

Financial Management Practices Audit Report

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Baltimore County Public Schools

July 2015

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**OFFICE OF LEGISLATIVE AUDITS**  
**DEPARTMENT OF LEGISLATIVE SERVICES**  
**MARYLAND GENERAL ASSEMBLY**

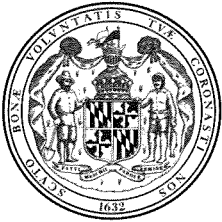
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DEPARTMENT OF LEGISLATIVE SERVICES  
OFFICE OF LEGISLATIVE AUDITS  
MARYLAND GENERAL ASSEMBLY

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Members of Joint Audit Committee  
Annapolis, Maryland

Ladies and Gentlemen:

We conducted an audit of the financial management practices of the Baltimore County Public Schools (BCPS) in accordance with the requirements of the State Government Article, Section 2-1220(e) of the Annotated Code of Maryland. The objectives of this audit were to evaluate whether BCPS procedures and controls were effective in accounting for and safeguarding its assets and whether its policies provided for the efficient use of financial resources.

Our audit disclosed that BCPS needs to improve certain procurement practices to ensure it obtains goods at services in a cost-effective manner. For example, BCPS appeared to be paying more than necessary for roof replacements obtained through a purchasing consortium. BCPS paid approximately \$31.4 million for roofing services during the period from July 1, 2010 through December 10, 2013. In addition, BCPS procurement policy did not require that a competitive procurement process be used for certain service contracts.

BCPS also needs to improve internal controls and accountability for certain financial operations including procurement and disbursements, payroll processing, information system security, and equipment control. For example, certain critical user functions on the payroll systems, such as the ability to change an employee's salary and direct deposit information, were not properly restricted, thereby increasing the risk of improper transactions being processed without detection. Also, BCPS needs to improve security and controls over its computer network and information systems, including firewall rules which allowed numerous insecure and unnecessary connections to critical network devices.

BCPS also needs to ensure the accuracy of payments for employee healthcare. For example, although BCPS had verified that dependents of its employees were eligible for health care coverage, it had not conducted reviews to verify the propriety of health care claim payments, which totaled \$125 million in fiscal year 2014.

An executive summary of our findings can be found on page 5 of this report. The BCPS response to this audit is included as an appendix to this report. We wish to acknowledge the cooperation extended to us during our audit by BCPS.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Thomas J. Barnickel III". The signature is fluid and cursive, with a small mark at the end.

Thomas J. Barnickel III, CPA  
Legislative Auditor

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\* Denotes item repeated in full or part from preceding audit report

## Executive Summary

### Legislative Audit Report on the Baltimore County Public Schools (BCPS) July 2015

According to data compiled by the Maryland State Department of Education, BCPS ranks 3<sup>rd</sup> in student enrollment among the 24 public school systems in Maryland. In fiscal year 2014 BCPS had a total full-time regular and special education pupil population of 108,191 at its 160 schools. BCPS' operating and capital expenditures totaled \$1.55 billion during that year.

The Office of Legislative Audits has conducted its second audit of BCPS' financial management practices. The results of the first audit were issued in a report dated October 15, 2008. Our current audit identified a number of opportunities for BCPS to improve internal controls, to adopt more cost effective processes, and to enhance its policies.

#### **BCPS Needs To Improve Internal Controls and Accountability**

BCPS needs to improve internal controls in several financial areas. For example, we noted that BCPS lacked an independent review to ensure that critical personnel and payroll transactions processed were proper. BCPS also needs to restrict user capabilities to record critical transactions on its automated procurement and accounts payable system. In addition, BCPS needs to implement adequate security measures and monitoring procedures to protect its network and related critical devices from security risks. For example, account and password controls to protect critical systems were not sufficient and firewall rules allowed numerous insecure and unnecessary connections to critical devices.

BCPS needs to verify the propriety of payments to contractors for healthcare services. The Baltimore County government administers self-insured employee medical benefits for BCPS. However, BCPS does not verify the reasonableness of the amounts paid for employee healthcare. BCPS expenditures for employee healthcare totaled approximately \$125 million during fiscal year 2014.

#### **BCPS Should Take Certain Steps to Assure Cost Effectiveness**

BCPS did not comply with a State law that requires the preparation of written determinations that it was in BCPS' best interest to participate in an intergovernmental cooperative purchasing agreement (ICPA). Further, BCPS routinely used a vendor from a purchasing consortium, under an ICPA, to replace school roofs; however, BCPS did not periodically assess the cost benefit of this practice. OLA's analysis, including comparisons with other local

public school systems, indicates that BCPS could be paying significantly more than necessary because of the exclusive use of this contractor for the replacement of school roofs. Between July 1, 2010 and December 10, 2013, BCPS paid approximately \$31.4 million to the contractor obtained through the purchasing cooperative for roofing services.

Also, BCPS was not using its automated bus routing software, purchased in 2004, to assist in planning efficient bus routes. We also found ridership on certain elementary and middle school bus routes selected for review was significantly lower than bus capacity.

**BCPS Needs to Establish Certain Comprehensive Policies and Practices**

BCPS needs to develop formal policies pertaining to the competitive procurement of service contracts above a specified amount, and recordkeeping and physical inventory requirements for certain equipment. We also noted that BCPS awarded two service contracts totaling \$1.25 million without competitive procurements.



