LEGISLATIVE AUDIT REPORT

SCHOOL BUILDING AUTHORITY

SCHOOL CONSTRUCTION COSTS

STUDY PERIOD JULY 1, 2009 - JUNE 30, 2014

STUDY SUMMARY

1. Reporting standards regarding public school construction could help counties monitor construction efficiency and provide greater transparency

2. Record-keeping regarding school construction costs is inconsistent among the counties

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A REPORT TO THE WEST VIRGINIA LEGISLATURE

December 6, 2016

SCHOOL BUILDING AUTHORITY SCHOOL CONSTRUCTION COSTS

Joint Committee on Government Organization

Joint Committee on Government Operations

Joint Committee on Education

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ABBREVIATIONS:

AIA	American Institute of Architects
CEFP	Comprehensive Educational Facility Planning
FY	Fiscal Year
RESA	Regional Education Service Agency
SBA	School Building Authority
WV	West Virginia
WVDE	West Virginia Department of Education

Introduction

The Joint Committee on Government Organization requested a review focusing on the School Building Authority (SBA) and school constructions costs.

Public school construction is highly important to the youth and start of a strong workforce. Conditions of the school buildings impact student and teacher performance. There are not enough resources to fix all deteriorating conditions plaguing schools across the state. Therefore, it is important that money used to renovate or build new school buildings are spent efficiently and effectively. This report provides a regional comparison of public school construction costs for 125 SBA-funded schools for the period of July 1, 2009 through June 30, 2014. To see how construction costs compared between regions, we calculated cost variances based on the difference from the average construction costs for each identified region. This report also looks at the cost and frequency of change orders. However, there were obstacles in obtaining all school construction data as it differs among counties and there are no uniform requirements. Therefore, we make recommendations to better monitor public school construction through timely collection and reporting of the data.

Public school construction is a complex process which requires a large amount of planning, expertise, and resources. Local boards of education are responsible for addressing the existing school facilities and facility needs to provide a thorough and efficient education to the students. Part of this responsibility includes identifying the source of funding. The local board can obtain funds locally, federally, or through the state. State funds are awarded by the SBA.

The SBA was created in 1989 by the West Virginia Legislature to address the educational planning and school construction needs of the state in an efficient and economical manner. The SBA is funded annually by the West Virginia Legislature using a portion of General State Revenue, Lottery Funds, and Excess Lottery Funds. Construction funds are created from General Revenue and the annual sale of capital improvement bonds. Local boards must submit a project to the SBA to be considered for funding. WV has approximately 700 public schools and funds are limited; therefore, the SBA board and staff have developed evaluation criteria to determine which schools will receive funds each year. From July 1, 2009 to June 30, 2014, the SBA awarded approximately $430 million for the construction and maintenance of public schools.

From July 1, 2009 to June 30, 2014, the SBA awarded approximately $430 million for the construction and maintenance of public schools.

Data Availability

The availability of data posed a challenge in determining the cost variance. No literature exists on the state level to provide information regarding the school construction costs. Data available on the national level groups states into regions which may provide a false comparison, especially with West Virginia being a smaller less populous state.

Solely looking at final construction costs and even cost per square foot can be misleading. Construction is always changing, and there are numerous details which differ among schools. For example, a school constructed to be more environmentally friendly could cost more up front, but save costs over time. Again, this information is not tracked or reported at the state level.

Factors Affecting Construction Costs

A number of factors can affect school construction costs such as: changes in enrollment, school consolidations, regional environmental factors, federal, state, and local regulations and policies, current condition of the schools, current state of the economy, material and labor prices, and funding available by the county and the SBA. While we can determine cost variances of school construction among the regions, it is difficult to pinpoint an exact reason as to why variances exist. Again, this information is not tracked or reported at the state level.

School Design and Construction Process

The school planning, design and construction process is highly controlled by the counties. (See Appendix) The SBA has set minimum standards and the county is required to adhere to applicable building codes. The WVDE has a handbook on planning school facilities which is also to be followed by the counties.

Data Collected

We collected construction cost data of 125 SBA-funded projects completed from July 1, 2009 through June 30, 2014. Included are construction of new school facilities as well as additions and renovations to existing school facilities. The projects spanned almost every county of WV and include all school types as shown in the table below.

PROJECT TYPES

New: Construction for a new school building.

Additions and Renovations: Construction to existing facility.

FUNDING SOURCES

Local Funds: Construction costs paid by the local county.

SBA Funds: Construction costs reimbursed by the SBA to the local county.

All Funds: Local Funds & SBA Funds.

SCHOOL TYPES

Elementary: Students enrolled are in 6th grade or below.

Middle: Students enrolled are between 6th to 9th grades.

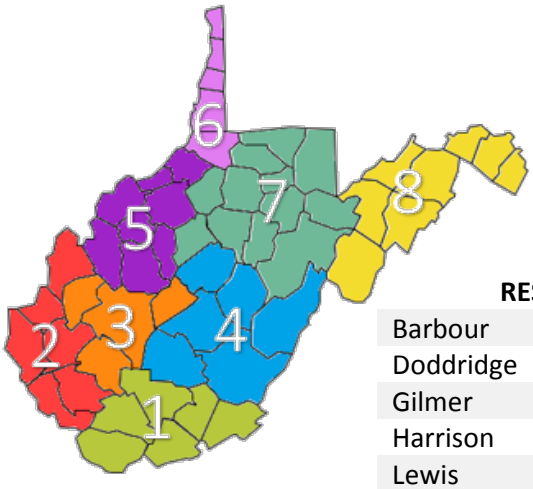
Secondary: Students enrolled are 9th to 12th grade.

Mixed: Includes grade levels from two or more of the elementary, middle, or secondary grades.

The Regions

We calculated the cost variances in school construction costs between the WVDE's eight Regional Educational Service Agencies (RESAs). The following map shows the counties included in each region:

RESA 1	RESA 2	RESA 3	RESA 4
McDowell	Cabell	Boone	Braxton
Mercer	Lincoln	Clay	Fayette
Monroe	Logan	Kanawha	Greenbrier
Raleigh	Mason	Putnam	Nicholas
Summers	Mingo		Pocahontas
Wyoming	Wayne		Webster



RESA 5	RESA 6	RESA 7		RESA 8
Calhoun	Brooke	Barbour	Monongalia	Berkeley
Jackson	Hancock	Doddridge	Preston	Grant
Pleasants	Marshall	Gilmer	Randolph	Hampshire
Ritchie	Ohio	Harrison	Taylor	Hardy
Roane	Wetzel	Lewis	Tucker	Jefferson
Tyler		Marion	Upshur	Mineral
Wirt				Morgan
Wood				Pendleton

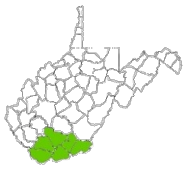
The following page includes a summary of total construction costs and construction costs by counties in each RESA for the five-year period.

