot-humid	N	N	21,303	Q	N	N	22.63	Q	N	N	1.69	Q
Marine	N	N	N	4,677	N	N	N	23.78	N	N	N	1.91
Ownership and occupancy												
Nongovernment owned	26,501	20,825	43,065	26,257	24.55	17.73	21.49	23.5	2.22	1.47	1.63	1.75
Owner occupied	11,366	10,409	20,496	11,012	22.8	16.92	20.72	21.49	2.08	1.42	1.69	1.92
Leased to tenant(s)	11,241	7,427	17,302	11,490	26.93	19.31	22.3	24.82	2.54	1.57	1.71	1.67

Owner occupied and leased	3,870	2,932	5,205	3,665	23.79	17.12	22	26.48	2.17	1.66	1.61	1.76
Unoccupied	Q	Q	63	Q	Q	Q	31.67	Q	Q	Q	0.06	Q
Government owned	8,416	6,554	11,714	5,726	22.16	16.76	20.83	22.5	2.32	1.38	1.49	1.71
Federal	Q	507	1,769	387	Q	19.56	23.69	17.91	Q	1.84	2.12	1.9
State	3,592	1,952	3,037	2,069	20.38	16.46	18.46	21.69	3.13	1.69	1.44	1.84
Local	4,389	4,096	6,909	3,270	23.3	16.61	21.37	23.79	1.98	1.24	1.41	1.62

¹These climate regions were created by the Building America program, sponsored by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE).

²In earlier CBECS publications, BAS was referred to as *Energy Management and Control System (EMCS)*.

Q = Data withheld either because the Relative Standard Error (RSE) was greater than 50 percent or fewer than 20 buildings were sampled.

N = No cases in reporting sample.

Notes: • Because of rounding, data may not sum to totals. • See the Guide to the 2012 CBECS Detailed Tables or CBECS Terminology for definitions of terms used in these tables and/or comparison of differences with prior CBECS tables. Both references can be accessed from <http://www.eia.gov/consumption/commercial/data/2012/> • Statistics for the Energy end uses category represent total consumption in buildings that have the end use, not consumption specifically for that particular end use. • HVAC = Heating, ventilation, and air conditioning.

Source: U.S. Energy Information Administration, Office of Energy Consumption and Efficiency Statistics, Forms EIA-871A, C, D, E, and F of the 2012 Commercial Buildings Energy Consumption Survey.