# Background Information

## Statistical Overview

According to student enrollment records compiled by the Maryland State Department of Education (MSDE), Baltimore County Public Schools (BCPS) ranks 3<sup>rd</sup> in student enrollment among the 24 public school systems in Maryland. Fiscal year 2014 total full-time student population was 108,191 students. BCPS has 160 schools, consisting of 104 elementary schools, 27 middle schools, 24 high schools, 4 special education schools, 1 charter school, and 11 centers where students are only enrolled on a short-term basis.

According to BCPS' audited financial statements, expenditures totaled \$1.55 billion in fiscal year 2014. The largest expenditure category was salaries and wages, including benefits, which accounted for 74 percent of total operating expenditures during fiscal year 2014. According to MSDE records, as of October 2013, BCPS had 14,281 full-time equivalent positions which consisted of 9,195 instructional and 5,086 non-instructional employees.

## Oversight

BCPS is governed by a local school board, consisting of 11 voting members appointed by the Governor and 1 non-voting student member. The State and the Baltimore County government provide the majority of BCPS funding. In addition, MSDE exercises considerable oversight through the establishment and monitoring of various financial and academic policies and regulations, in accordance with certain provisions of the Annotated Code of Maryland. MSDE also works with BCPS to comply with the requirements and mandates of federal law. Baltimore County government exercises authority over BCPS, primarily through review and approval of BCPS' annual operating and capital budgets.

## External and Internal Audits

BCPS engages a certified public accounting firm to independently audit its fiscal year-end financial statements. Additionally, the auditor conducts what is referred to as a Single Audit of BCPS federal grant programs (as required by federal regulations). We reviewed the resulting financial statement and Single Audit reports for fiscal years 2013 and 2014, and examined the related work papers for the fiscal year 2013 audits, which were the latest work papers available when we commenced our field work.

Due to similarities between the work of the independent certified public accounting firm that audited BCPS' financial statements and conducted the Single Audit of federal grants, and the risks and scope of our audit in certain areas, we relied on the results of the independent audits to reduce the scope of our audit work related to certain revenues (amounts due from other governments) and federal grant activity. In addition, we relied on the results of the work performed by the BCPS internal auditors related to school activity funds.

### **Status of Findings From Preceding Audit Report**

Based on our assessment of significance and risk to our audit objectives, our audit included a review to determine the status of 11 of the 18 findings contained in our preceding audit report dated October 15, 2008. We determined that BCPS satisfactorily addressed 6 of these findings. The remaining 5 findings are repeated in this report as 4 findings.

# Findings and Recommendations

## Revenue and Billing Cycle

### Background

Baltimore County Public Schools (BCPS) revenues consist primarily of funds received from Baltimore County, the State, and the federal government. According to the BCPS audited financial statements, revenues from all sources totaled \$1.55 billion during fiscal year 2014. In addition to these revenue sources, schools also collect funds for various purposes, such as for student activities, clubs, and school publications. Because they are not considered school revenue, these student activity funds are accounted for separately by each school and are reported in summary in the audited financial statements. Although this revenue is raised through student-related activities, BCPS has a fiduciary duty to safeguard these funds. For fiscal year 2014, school activity fund collections totaled \$16.2 million and the June 30, 2014 balance was \$7.3 million.

### External Audits

Due to the similarities between the work of the independent certified public accounting firm that audited the BCPS financial statements and our objectives for this area, we placed significant reliance on the results of the firm's audit for certain revenues, for which the auditor's procedural reviews and testing disclosed no material weaknesses or significant deficiencies.

### Internal Auditor Audits School Activity Funds

The BCPS internal auditor conducts audits of school activity funds. The internal auditor's review and testing of the school activity funds at BCPS schools identified some control weaknesses at certain schools that were addressed by school management. The internal auditor's reports we reviewed disclosed that internal control weaknesses identified were not prevalent. The internal auditor audits all schools' activity funds on a rotating basis and reports its findings to the school principals and central administrative staff, and are summarized and provided to the Board's Audit Committee.

## Federal Funds

### Background

BCPS receives funds pertaining to federal government programs that are generally restricted for use for a specified program (such as the School Lunch Program or Special Education). According to the audited Schedule of

Expenditures of Federal Awards, fiscal year 2014 expenditures of federal award funds totaled \$88.7 million.

### **Single Audit Report Disclosed No Reportable Conditions Regarding Federal Grant Management**

Due to work performed by the independent certified public accounting firm that conducted the Single Audits of BCPS federal grants for fiscal years 2013 and 2014 and the objectives of our audit in this area, we relied on the auditor's work and results. Besides expressing an opinion on BCPS compliance with the terms of several grant programs, the auditor also considered the existing internal control structure's impact on compliance and audited the fiscal year 2014 required Schedule of Expenditures of Federal Awards. The related report stated that BCPS complied, in all material respects, with the requirements applicable to its major federal programs. With respect to internal controls over compliance with, and the operation of, major federal programs, the auditor did not identify any deficiencies in internal control that were considered to be material weaknesses.