Total construction costs of $549.6 million; $347.8 million, or 63%, SBA funds

- **Average cost per project = $4.4 million**

New school construction of $329.6 million

Additions and renovations of $220 million



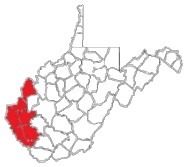
RESA 1

Total construction costs of **$56.6** million; **$37.8** million, or **67%**, SBA funds

- Average cost per project = **$3.8** million; **14% below** average

New school construction of **$45.1** million; **18% below** average

Additions and renovations of **$11.6** million; **58% below** average



RESA 2

Total construction costs of **$80.5** million; **$62.4** million, or **78%**, SBA funds

- Average cost per project = **$6.2** million; **41% above** average

New school construction of **$58.5** million; **6% above** average

Additions and renovations of **$22** million; **20% below** average

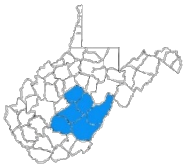
RESA 3

Total construction costs of **$68.6** million; **$45.6** million, or **66%**, SBA funds

- Average cost per project = **$4.3** million; **2% below** average

New school construction of **$42.6** million; **22% below** average

Additions and renovations of **$26** million; **5% below** average



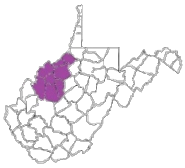
RESA 4

Total construction costs of **$57.1** million; **$42.7** million, or **75%**, SBA funds

- Average cost per project = **$4.4** million; equals average

New school construction of **$21.5** million; **61% below** average

Additions and renovations of **$35.6** million; **30% above** average



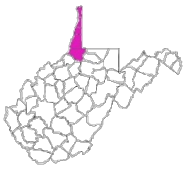
RESA 5

Total construction costs of **$18.3** million; **$15.4** million, or **84%**, SBA funds

- Average cost per project = **$1.3** million; **70% below** average

No New school construction

Additions and renovations of **$18.3** million; **33% below** average



RESA 6

Total construction costs of **$41.5** million, **$23.6** million, or **57%**, SBA funds

- Average cost per project = **$2.6** million; **41% below** average

No New school construction

Additions and renovations of **$41.5** million; **51% above** average

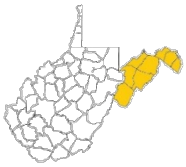
RESA 7

Total construction costs of **$122.5** million; **$59** million, or **48%**, SBA funds

- Average cost per project = **$5.1** million; **16% above** average

New school construction of **$73.3** million; **33% above** average

Additions and renovations of **$49.3** million; **79% above** average



RESA 8

Total construction costs of **$104.4** million; **$61.3** million, or **59%**, SBA funds

- Average cost per project = **$7.5** million; **70% above** average

New school construction of **$88.7** million; **61% above** average

Additions and renovations of **$15.7** million; **43% below** average

Regional Cost Comparison

Comparing Construction Costs for All School Projects

As shown in Figure 1, and Tables 1-3 on the following page, counties in RESAs 2, 7 and 8 spent a larger amount on total public school construction costs during the time period in relation to the amount spent by counties in the other RESAs. Counties in RESAs 1, 3 and 4 were more on par with the average, while counties in RESAs 5 and 6 were significantly below average. The trend follows total construction costs when comparing how much counties in each RESA spent per project using SBA funds (Figure 2).

Figure 1 – Variance in Total Construction Costs (All Funding Sources)

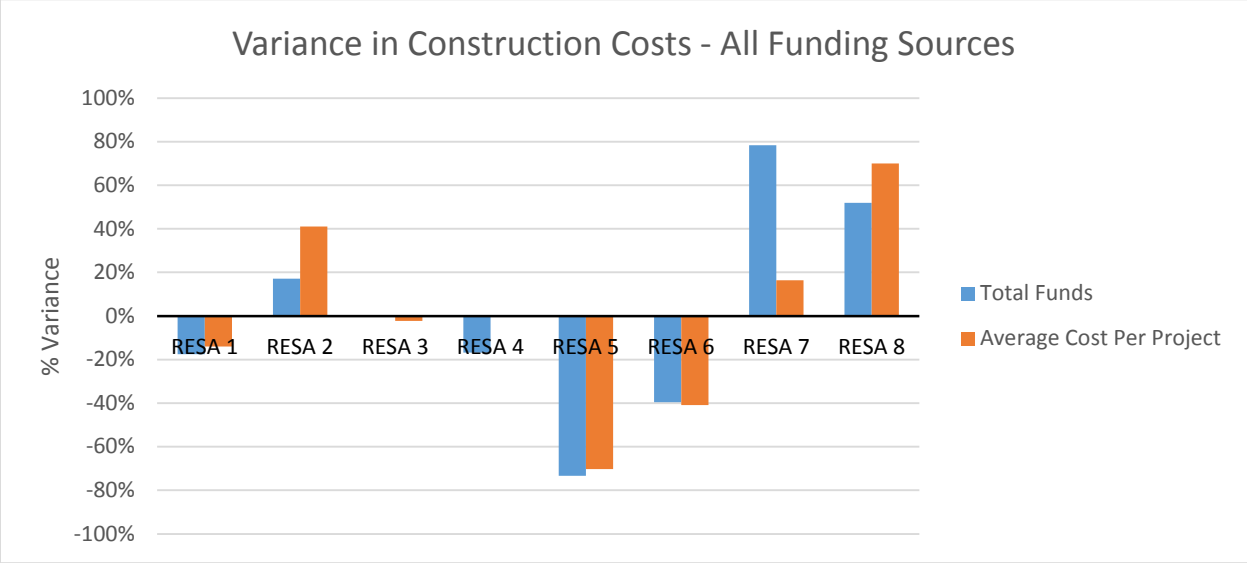


Figure 2 – Variance in Total Construction Costs (SBA Funds)

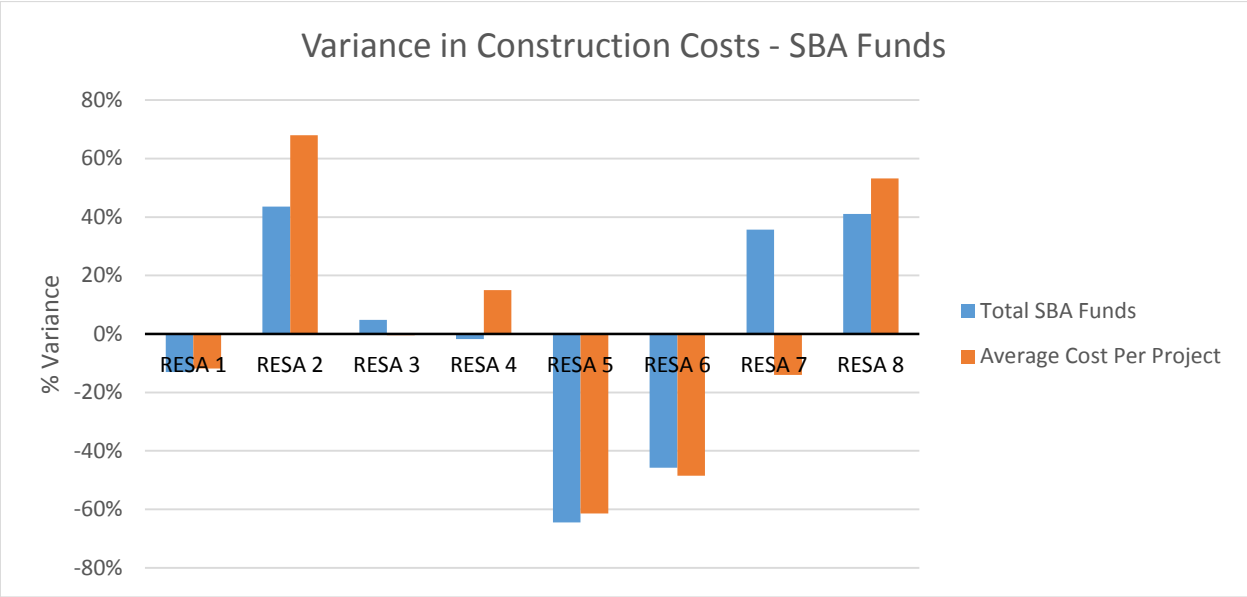


Table 1 – Total Construction Costs (All Funding Sources)