Appendix D COMMONWEALTH OF VIRGINIA DEPARTMENT OF EDUCATION ANNUAL SCHOOL REPORT FINANCIAL SECTION

2016-2017 ANNUAL SCHOOL REPORT GILES FUNCTION COST CENTER 64000 OPERATION AND MAINTENANCE DISTRICT WIDE SECTION

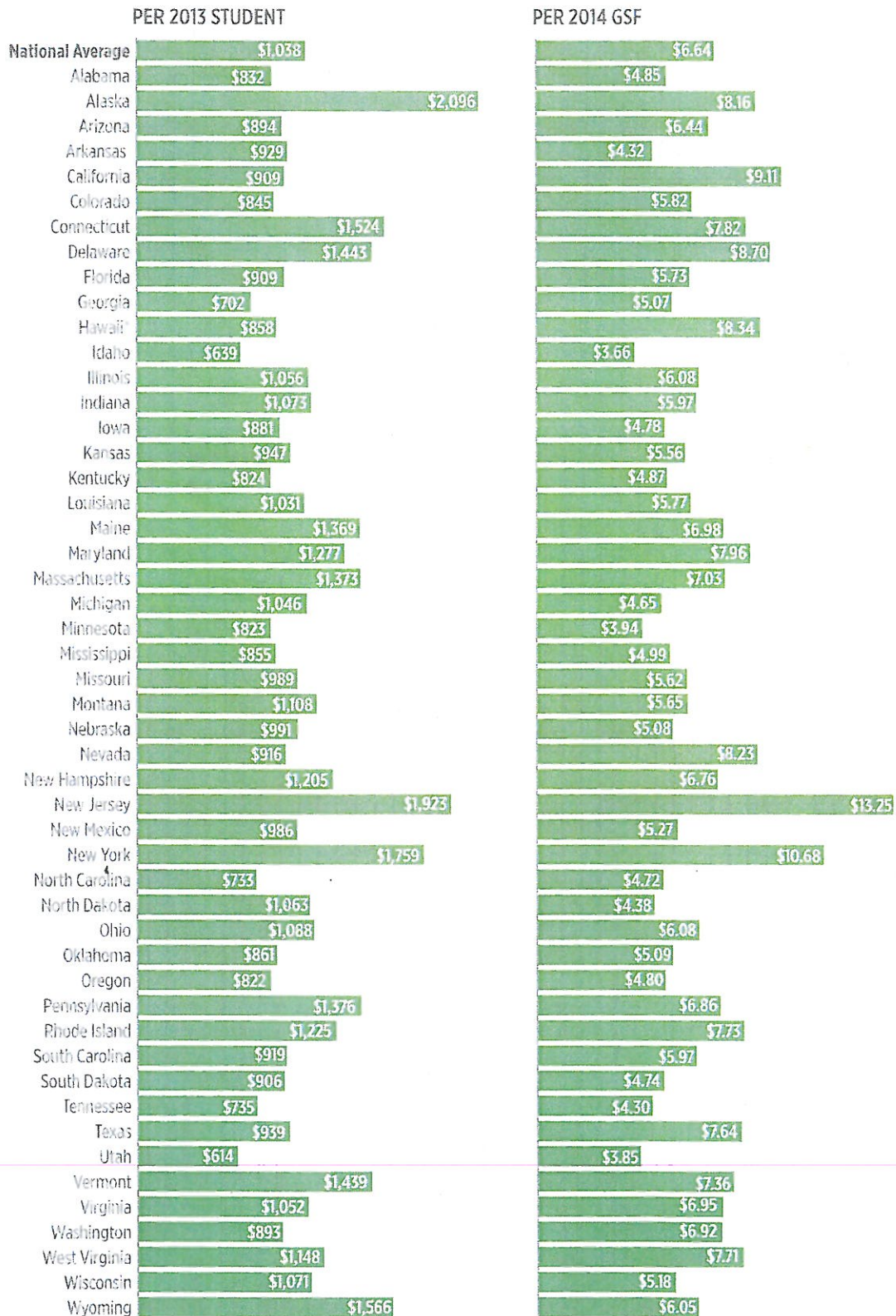
Shade Expenditures EXCLUDED from Required Local Effort Shade SOQ Defined Instructional and Support Expenditures

OBJECTS	MANAGEMENT & DIRECTION		ACTIVITY				WAREHOUSE/ DISTRIBUTION	TOTAL
	64100	64200	64300	64400	64500	64600		
Personal Services:								
1110								0.00
1130								0.00
1140								0.00
1142								0.00
1150								0.00
1160								0.00
1180								0.00
1190		31,720.68						31,720.68
1620		573.81						573.81
1660								0.00
Employee Benefits:								
2100		2,470.48						2,470.48
2210								0.00
2220								0.00
2300								0.00
2400								0.00
2500								0.00
2510								0.00
2600								0.00
2700								0.00
2750								0.00
2800								0.00
Purchased Services:								
3000		986,349.68	36,707.00			152,850.78		1,175,907.46
Internal Services:								
4000								0.00
Other Charges:								
5100		655,675.37						655,675.37
5200		66,028.74						66,028.74
5300		83,048.00						83,048.00
5400		54,947.00	3,380.49					58,327.49
5500								0.00
5600								0.00
5700								0.00
5800		60.00						60.00
Materials and Supplies:								
6000		257,373.85	47,976.93			9,318.40		314,669.18
Capital Outlay:								
8100			7,721.87					7,721.87
8200		31,917.50				64,274.39		96,191.89
Other Uses of Funds:								
9000								0.00
Page Total:								
	0.00	2,170,165.11	95,786.29	0.00	0.00	226,443.57	0.00	2,492,394.97

Appendix E

Statewide M&O Spending Varies Greatly from State to State

Average annual M&O spending, FY 2011–13 (2014\$)*



*Statewide spending data can be found in Appendix A and online at Stateofourschools.org
 Source: National Center for Education Statistics, analyzed by 21st Century School Fund