## **Procurement and Disbursement Cycle**

### **Background**

According to BCPS records, non-payroll disbursements totaled \$226 million during fiscal year 2014. Requisitions are computer generated by the requesting department and must be approved by supervisory personnel (such as a respective department head). Approved requisitions are then converted to purchase orders and approved by the Chief Financial Officer. The BCPS procurement policy requires that certain procurements over \$25,000 be competitively bid and approved by the Board. The policy also requires solicitation of quotes for purchases of goods and services under \$25,000. Payments are processed by the finance department through an automated system that prints vendor checks, for the majority of disbursement transactions, and also posts the payment to the financial records. Finally, system-wide contracts had been entered into for certain consumable items, such as office supplies, which staff at individual schools are authorized to purchase without finance department approval.

**Finding 1**

**BCPS did not adequately separate user duties on the procurement system used by schools to order supplies.**

**Analysis**

BCPS did not adequately separate user duties on the automated system used by schools for order supplies. Certain employees were assigned capabilities that allowed them to perform incompatible functions. Our review of user capabilities disclosed that there were 168 employees that could initiate and approve requisitions, which in turn caused a purchase order to be automatically issued to the vendor without independent approvals. During fiscal year 2013, 93 of the 168 employees initiated and approved requisitions for 10,433 items that resulted in 3,084 purchase orders totaling \$1,454,411. In addition, there were 16 employees involved in the procurement process that had administrator access to the system. The administrator access provided them the ability to create or modify user accounts, without subsequent independent review of the changes, in such a way as to permit incompatible functions that could result in the processing of unapproved transactions. Typically, such access is restricted to a limited number of individuals and preferably those independent of the related operational area.

**Recommendation 1**

**We recommend that BCPS strengthen its controls over the automated procurement system used to order supplies for schools. Specifically, we recommend that BCPS restrict user access capabilities to eliminate the ability of users to perform incompatible duties, such as initiating and approving the same procurement transactions, and limit administrator access rights to those employees requiring such access.**

**Finding 2**

**BCPS did not prepare written determinations that it was in BCPS' best interest to participate in intergovernmental cooperative purchasing agreements.**

**Analysis**

BCPS did not prepare a written determination of the benefits of using an intergovernmental cooperative purchasing agreement (ICPA) as required by State law. This law, which legal counsel to the Maryland General Assembly advised us is applicable to local education agencies, allows the use of cooperative purchasing arrangements only after the using entity has determined in writing that the use of such arrangements will provide cost

benefits, promote administrative efficiencies, or promote intergovernmental cooperation.<sup>1</sup>

- Since 2006, BCPS has procured all roof replacements from the same contractor obtained through an ICPA without preparing the required written determination of the benefit of using the cooperative. Between July 1, 2010 and December 10, 2013, BCPS paid approximately \$31.4 million to one contractor procured through the cooperative. (See additional comments regarding BCPS roofing procurements in finding 10.)
- During our test of 10 contract procurements, we also noted two service contracts totaling \$1.25 million (one for training prospective principals and one to improve school schedules) in which the stated procurement method was "piggybacking" on other governmental entities' contracts, which according to the aforementioned State law are also deemed to be ICPAs. No written determination of the benefits of using this procurement method was prepared for either contract.

These contracts were issued by other governmental entities that allowed other jurisdictions to use the contract terms and prices. However, we found that BCPS did not use the contract terms and prices established by the other government entities, but negotiated their own unique contract terms and prices. Without the aforementioned written determination of the ICPA's benefits, these two procurements have the appearance of sole-source procurements that lacked any documented basis as to why competitive procurement methods were not used.

## **Recommendation 2**

**We recommend that BCPS comply with State law and ensure that a written determination substantiating its use of an ICPA is prepared.**

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<sup>1</sup>Section 13-110 of the State Finance and Procurement Article, in part, defines a intergovernmental cooperative purchasing agreement as a contract that is entered into by at least one governmental entity in a manner consistent with the purposes set forth in Section 11-201 of the Article, that is available for use by the governmental entity entering the contract and at least one additional governmental entity, and that is intended to promote efficiency and savings that can result from intergovernmental cooperative purchasing.

**Finding 3**

**BCPS' procurement policies did not require competitive procurements for certain contractual services.**

**Analysis**

BCPS had not established a comprehensive procurement policy that requires competitive procurement of certain services or documentation of justifications for not using competitive procurements. The Board adopted a procurement policy that requires the purchase of goods to be conducted in compliance with the Annotated Code of Maryland, which requires that procurements of school buildings, improvements, supplies, and equipment exceeding \$25,000 be competitively bid and awarded to the lowest responsible bidder. Although the policy requires price quotes be obtained for purchases of services valued at less than \$25,000, the current policy does not address the selection of contractors for services valued at \$25,000 or more (for example, to be selected by a competitive procurement process). During fiscal year 2013, BCPS issued purchase orders for service contracts totaling approximately \$56.1 million with related expenditures totaling approximately \$49.8 million during that year.

**Recommendation 3**

**We recommend that BCPS amend its existing policies to require competitive procurement methods to be used for all contracts for services.**

**Human Resources and Payroll****Background**

Payroll expense represents the largest single cost component in the BCPS budget. According to BCPS records, fiscal year 2014 salary, wage, and benefit costs totaled \$1.1 billion. According to Maryland State Department of Education reports, during the 2013 - 2014 school year BCPS had 14,281 full-time equivalent positions, which consisted of 9,195 instructional positions and 5,086 non-instructional positions.