RESA	All Funds ($)	% of Funds	Average Cost Per Project ($)	Variance All Funds	Variance Average Cost Per Project
RESA 1	56,635,992	10.30%	3,775,733	-18%	-14%
RESA 2	80,475,756	14.64%	6,190,443	17%	41%
RESA 3	68,623,926	12.49%	4,288,995	0%	-2%
RESA 4	57,114,705	10.39%	4,393,439	-17%	0%
RESA 5	18,299,843	3.33%	1,307,132	-73%	-70%
RESA 6	41,480,491	7.55%	2,592,531	-40%	-41%
RESA 7	122,541,916	22.30%	5,105,913	78%	16%
RESA 8	104,429,400	19.00%	7,459,243	52%	70%
Average	**68,700,254**		**4,389,179**		

Table 2 – Total Construction Costs (SBA Funds)

RESA	Total SBA Funds ($)	% of Funds	Average Cost Per Project ($)	Variance SBA Funds	Variance Average Cost Per Project
RESA 1	37,802,750	10.87%	2,520,183	-13%	-12%
RESA 2	62,407,059	17.94%	4,800,543	44%	68%
RESA 3	45,555,853	13.10%	2,847,241	5%	0%
RESA 4	42,711,730	12.28%	3,285,518	-2%	15%
RESA 5	15,427,015	4.44%	1,101,930	-65%	-61%
RESA 6	23,567,937	6.78%	1,472,996	-46%	-48%
RESA 7	58,987,977	16.96%	2,457,832	36%	-14%
RESA 8	61,320,144	17.63%	4,380,010	41%	53%
Average	**43,472,558**		**2,858,282**		

Table 3 – Total Construction Costs (Local Funds)

RESA	Total Local Funds	% of Funds	Average Cost Per Project ($)	Variance Local Funds	Variance Average Cost Per Project
RESA 1	18,833,242	9.33%	1,255,549	-25%	-18%
RESA 2	18,068,697	8.95%	1,389,900	-28%	-9%
RESA 3	23,068,074	11.43%	1,441,755	-9%	-6%
RESA 4	14,402,975	7.14%	1,107,921	-43%	-28%
RESA 5	2,872,828	1.42%	205,202	-89%	-87%
RESA 6	17,912,554	8.88%	1,119,535	-29%	-27%
RESA 7	63,553,939	31.49%	2,648,081	152%	73%
RESA 8	43,109,256	21.36%	3,079,233	71%	101%
Average	**25,227,696**		**1,530,897**		

Comparing Construction Costs for New School Projects

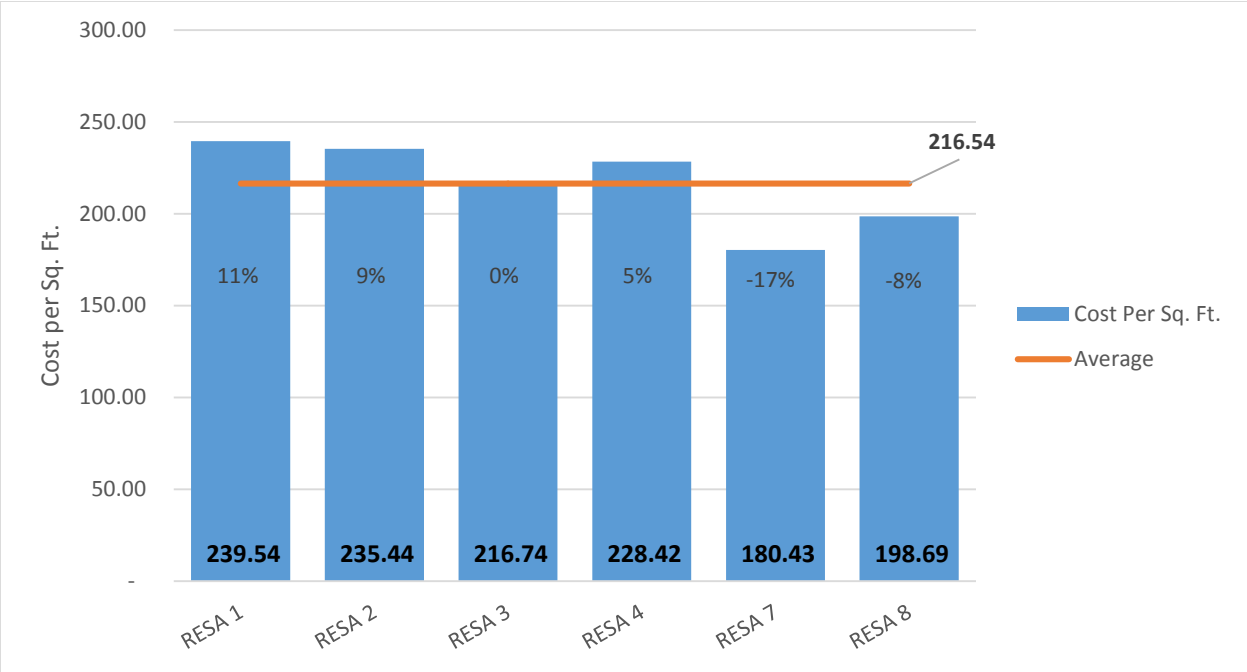
Approximately $329.6 million was spent from July 1, 2009 to June 30, 2014 to build 20 new schools. No new schools were completed during the time frame for counties in RESAs 5 and 6; however, new school buildings were in construction. As shown in Table 4 below, counties in RESA 8 spent the highest amount for total construction and completed the highest number of projects; however, counties in RESA 7 had the highest average total construction cost per project and counties in RESA 1 had the highest average cost per square foot.

Table 4 – Total Construction Costs (New Schools)

RESA	Total Construction Cost ($)	% of Total Construction Cost	# of Projects	Average Total Construction Cost ($)	Average Cost Per Sq. Ft.
RESA 1	45,081,826	13.68%	4	11,270,457	239.54
RESA 2	58,461,466	17.74%	3	19,487,155	235.44
RESA 3	42,601,735	12.92%	3	14,200,578	216.74
RESA 4	21,496,362	6.52%	2	10,748,181	228.42
RESA 7	73,287,531	22.23%	3	24,429,177	180.43
RESA 8	88,705,814	26.91%	5	17,741,163	198.69
Total	**329,634,734**		**20**		

As seen in Figure 3 below, counties in RESAs 7 and 8 were below the average cost per square foot. The counties in remaining RESAs were within a $25 difference.

Figure 3 – Variance in Cost Per Square Foot (New Schools)



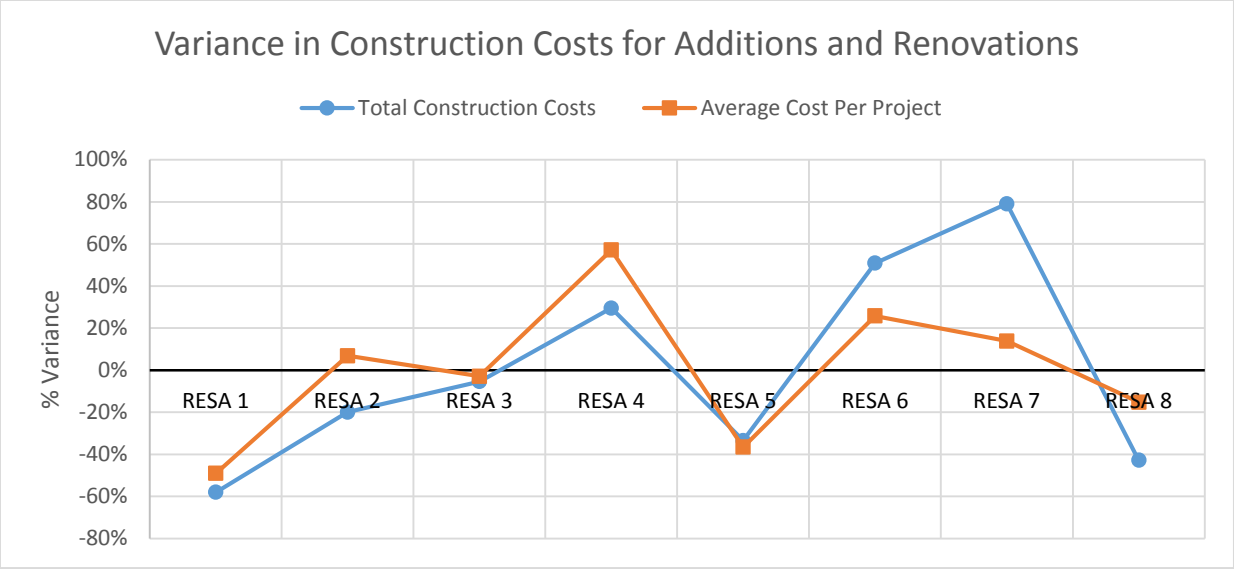
Comparing Construction Costs for Additions and Renovation Projects

Approximately $220 million was spent during the five-year period for additions and renovations to existing school buildings. As shown in Table 5 and Figure 4 below, counties in RESA 7 had the highest construction cost for additions and renovations, and counties in RESA 4 had the highest average cost per project.

Table 5 – Total Construction Costs (Additions and Renovations)

RESA	Total All Funds ($)	% of All Funds	# of Projects	Average All Funds Per Project ($)
RESA 1	11,554,166	5.25%	11	1,050,379
RESA 2	22,014,291	10.01%	10	2,201,429
RESA 3	26,022,191	11.83%	13	2,001,707
RESA 4	35,618,343	16.19%	11	3,238,031
RESA 5	18,299,843	8.32%	14	1,307,132
RESA 6	41,480,491	18.86%	16	2,592,531
RESA 7	49,254,385	22.39%	21	2,345,447
RESA 8	15,723,587	7.15%	9	1,747,065
Total	**219,967,297**		**105**	

Figure 4 – Variance in Total Construction Costs (Additions and Renovations)



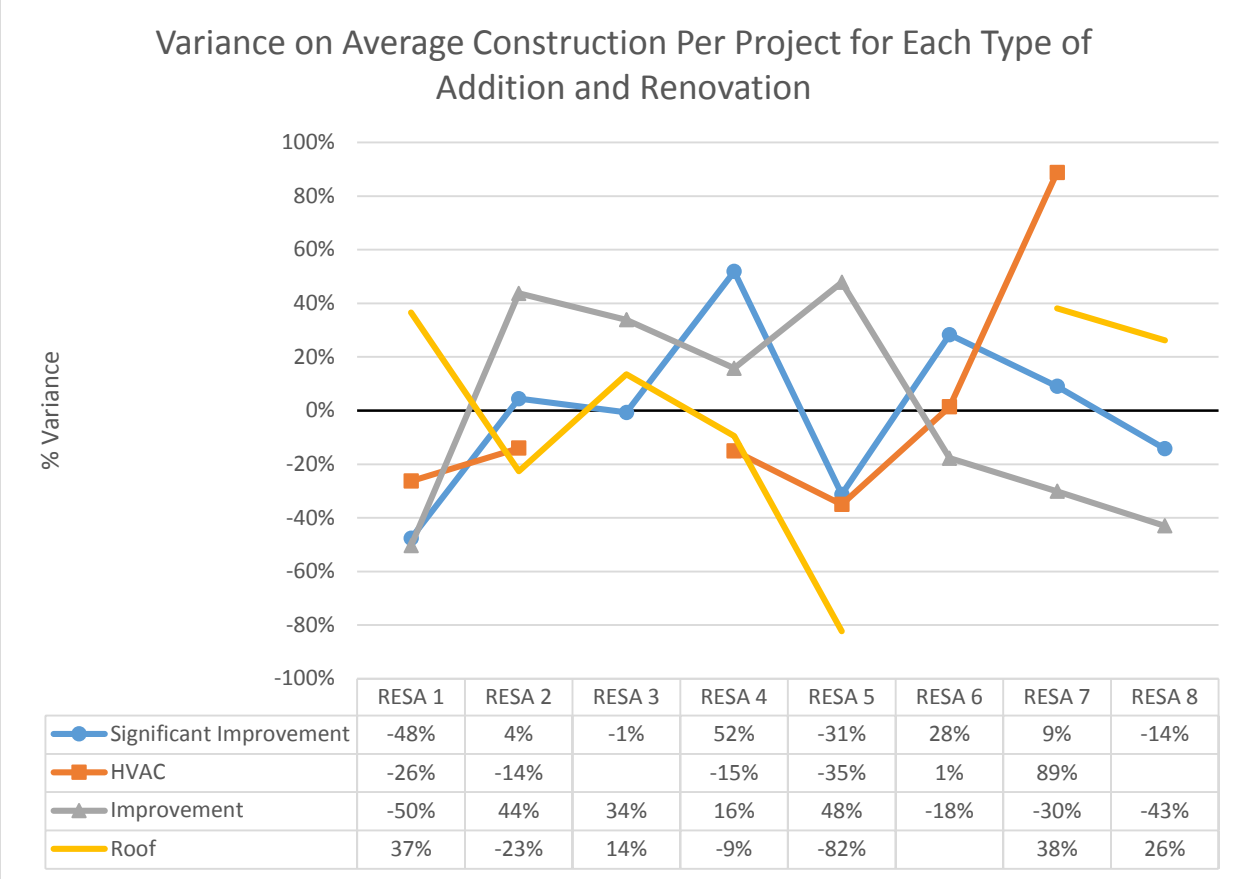
Degrees of Additions and Renovations

For additional detail, we have broken down additions and renovations into four separate categories:

- **Significant Improvement**: Construction to existing facility greater than $1,000,000.
- **Improvement**: Construction to existing facility less than $1,000,000.
- **Roof**: Construction to existing facility, specifically for the roof.
- **HVAC**: Construction to existing facility, specifically for heating, ventilation and air conditioning.