BCPS uses an automated integrated human resources and payroll system to maintain human resources information, record employee time, track leave usage, and to process and record payroll transactions. The system automatically generates semi-monthly time records and any adjustments are processed by central payroll personnel. The system generates payroll checks and direct deposit advices. Payroll processing involves both automated processes (such as compiling leave and running edit reports) and manual processes (such as data entry of new employee information).

#### **Finding 4**

**Independent reviews of certain payroll and personnel transactions were lacking and access to the automated system was not properly restricted.**

#### **Analysis**

Independent reviews of certain personnel and payroll changes processed were not performed and certain system users were assigned incompatible capabilities in the automated human resources and payroll system.

- BCPS lacked an independent review to ensure that certain processed employee personnel and payroll transactions were correct and appropriate. For example, new employees added to the system or changes to employee data, including salary changes, were not subject to online approvals nor were transaction reports generated for verification to source documentation by an independent employee.
- BCPS did not adequately restrict employee capabilities to perform certain critical functions, such as changing employee salary and direct deposit information. Eleven employees within the Office of Payroll had been assigned access to personnel and payroll menus in the automated system that provided them with virtually complete control over the payroll process. Although these employees needed access to certain components of the menus to perform their jobs, BCPS had not developed a process to restrict access to only those components necessary to perform specific job duties. As a result of the current system's inability to limit access to certain functions within menus, these employees could perform potentially incompatible functions such as adding a new employee and processing the related payroll. Furthermore, these eleven employees had the ability to change employee address and bank account information in the automated system for direct deposit payees as well as the ability to independently process payroll. Although our tests did not identify any inappropriate transactions, unnecessary employee access to the system could be used to process unauthorized payroll payments that would not be readily detected. A similar condition was noted during our prior audit.

#### **Recommendation 4**

**We recommend that BCPS**

- a. perform a documented independent review of personnel and payroll transactions,**
- b. eliminate the capability of system users to perform incompatible functions, and**
- c. limit assignments of critical system functions to those employees who require such capabilities to perform their job duties (repeat).**



## Inventory Control and Accountability

### Background

According to the BCPS audited financial statements, as of June 30, 2014, the undepreciated value of its equipment was \$64.5 million. BCPS uses a centralized fixed asset inventory system to track capital equipment (that is, items with a cost of \$5,000 and greater). Equipment at BCPS included furniture and equipment items, such as desks, computers, audio and video items, and various other items. Certain individuals were responsible for the equipment at each location (that is, each school or administrative office). In addition, the individual schools and offices maintain separate inventory records for sensitive equipment (defined as non-capital equipment with a unit cost between \$500 and \$5,000, with a useful life greater than one year, which are transportable, easily concealable, or prone to theft). BCPS also maintains a separate database of certain computer hardware assigned to schools.

### Finding 5

**Policies, controls, and record keeping over equipment were not adequate.**

### Analysis

BCPS lacked sufficient policies and procedures to govern the accountability and control of its equipment, including non-capitalized equipment items that are prone to theft, such as digital cameras and other electronic equipment.

- BCPS' equipment policy did not require that all computers (desktop and laptop computers) and other sensitive items susceptible to theft (such as, netbooks, tablets, cameras, audio visual equipment) be added to the centralized equipment records and counted during periodic physical inventories. A similar condition was noted during our prior audit. Although BCPS required the schools or offices to establish proper accountability over such items in their custody, BCPS did not ensure that those locations were properly maintaining the related equipment records or conducting physical inventories.

At three schools visited we were unable to locate 7 of 40 sensitive items selected from the schools' records (such as printers and cameras). In addition, we noted that the inventory records did not include the minimum information required by the BCPS' Sensitive Equipment Tracking Procedures. Those procedures require the school or office in custody of sensitive equipment to maintain inventory records that, at a minimum,

include a description of the item, ID or serial number, date purchased, cost, employee custodian, and date of last physical inventory. Furthermore, we were advised by the three schools that physical inventories were only taken for items purchased with federal grant monies although the procedures also require an annual physical inventory of sensitive items purchased with other funds.

- BCPS' procedures were inadequate for its annual physical inventory of capital equipment items with a value of \$5,000 or greater. Specifically, the employees designated as custodians responsible for maintaining the inventory records of capital equipment items (usually school principals or office managers) were also responsible for ensuring the completion of the related annual physical inventories. BCPS also has an independent party perform a physical inventory once every 5 or 10 years, depending on the location to be inventoried. However, BCPS had not established a policy to verify the accuracy of the inventory counts reported by either the aforementioned employees or the independent party. A similar condition was noted during our prior audit.
- Disposals were frequently not approved by supervisory personnel. Specifically, our test of 12 disposals with a cost basis of \$358,958 disclosed that none of the disposals were approved by supervisory personnel. The only support was a physical inventory form that indicated that the item was no longer on hand.

Inadequate accountability and controls over equipment could result in unnecessary additional cost to replace missing property. In its response to our prior audit, BCPS agreed with the need to implement a system to inventory and track all computer equipment and sensitive items throughout the system and that it would develop appropriate systems and procedures to accomplish those objectives.