As shown in Figure 5 below, additions and renovations broken down vary among the regions. The numbers show counties in RESA 1, RESA 5, and RESA 8 were generally below average, while the counties in remaining RESAs were generally above average.

Figure 5 – Variance in Average Construction Cost Per Project (Additions and Renovations)



Cost and Frequency of Change Orders

Most school construction projects require change orders. Projects which generally do not require change orders are small in scope and cost. Additions and renovations generally contain more change orders because the construction has to adapt to existing conditions, which in many cases is hard to predict until the work begins. Because change orders are a normal part of the construction process, a contingency is generally set aside to cover the unknown costs.

Change orders can be the result of unforeseen conditions, errors or omissions in design, regulatory changes, etc. Change orders can be requested by the owner, by the contractor, or the architect, and can affect the construction project by increasing or decreasing the cost of the project or the completion date. While some change orders are to be expected, it is in the best interest of the state if these are minimized.

According to SBA policies, any change order must be submitted in an American Institute of Architects (AIA) document format to the SBA for review and approval. When a change order is approved, it is either approved with the use of SBA funds solely, local funds solely, or with the use of local funds and SBA funds matching the project breakdowns in the grant agreement. A copy of the AIA document is stamped to signify the approval status, signed and dated by the SBA, and returned to the county.

The SBA does not maintain change order documentation past the warranty of the school building, which is typically one year, because **the counties are considered the official record keepers**. It was not feasible to request the change order documentation for all 125 projects; therefore, we requested a sample of 30 projects. Of those projects, 5 projects had no change orders and 12 projects were able to provide all necessary documents. However, 6 projects could not find all the change order documentation, 2 projects stated there were no change orders which was not consistent with documentation provided by the SBA, and 5 projects could not find any change order documentation. Without the AIA change order documents, we cannot determine the date of the change order in order to evaluate the frequency. In some instances, we were able to deduce the amount and if the change order increased the time to complete the project based on the previous and following change order documents; however, this was not possible in instances where more than one sequential document was missing.

Costs of Change Orders

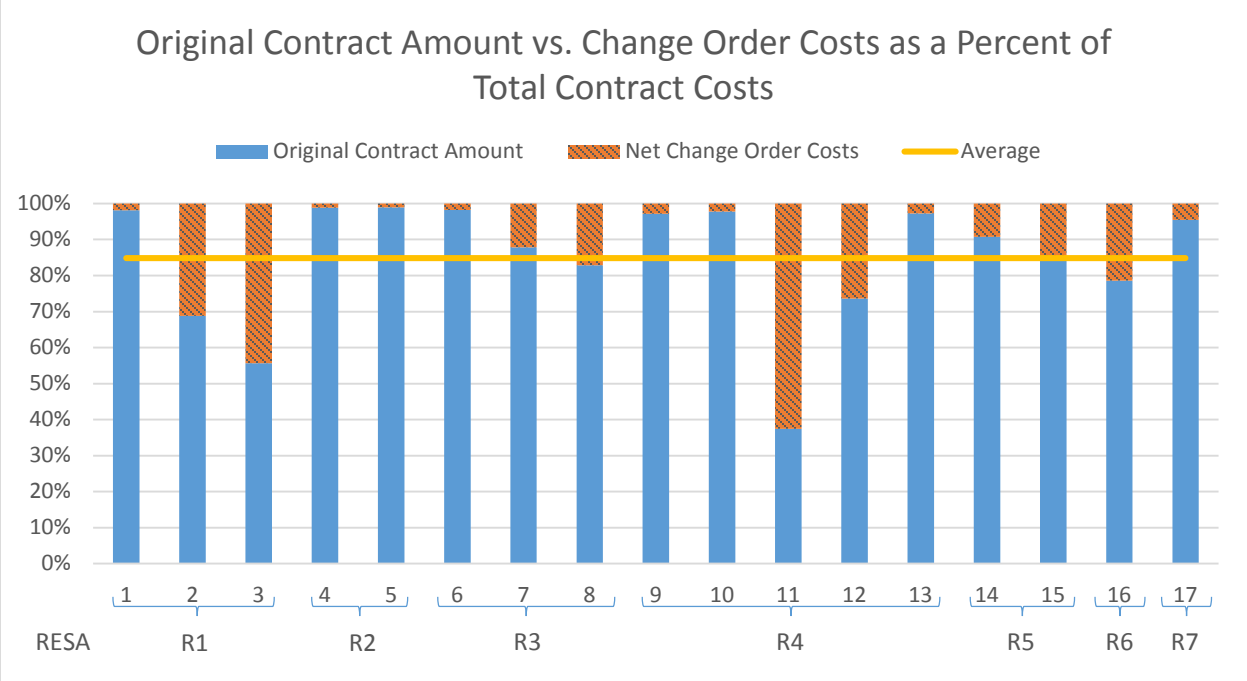
For the 18 projects for which sufficient documentation was provided, there was a total of approximately $7.3 million spent on change orders. As seen in Table 6, 84% of change orders totaled between $0 and $100,000.

Table 6 – Range of Change Order Costs

Range of Change Order Costs	Number of Change Orders	% of Change Orders
-$50,000 or less	2	1.60%
-$50,000 to $0	5	4.00%
$0 to $10,000	44	35.20%
$10,000 to $25,000	35	28.00%
$25,000 to $100,000	26	20.80%
$100,000 to $500,000	11	8.80%
$500,000 and more	2	1.60%

All but one project had net change order costs which increased the final contract amount. As shown in the Figure 6 below, change orders for those 17 projects accounted for an average of 15.18% of the final contract costs.

Figure 6 – Contract Amount vs. Change Order Costs



In some cases, a project has different phases or bid alternates where a change order will be submitted rather than including the cost in the original contract amount. For example, project number 11 in the above figure included a $1.6 million change order for phase II of the project. Therefore, the total amount spent on change orders is difficult to properly represent especially with missing documentation. Table 7 below shows the difference with the high dollar and negative dollar change orders included in the contract amount rather than as a change order.