#### **Recommendation 5**

**We recommend that BCPS**

- a. ensure that all locations with custody of sensitive equipment properly maintain equipment records and perform annual physical inventories in accordance with written procedures or require that such items be recorded in the centralized equipment records and be counted during physical inventories of capital equipment (repeat);**
- b. establish a policy to verify the accuracy of the completed capital equipment inventory counts (repeat); and**
- c. ensure that equipment disposals are approved by supervisory personnel prior to deleting items from the capital equipment inventory records.**

## Information Technology

### Background:

The BCPS Department of Information Technology (DoIT) maintains and administers the BCPS computer network, computer operations, and certain information systems applications. BCPS operates a wide area network, with Internet connectivity, which connects the individual schools' local networks to the computer resources located at the BCPS data center and the Baltimore County Government network. DoIT supports instructional software/web-services, the student information system, the financial management system, e-mail, data backup, technology management tools, and application hosting.

### Finding 6

**The BCPS computer network was not adequately secured.**

### Analysis

The BCPS computer network was not adequately secured.

- Firewall rules allowed numerous insecure and unnecessary connections to critical network devices. For example, firewall rules were not configured to adequately secure connections into the BCPS network from the Internet. In addition, the entire Baltimore County Government network had access, at the network level, to all internal BCPS network resources via all ports. Such access was excessive and should have been limited to specific source and destination IP addresses over select ports. Best practices prescribed by the State of Maryland Department of Information Technology's *Information Security Policy* requires that information systems shall be configured to monitor and control communications at the external boundaries of the information systems and at key internal boundaries within the systems.
- Fourteen publicly accessible servers were located in the BCPS internal network rather than isolating these servers in a separate protected network zone. These 14 servers, if compromised, could expose the internal network to attack from external sources. Recommended security procedures from the National Institute of Standards and Technology *Guidelines on Firewalls and Firewall Policy*, include placing publicly accessible servers in an external protected zone to protect those servers, as well as the entity's internal network.

- BCPS did not use any form of intrusion detection prevention system (IDPS) software to protect its network. Specifically, BCPS did not use a network based IDPS to protect its entire network from external unencrypted traffic and did not use a host-based intrusion prevention system (HIPS) on its servers that processed encrypted traffic. A properly configured network-based IDPS, supplemented by HIPS can aid significantly in the detection/prevention of and response to potential network security breaches and attacks. Also, best practices identified in the aforementioned *Information Security Policy* require protection against malicious code and attacks by using IDPS to monitor system events, detect attacks, and identify unauthorized use of information systems and/or confidential information.
- BCPS was in the process of implementing a new wireless network infrastructure that segmented guest users and required regular users to authenticate before obtaining network access. However, our testing disclosed that as of April 2014 wireless access in 106 schools and 6 administrative offices still allowed unfiltered, unauthenticated and unencrypted access to the entire BCPS internal network by any wireless user (including guests).

#### **Recommendation 6**

##### **We recommend that BCPS**

- a. configure its firewall rules to adequately secure connections from untrusted third parties (including the Internet and Baltimore County Government);**
- b. relocate all publicly accessible servers to a separate neutral network zone to limit security exposures to the internal network segment;**
- c. perform a documented review and assessment of its network security risks and identify how IDPS and HIPS coverage should be best applied to its network and implement this coverage; and**
- d. complete the wireless network conversion project to properly segment all guest wireless users and require authentication and encryption for all wireless users accessing internal resources.**

## **Finding 7**

**Workstations and servers were not sufficiently protected against malware.**

### **Analysis**

Workstations and servers were not sufficiently protected against malware.

- Eight of 10 workstations tested were improperly configured with users having administrator rights. Administrator rights should be provided to network administrators only, since these rights are the highest permission level that can be granted to users and allow users to install software and change configuration settings. As a result, if these workstations were infected with malware, the malware would run with administrative rights and expose these workstations to a greater risk of compromise than if the workstations' user accounts operated with only user rights. In addition, as a result of the administrator rights assigned, these 8 users had the ability to disable the malware protection software on their workstations.
- Workstations tested had not been updated with the latest releases for software products that are known to have significant security-related vulnerabilities. Although the vendors for these software products frequently provide security-related software patches to address these vulnerabilities, BCPS had not updated its workstations for these patches. For example, of 10 workstations tested for 2 of these software products we noted that all 10 workstations were running older software versions.
- The malware protection software used to protect BCPS workstations was not properly configured to limit users' capabilities. Specifically, users of all 10 workstations tested could disable malware protection software features that would render the software unable to protect against malware threats. In addition, 4 of 10 workstations and 2 of 3 servers tested had not been updated with either the current malware protection software or the related signatures.

The aforementioned *Information Security Policy* identifies best practices which provide that security settings of information technology products should be configured to the most restrictive mode consistent with operational requirements and protect against malicious code by implementing protections that, to the extent possible, include a capability for automatic updates.

### **Recommendation 7**

**We recommend that BCPS**

- a. **ensure that administrative privileges on workstations are restricted to network administrators,**

- b. keep its computers up-to-date for all critical security related updates to potentially vulnerable installed software,
- c. configure its malware protection software so that users cannot disable the settings which allow users to override and modify default security controls established by management, and
- d. ensure that the current versions of malware protection software and related signatures are installed and running properly on all workstations and servers.

#### **Finding 8**

**Controls over BCPS' network domain accounts, passwords, and administrative access were not sufficient.**

#### **Analysis**

Controls over BCPS' network domain accounts, passwords, and administrative access were not sufficient.

- Domain account and password controls were not in compliance with the best practices identified in the aforementioned *Information Security Policy*. Specifically, domain password length, age, complexity, history, and account lockout were not enforced. These exception conditions weaken the security over the entire BCPS network including all BCPS systems (such as the financial management system) that use the domain's active directory system for authentication. Similar conditions were commented upon in our preceding audit report.
- Administrative access to the BCPS network was excessive. Specifically, we noted that 46 accounts, assigned to 44 unique users, were improperly included in powerful domain groups. For example, 3 accounts were classified as domain administrators even though the assigned users did not need the related access. Accounts that are domain administrators are the most powerful and privileged accounts in the system. As a result of this condition, these accounts had administrative control over all BCPS domain resources and could make unauthorized modifications to critical data without detection.

#### **Recommendation 8**

**We recommend that BCPS**

- a. implement strong controls over domain accounts and passwords in accordance with best practices identified in the aforementioned *Information Security Policy* (repeat), and

- b. ensure that membership in powerful domain groups only be assigned to users requiring such privileges.

**Finding 9**

**Controls over the student information and financial management databases were inadequate.**

**Analysis**

Controls over the student information and financial management databases were inadequate.

- A default administrative database account unnecessarily had full access to the student information and financial management databases. Since this account includes local server administrators by default, they, and anyone able to achieve local administrator privileges, would automatically have full administrative access to these databases and could perform unauthorized modifications to critical data. For example, as a result of these conditions, we noted that 36 accounts (assigned to 16 unique individuals) had full administrative access to the student information database even though those users did not need such access to perform their duties.
- Fourteen accounts had been granted excessive access and privileges on the student information database and/or server. For example, users of five accounts had been improperly given the ability to perform all configuration and maintenance activities (including deletion) on this database even though these users did not need such access to perform their duties.
- Security event monitoring over the student information and financial management databases was not sufficient. For example, although a number of security events were logged, BCPS was unable to provide documentation that these logs were reviewed. In addition, audit events and direct changes to several critical tables were not logged for subsequent review.

Best practices identified in the aforementioned *Information Security Policy*, recommend that access to information be strictly controlled, audited, and that it supports the concepts of "least possible privileges" and "need-to-know." In addition, this Policy states that procedures must be developed to routinely review audit records for indications of unusual activity and report findings to appropriate officials for prompt resolution.

## Recommendation 9

We recommend that BCPS

- a. limit access to critical databases to personnel whose job duties require such access;
- b. limit the assignment of access and privileges to the student information database and server to only those accounts requiring such access and privileges; and
- c. log all critical audit events and direct changes to critical tables, review these logs on a regular basis with appropriate investigation of unusual activity, document these reviews, and retain the documentation for subsequent verification.

## Facilities Construction, Renovation, and Maintenance

### Background

BCPS employs a staff of approximately 1,171 employees to maintain its 171 facilities (including schools and other administrative and support offices). According to the fiscal year 2015 Capital Improvement Plan, necessary construction, major renovations, and systemic improvements to BCPS facilities over the next six years were estimated to cost \$819 million.

### Finding 10

BCPS is paying a significantly higher cost per square foot for roof replacements compared to other local school systems, and could not adequately justify the rationale for its practice of using the same roofing contractor for a number of years.

### Analysis

Our audit disclosed that BCPS is paying significantly more for roof replacements, compared to other Maryland public school systems, through its exclusive use of one contractor. Since 2006, BCPS has been using the same contractor obtained through an intergovernmental cooperative purchasing agreement for all of its roofing requirements. Specifically, BCPS has used a Pennsylvania-based cooperative purchasing program (Program) that is open to K-12 schools, higher education institutions, local government and other non-profit organizations. According to the Program's website, it competitively procures contracts for commodities and services, with awards going to the "lowest responsive responsible bidder," and the contracts are approved by the board of directors of its parent agency (a collective of certain schools located in central Pennsylvania). All cooperative members may purchase the available goods and services at the prices provided for in the related contracts. We were advised by a Program representative that there is no



direct membership fee to Program members, such as BCPS. Instead, the Program's vendors pay the administrative costs of the Program and our review of vendor proposals found that they may pass these costs onto the members.