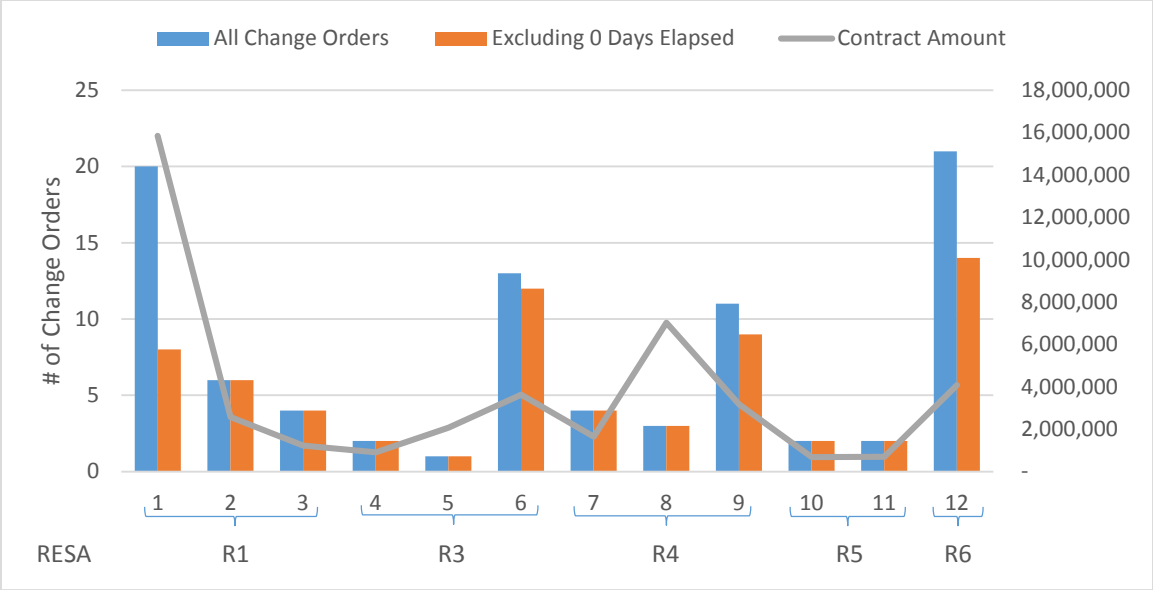
Table 7 – Adjusted Change Order Costs

	All Projects	Change order between $0 and $100, 000
Number of Change Orders	125	105
Original Contract Amount	$60.7 million	$60.7 million
Adjusted Contract Amount	$60.7 million	$66 million
Aggregate Change Orders Amount	$7.3 million	$2 million
Final Contract Amount	$68 million	$68 million
Percent Increase in Contract Due to Change Orders	12%	3%
Change Orders as a Percent of Final Contract Amount	10.7%	2.9%
Average Change Order Cost	$58,300	$19,000
Average Change Order Cost Per Project	$405,100	$110,700

Frequency of Change Orders

For the 12 projects for which sufficient documentation was provided, there were 89 change orders. Some projects are multiple prime contracts, in which multiple contractors are hired for different sections of the project. If a change in the project is necessary, a separate change order for the same date and reason may be sent to multiple contractors inflating the actual number of change orders for the project. Therefore, we removed 22 instances where the lapse of time was zero days, leaving a total of 67 change orders. It appears as though the number of changes orders follows a similar pattern to the cost of the contract amount, as shown in Figure 7 below.

Figure 7 – Count of Change Orders Per Project



Of the 67 change orders, 39% had an elapsed time of 30 days or less.

Table 8 – Range of Days Elapsed

Range of Days Elapsed	Number of Change Orders	% of Change Orders
1 to 30 days	26	38.81%
30 to 60 days	12	17.91%
60 to 90 days	11	16.42%
90 to 180 days	13	19.40%
180 and more days	5	7.46%

We also noted an average of 79 days between the original contract date to the first change order, and an average of 284.5 days from the last change order to the last payment date.

Table 9 – Days Elapsed

	Contract Date to 1st Change Order	Last Change Order to Last Payment Date
Average Value	79	284.5
Maximum Value	197	927
Minimum Value	7	10

Findings & Recommendations

1. **Reporting standards regarding public school construction could help counties monitor construction efficiency and provide greater transparency.**

   The WVDE website includes general school facilities information such as a list of schools in each county, grades served at each school, and enrollment; however, the availability of data regarding construction costs is minimal.

   As part of the Comprehensive Education Facilities Plan (CEFP) completed every 10 years, counties complete a facility evaluation which includes general information for each school; however, this information is not in a database to make it easily available for every school facility. There is currently no data source or reporting standards regarding public school construction costs in West Virginia.

   RECOMMENDATION 1:

   Single Data Source

   A single data source using the information provided on the CEFP could help counties monitor construction efficiency and provide greater transparency. The data source could detail project construction costs including, but not limited to, total construction cost, total square footage, total student capacity, and cost per square foot and per student.

   Annual Report

   The following information could be reported annually: (1) funding for the year (2) schools currently under construction, scope of the project, and expected completion date and (3) schools completed during the year.

   For schools completed during the year, a more detailed analysis could be included detailing, but not limited to, the architect and contractor, total construction costs, material versus labor costs, number and amount of change orders, project start date, project completion date, and opening date of facility.

2. **Record-keeping regarding school construction costs is inconsistent among the counties.**

   Documentation to support change orders was not properly maintained for all projects. According to the WVDE's Handbook on Planning School Facilities, the counties are to maintain and store all associated construction documents for future reference for the duration that the county has ownership of the facility.

   RECOMMENDATION 2:

   All documentation regarding public school construction costs should be properly maintained by the county. Change order documents should be properly maintained as they are essential in the construction process, specifically the approved AIA change order document signed by necessary parties. A change order log could be kept to detail the effects of all approved change orders such as any change in the contract amount or project completion date, and the reason for the change order.

Conclusion

A sufficient database is not available to properly compare public school construction costs or assess the costs and frequency of change orders. In our research, we have discovered this is not an issue exclusive to West Virginia. According to a publication[1] released in 2016 which analyzed national data for fiscal years 1994 through 2014:

> *School facilities represent the second largest sector of public infrastructure spending, after highways, and yet we have no comprehensive national data source on K–12 public school infrastructure. Even at the state level, school facilities information is often scant.*

However, this data is important because public school construction is highly important to the youth and start of a strong workforce. Multiple studies have been conducted showing that condition of school facilities do have an impact on student performance, as well as teacher performance. One study[2] noted the importance facilities have on learning time for students, and that every school year many hours of classroom time are lost due to maintenance problems. This issue occurred at the beginning of the 2016-2017 school year in Kanawha County where multiple schools were closed or released early due to broken air conditioning.

Construction and architecture standards are constantly changing to assure school buildings are properly built, run efficiently, and cater to the needs of the students. Resources available are not plentiful enough to fix current conditions of all public schools; therefore, properly tracking public school construction costs could be a useful tool in determining how to maximize resources and ensure state tax dollars are being used efficiently and effectively.

[1] State of Our Schools: America's K–12 Facilities - Joint publication of the 21st Century School Fund, Inc., U.S. Green Building Council, Inc., and the National Council on School Facilities.
[2] Do K-12 School Facilities Affect Education Outcomes? - Tennessee Advisory Commission on Intergovernmental Relations

Appendix: Objectives, Scope and Methodology

The scope encompassed all public school construction projects which received SBA funding and were completed during the five-year period of July 1, 2009 through June 30, 2014. The objectives were to:

- Determine the variance of school construction costs by RESA region; and
- Assess the frequency and cost of change orders and design changes for school construction projects.