- BCPS did not evaluate the roofing contractors that were available through the Program of which BCPS was a member to determine which contractor provided the best value. In August 2012 the Program placed its roofing contract out for bid and in December 2012 awarded contracts to two contractors effective March 2013. One contractor was the incumbent, and previously the Program's sole roofing contractor and the other was a new contractor. We selected roofing contracts for two schools that were awarded by BCPS after the second contractor was added by the Program for review. We found that in November 2013 BCPS awarded roofing contracts for two schools to the contractor that had held the cooperative's contract for several years and who BCPS had exclusively used since 2006 and that BCPS was unaware that an additional vendor had been added by the Program. We compared both contractors' published rates and because of differences between the contractors' per unit cost rates for the same roof design, we determined that the new contractor's costs for each project would have been lower. Specifically, one roof would have cost \$722,680 less (\$1,818,999 vs. \$1,096,319) and the other roof would have cost \$496,978 less (\$1,299,470 vs. \$802,492). The cost per square foot was \$28.92 and \$25.68, respectively, for the higher priced alternatives BCPS used compared to \$17.43 and \$15.86, respectively, for the lower priced alternatives.
- Our analysis of nine BCPS roofing projects completed from August 2011 through December 2013 disclosed that the average cost of their projects was \$22.76 per square foot whereas the largest school system in the state replaced two roofs during the summer of 2013 using competitive procurements for an average cost of \$13.70 per square foot (a difference of \$9.06 per square foot). Another school system received bids for a roof replacement in April 2014 and the winning bidder's price was \$14.01 per square foot. BCPS paid this same Program vendor approximately \$31.4 million to replace 1.45 million square feet of roofing during the period from July 2010 through November 2013. We estimate that the amount paid was \$11 million greater than the recent more expensive square foot costs of approximately \$14 per square foot paid by one of the two aforementioned school systems.

We acknowledge that each roofing project is unique and structural differences and quality specifications affect the ultimate costs incurred. BCPS attributes part of the cost differential to the inclusion of annual

inspection services in BPCS contracts, which are not included in other school system roofing contracts. We question whether the cost of annual inspections would account for an appreciable increase in cost. Further, BCPS cited the frequent use of a cold asphalt application, which is a more expensive process that costs an additional \$3.00 - \$3.50 per square foot. The cold asphalt application process is considered advantageous because it results in fewer odors and does not disrupt operations when schools are in session. However, we noted that two of the nine BCPS roof projects reviewed did not use the cold asphalt application process, but still cost \$21.30 per square foot.

In December 2013, a report was issued by a consultant hired by BCPS to perform a roofing study. The purpose of the study, as indicated in the report, was to perform an investigation and comparison for BCPS between the traditional "design, bid and award, construct" process utilized by BCPS prior to 2006 (and currently used by other Maryland public school systems) for roofing replacement projects, to the current methodology of procurement of design and construction through the purchasing cooperative Program that BCPS has been using since 2006. The consultant concluded that use of the Program "to purchase roofing replacements is a sound decision and provides BCPS with the best long term solution and minimizes their involvement in management and maintenance of the roofing well over a 20 year period." The consultant's report provided a comparison of roofing costs between the second through ninth largest Maryland school systems and BCPS, which is the third largest system. However, the comparison, without explanation, did not include data for the largest Maryland school system. Furthermore, the cost per square foot reported for the other Maryland school systems listed in the report for comparative purposes did not appear to be obtained from those systems, as we could not corroborate the costs for the three systems we contacted. For these reasons, we question if the consultant's report justifies the continued use of the same vendor under the Program.

Subsequent to our audit field work, BCPS used the "design, bid and award, construct" process to obtain a vendor for a school roof replacement project. We were advised that BCPS bid this project out instead of using the purchasing cooperative Program to assess which method was more cost effective. BCPS believes the result of this bid process provides grounds to conclude that its practice of using the Program vendor is appropriate and, therefore, disagrees with our conclusion that its roofing replacement costs may be excessive. However, we believe BCPS' conclusion cannot be reliably supported.

BCPS received six bids for the project that were based on design specifications developed by an architect hired by BCPS. The lowest bid of \$1,803,350 was received from the same purchasing cooperative Program vendor that BCPS had used since 2006. During this process, BCPS also obtained a proposal for the project from the same Program vendor based on its own design specifications using the Program's pricing method. That proposal totaled \$1,672,447, which was less than the same vendor's competitive procurement bid, thus ostensibly substantiating BCPS' conclusion.

When questioned, however, BCPS acknowledged that different bid specifications were used for the two proposals from the Program vendor. Furthermore, we consulted a State agency with expertise in managing building construction and they advised us that the specifications between the competitively bid project and the project specified by the Program vendor did not appear to be comparable. For example, the specifications developed by the BPCS hired architect required five inches of insulation material whereas the specifications developed by the Program vendor under its Program proposal appear to require only three inches of insulation. We were advised by staff at the aforementioned state agency that the additional layer of insulation added increased costs to the competitively bid project not only for the insulation material itself, but also resulted in significant cost increases for the additional labor and materials to permanently raise various mechanical components and duct work in order to accommodate the increased height of the additional insulation.

Also, the architect hired by BCPS to develop the design for this roofing project's invitation for bids had used this same roofing vendor (from the Program) to develop certain technical specifications for the project, perhaps giving this roofing vendor an unfair advantage for the competitive bid process. Although not applicable to BCPS and the other public school systems, State law prohibits a person or firm who assisted in drafting specifications for a proposed project for a State agency from bidding on or assisting others in bidding on that project.<sup>2</sup>

According to the technical advice we received from the aforementioned state agency, a thorough independent technical evaluation of multiple roofing projects at BCPS needs to be performed to determine whether BCPS' use of the purchasing cooperative Program is cost efficient for the products and services being delivered by the Program's vendor.

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<sup>2</sup>State Finance and Procurement Article, §5-508.

## Recommendation 10

We recommend that BCPS

- a. obtain a thorough independent evaluation of the of the cost effectiveness of using the purchasing cooperative program's roofing vendors, and if those vendors continue to be used, select the vendor whose proposal provides the best value; and
- b. adopt a policy similar to the cited State law prohibiting those involved with developing project specifications from bidding on those projects.