It should be noted the SBA does not track completion dates. We were also unable to obtain school opening dates from either the SBA or the WVDE Office of School Facilities. Therefore, project completion was based on when the final reimbursement was made to the county. The population consisted of all projects where the final reimbursement date was between July 1, 2009 and June 30, 2014. Using documentation provided by the SBA, we determined the month and year of the last reimbursement. Construction cost data was provided by the SBA and was not audited. The construction costs represent the cost of academic areas as the SBA does not build nor contribute to athletic facilities. The time period for projects was five years; therefore, we used the Consumer Price Index – US Average to bring all dollars to July 2014 in order to more accurately compare construction costs. The SBA also does not track labor costs versus material costs.

Cost variances were calculated using different combinations of project type and funding source. For each combination, we calculated the average regional cost and then calculated percent difference for each RESA from that average cost. RESAs with a positive percentage were above the average cost, and RESAs with a negative percentage were below the average cost.

The information regarding change orders on the project worksheets was limited to costs and was not complete; therefore, it was necessary to request the change order documentation. The SBA does not maintain change order documentation past the school warranty, typically one year, as the county is responsible for the contract and record keeping. The SBA acted as a pass through for the request and delivery of change orders from the counties. We used auditor judgment to select a sample size of 30 and used a random number generator to select which projects would be included in the sample.

Appendix: School Design and Construction Process

We compiled a summary of the school design and construction process from SBA and WVDE policies.

Facilities Plan	•County submits CEPF to WVDE and SBA for approval •Amendments must also be submitted to WVDE and SBA for approval
Project Feasibility	•County submits Project Preliminary Submission Form to SBA for project evaluation
Request for SBA Funding	•County submits project Executive Summary to SBA
Project Review	•SBA staff reviews and rates project •SBA Board interviews County Superintendants
Project Selection	•SBA Board determines which projects will receive funding •The amount of funding for each selected project is also determined
Design Professional	•County seeks design professional for project •County submits list of respondees to SBA for review and comment
Construction Management	•County seeks construction manager or construction analyst •County submits list of respondees to SBA for review and comment
Design	•County and Architect submit educational specifications to SBA and WVDE •Architect prepares schematic design from educational specifications
Preliminary Project Approval	•County, architect and construction management provide necessary information to the SBA and WVDE for approval
Bid Proposal	•Architect and construction management prepare bidding and construction documents •Approved by county, SBA, WVDE, and State Fire Marshal
Bid Responses	•County, architect, and construction management advertise bid •SBA reviews and approves bid responses
Construction	•County, architect, and construction management award contract •Construction is started
Project Closeout	•Appropriate documentation completed by County, Architect and Construction Management and reviewed by SBA
Building Inspection	•County, architect, construction management, contractor, SBA, WVDE, and Fire Marshal perform final walk-thru building inspection and approve the building to be occupied

School Building Authority of West Virginia

2300 Kanawha Boulevard, East • Charleston, West Virginia 25311-2306 • Office Number (304) 558-2541 • FAX Number (304) 558-2539

December 2, 2016

Mr. Denny Rhodes
West Virginia Legislature
Post Audit Division
Building 1, Room W-329
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0610

Dear Mr. Rhodes

We have reviewed the findings on your recent study. We appreciate the opportunity you have given us to clarify several points within the findings and to meet with you and discuss this matter. Attached is our official response to the study and follow up information that was presented during our meeting on December 2, 2016.

Sincerely,

David A. Sneed
Executive Director

DAS/tab

Enclosure: Response to Study Performed by the Legislative Post Audit Division

2016
School Building Authority of West Virginia
Response to
The Study Performed by the Legislative Post Audit Division

Page 1

Introduction

Reference to the 125 schools used dated back to 2000

Comparing school costs by project is somewhat misleading. The SBA approved expenditures is consistent in all projects. However, if a county passes a local bond or provides additional cash beyond the typical SBA formula for a schools additional space or upgraded finishes the comparison will be inconsistent. Also, the comparison may be affected using renovation vs new construction.

The SBA tracks all state funding, without exception, by amount and type of expenditure. All expenditures must be a part of the approved project and county requests for reimbursement funding from the SBA for project expenditures exceeding policy are rejected.

The SBA tracks state funding to the penny. County boards tract project funding including their local expenditures. However, because they are the party contracting with the design and construction companies they hold the official records of the project. The SBA does require contracts to be on file in the SBA Office. Counties sometimes withhold project expenditures from the SBA when they use their local funding to improve their project. They use their architect to coordinate these expenditures with contractors or vendors when SBA funding is not involved. Often the architects do not report these expenditures to the SBA and we may only find out about them if a construction change order is processed.

Data Availability

The report suggests that there is no data available at the state level that provides information regarding school construction costs. Perhaps there was a misunderstanding during the audit process. The SBA tracks all school construction costs. Data for each project is broken down by division of work and this report reflects the square foot cost of all building components. This data is used to establish SBA allowable new construction costs.

Concerning energy costs, the SBA has evolved significantly from its beginning in 1990. Quality and performance standards are now in place as a matter of policy that establishes minimum quality of building components including energy efficient design. These standards are reviewed regularly and adjustments made as technology changes. Please keep in mind that at the state level, first cost is important but it is not the end all to be all. Counties have a vested interest in funding long-term energy savings components for their projects and they often provide funding for energy efficient design because they benefit directly from the initial investment. We do provide funding for energy savings design and building components. The SBA also inserted a requirement in our annual CEFP updating policy several years ago, that provided the SDOE data regarding SBA funded school energy costs. This data was to be used in their efforts to track and improve energy usage and costs. Additionally, the SBA is currently working on new energy standards for state funded projects that will be considered in 2017.

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Factors Affecting Construction Costs

The report correctly states that there are a number of factors that affect construction costs and some of which are noted in the report. Actually, the SBA tracks an even greater amount of data that we use to reduce construction costs where possible. We have been working with our Construction Cost Analyst over the past 6 years to track our project costs and the factors that might affect school construction costs. We also consider the architect designing the school, the time of year the project is bid, the efficiencies regarding the size of the structure, the HVAC system, the construction type, the region of the state (not necessarily the RESA region because we have discovered that the particular contractors that tend to bid project in specific regions of the state that are near their office has an effect on the overall project bids) and these factors have caused us to adjust our building designs and bidding schedules. These are only a few of the factors we are tracking. To show how this data has guided our policy changes we have changed the dates that projects are awarded from April to December each year. Because we know that projects that bid between January 1 and June 30 were costing less than those that bid after June 30. This action allowed us to plan and design the school, which requires approximately 12 months, and these projects are now bid during this opportunistic window of time.

This data we collected also has indicated that we should change our construction sequencing and design detailing as well to allow us to construct the school in a manner that reduces the time required to get the building under roof and allow other trades to continue working during winter months. Again, this is only a few examples of how we have been tracking our project costs and adjusting our procedures

School Design and Construction Process

Another policy change that has occurred over the past 12 months inserts the SBA directly into the educational planning phase of all new school designs. Previously the architects were working with the county boards of education to prepare the written description of all schools. This arrangement was causing school design square footage to exceed the SBA allowable on our projects and cost overruns if the project moved forward as planned by the architect. The SBA has been able to work with each county directly on the number, types and descriptions of all their academic areas of the new school and now our schools are all beginning design within the square footage allowed by SBA policy and SBOE policy 6200.

Pages 4-5

RESA Area Cost Comparisons

These sections of the audit report indicate that there are variances in the cost comparisons by the RESA areas. Again, we feel if the sampling data uses the various types of projects and the costs of these projects as the comparison this will yield the results shown in the audit. However, this may lead the reader to believe there are regional cost differences or perhaps inequities in the funding disbursements. This strategy relies heavily on the number and types of projects we receive from these RESA areas to make the comparisons. Again, we do not have control of these two factors. For example there is not a collation between RESA areas and which county are likely to attempt and pass a local bond issues that they may request SBA funding participation on in order to complete their projects. We have found that often more wealthy counties hesitate to attempt bond issues and often smaller county are very successful in the passage of local bonds that bring about projects.

Pages 6-9

Tables 1-3 make comparisons of SBA, local and all funding sources again by RESA area. We believe the data is correct but we feel the results do not reflect how we fund projects. If the audit report is attempting to show equities or inequities in local and SBA funding in RESA areas it does reflect this data. However, as we have said we do not have control over the number and types of projects submitted for our funding considerations not all counties submit projects every year. For example, this year we only received 18 projects from 55 counties for funding consideration. This number of project varies each year but it is very seldom greater than 35 counties requesting funding. Table 4 compares total construction cost for new schools. As we have noted, there are a number of factors that affect the costs of the schools compared. For example, our research indicates that there are defined school sizes that are breaking points for economies of scale. These breaking points are projects greater than 45,000 sq. ft., projects greater than 60,000 sq. ft. and projects over 120,000 sq. ft. and so on. Based on our knowledge of the schools compared in Table 4 there were small schools in RESA I and there were much larger schools in RESA 8. This would make a difference due to the fact that the finishes may be similar but the more sq. ft. in the school creates a low cost for these finishes. However, we do not want to over simplify the data either. Our records do show that construction costs in the region of RESA 1 and 2 are more expensive than other regions. Likewise, costs in RESA 7 and 8 are less per sq. ft. than other areas of the state. This is due to a number of factors including the contractor pool bidding the work. Other factors influence costs such as the type of project (renovation vs new school) Table 5 and Figures 4 and 5 reflect this variance but it is difficult to compare dissimilar projects by RESA areas.

We would not want the audit to reflect that we do not track costs and we do not understand the construction markets in our state. We would hope the audit reflects that there a number of factors that affect construction cost but the location of the projects are just one factor and we hope we have demonstrated that we have extensive data that we use to lower costs and that there are many factors that affect costs.

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Cost and Frequency of Change Orders

This section of the report deals with an area of construction that we take very seriously. As the audit report states change orders are inevitable and we have adopted policy over the last two years that we hope will control change orders to the extent possible. We now perform design document reviews in conjunction with our construction analyst to point out design errors where possible and to coordinate the design drawings and the written specification for the project. We have policy that informs the architects and engineers that they are responsible for errors and omissions and they will be completely responsible for change orders that we noted as a problem in our design reviews and no action was taken by the design firm to correct the problem before the project went out to bid. We now have in place on our large projects, construction project managers to manage the project during the design and construction phases and their responsibilities, also include a detailed review of the contractors cost for change orders and they have provided significant cost savings by adjusting the cost if the contractors cost to make the change is unreasonable. This action places a great deal of accountability within the process for our architects, engineers and our contractors. Having the SBA and the SBA's construction project managers in the contractual loop has caused pushback from the architects and some of our contractors but the benefits of having the project accountability and greater SBA control in the projects far outweighs the complaints expressed by a few of our design and construction firms.

We apologize for not having the records requested on all projects that may have been closed out several years ago. Please understand that we are not the official record keeper on the projects and our first interest is the proper expenditures of state funding. We do maintain all financial records, indefinitely and we are in the process of converting all our hard copy files into electronic files and this will allows us to store more project data on site in the future. Other action we have taken includes requiring the construction project managers we are using to use project management software that tracks all project information. The SBA will have access to this information in the future and we will not rely on the county boards to maintain storage of the project data.

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Projects typically are budgeted with a 2% (of the project cost) contingency for new construction projects and a 4% (of the project cost) contingency scenario for additions and renovation projects. Change orders for unforeseen conditions or county requested project changes are accounted for within these contingency amounts. However, county boards of education often request alternative pricing for items on the project that are not approved expenditures using SBA funding but can be added to the project with local funding. It would be very unusual for any SBA project to exceed the allotted contingency for the projects for unforeseen conditions. As we stated before this has only occurred three times over the past ten years for extreme unforeseen conditions. Much of the cost noted in the audit report relating to construction change orders that increase the project costs are a direct result of county requested changes that they are paying for with local funding. Our records do not reflect the change order percent increases shown in Figure 6 to project costs paid for with state dollars on any project.

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Findings & Recommendations

1. The WVDE is mentioned with regards to housing school construction cost data. The office of facilities and transportation does track school information but beyond the energy usage information mentioned in this report only tracks maintenance data for the counties. There must have been a failure in communications while we were working together during the audit. We have very detailed school construction cost files for our projects. It would be difficult for the WVDE to track school construction data and we need this information in order to function so we would recommend we continue to track school construction costs here in our office. We make our information available to all who request information but we do not publish the information regularly because it is necessary to interpret the data before you can use the data properly.
2. We would agree that the counties should keep project data on file indefinitely. As we mentioned earlier we have attempted to provide project management software for the counties and the architects to use for this purpose but they would not use the tool we provided. We now require our construction project managers to maintain all project data and this has worked well. We realize this will not resolve all the project data collection problems because we do not have project managers on smaller projects. We will make every effort to devise a process for the counties to capture and store this information. Our problems have been that the counties do not understand the importance of this information to them should problems occur in the future. All others (architect and contractors) that are collecting and maintaining project information are only doing so to protect themselves from future liabilities and therefore the counties best interests are not being served.

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Conclusion

Regarding the availability of data to compare public school construction costs, we would agree with the findings regarding data available at the county level. However, the SBA Office does maintain detailed construction cost for all projects at the state level. This information does include regional cost factors. Understanding our charge, we have been given the responsibility of planning and designing schools in West Virginia. Our staff development includes keeping up with current curricular offerings and construction methods. We track school construction costs in detail and our staff is made up of certified educational planners and individuals that have been construction administrators prior to coming to the SBA. Our agency responsibility does not include maintenance and operations of the schools after they are constructed. However, we do require post occupancy evaluations to be performed by the WVDE and we also require an inspection of the build by the architect and contractor accompanied by the SBA and the county 11 months after completion to make sure the systems are functioning properly and any warranty items are addressed.

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Appendix

It is reported that the SBA does not maintain school opening dates. The SBA deals with design and construction and we do maintain records of construction substantial completions because this date has contractual significance. The actual date the school is occupied by students and staff is tracked by the county and could be several months beyond the substantial completion date. Also, we hold final payment until all contracts are complete. Often times contractors take several months to finally close a project out but this process does not prohibit the county from occupying the facility and does not reflect a lack of record keeping by the SBA.

We will endeavor to address the items noted in the audit that we have actual control. We will also attempt to leverage support for items mentioned in the audit that we do not have direct control of but share the desire to have the recommendation addressed. We appreciate the opportunity to respond to this audit and the opportunity you have provided to meet and discuss the findings.