## Transportation Services

### Background

BCPS had approximately 70,000 students eligible to receive student transportation services during fiscal year 2014. These students were transported 14.8 million route miles during the 2013-2014 school year using 781 system-owned buses and 84 contractor-owned buses. The Office of Transportation (OT) is responsible for providing transportation service to schools and school related activities, determining student transportation eligibility, and establishing school bus stops for each school. The OT has established five geographic service areas in the County. According to MSDE records, fiscal year 2014 transportation costs totaled \$60.3 million, with \$10 million (17 percent) representing payments for contracted bus services. Payments to bus contractors consist of a flat rate per mile for the route.

### Finding 11

**BCPS was not fully using its automated routing software to develop more efficient routes.**

### Analysis

Routing software BCPS purchased during fiscal year 2004 has yet to be fully implemented. Instead, the BCPS OT uses a manual routing process which involves the flow of paper documents between schools, area bus depots, and the BCPS business office. This process also involves either an assistant principal at each school or a routing assistant in one of the five geographic areas to manually determine the closest bus stop for each eligible rider.<sup>3</sup>

The lack of a system-wide route analysis could have a potentially negative impact on route efficiency. For example, our review of fiscal year 2014 bus manifests (documents that record student ridership) for 100 buses disclosed

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<sup>3</sup>At the time of the audit, one of the five areas was in the process of implementing the automated routing software.

that elementary school buses operated at an average of 63 percent of the BCPS stated capacity and middle/high school buses operated at an average of 68 percent of the BCPS stated capacity<sup>4</sup>.

The use of routing software is a recognized best practice that can reduce the time it takes to design efficient routes, reduce student ride times, help ensure that routes better utilize existing bus capacity, and minimize the number of buses needed to transport students.

A similar condition was commented upon in our preceding audit report.

### **Recommendation 11**

**We recommend that BCPS use its automated routing software to develop more efficient bus routes on a system-wide basis (repeat).**

## **Food Services**

### **Background**

BCPS has a cooking cafeteria at 50 of its schools, where food is prepared for distribution to other schools. Food and related supplies are received and stored in each school. In fiscal year 2014, BCPS had 561 food service employees (comprised of 491 cafeteria positions and 70 administrative positions). According to the fiscal year 2014 audited financial statements, food service operation revenues exceeded food service operation expenditures by approximately \$1.6 million. Additionally, BCPS' fiscal year 2013 cost per meal was the second lowest among the five largest Maryland public school systems.

### **Cash Handling Procedures for Cafeteria Sales Were Established**

BCPS has implemented procedures and controls designed to ensure that cafeteria receipts were properly accounted for, processed, and deposited. BCPS has developed a *Cash Handling Procedures* manual to establish a uniform policy for the handling of all cafeteria sales. The *Procedures* outline responsibilities including, collection, reporting, and deposit practices. Applicable food service employees must sign a signature page to acknowledge reading the procedures, and periodically, staff from the Division of Business Services conducts unannounced audits to test for compliance by cafeteria staff with the procedures.

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<sup>4</sup>BCPS' school bus capacities are lower than manufacturer stated capacities and differ depending on the type of school. For example, the capacity for secondary (high school and middle school) and elementary school routes are 45 and 55 students, respectively, based on 64-passenger buses (manufacturer stated capacity).

## **School Board Oversight**

### **BCPS Adopted an Ethics Policy that Met the Current Requirements of State Law**

The Board has adopted a detailed ethics policy that conforms to State Law and includes provisions for conflicts of interest and financial disclosure and was approved by the State Ethics Commission. Provisions of this policy are applicable to Board members as well as all BCPS employees. BCPS established an Ethics Panel consisting of five members who are appointed by the Board of Education. The Panel acts as an advisory body to the Board and interprets the ethics code and provides advisory opinions. The Panel also reviews and rules on any reported complaints of ethics violations. According to the ethics policy, annual financial disclosure statements are required to be filed by Board members, the Superintendent, Assistant Superintendents, and a number of other administrators (such as school principals and department heads) by April 30<sup>th</sup> of each year. Our test of the records for employees required to submit financial disclosure forms for calendar year 2013, disclosed that forms were generally submitted as required.

### **BCPS Has an Operational Fraud Hotline**

In 2012, BCPS implemented a confidential fraud hotline to enable employees and others to confidentially report operational concerns and suspected fraud, waste, and mismanagement. The hotline is maintained by an independent third party that notifies the BCPS internal audit department of the allegations. The BCPS Internal Auditor reviews the allegations and makes a determination if the investigation should be performed by the internal audit department, the department to which the allegation relates, or the BCPS legal department. On a monthly basis, the Internal Auditor reports to the Superintendent and the Board on the status of allegations.

## **Other Financial Controls**

### **Healthcare Background**

BCPS participates in the Baltimore County government self-insurance program for employee and retiree health insurance. BCPS pays premiums to the County for its share of current costs based on prior years' claims and anticipated enrollment. The County serves as administrator of the plan and estimates outstanding claims and required reserves. BCPS healthcare expenditures totaled approximately \$125 million during fiscal year 2014.

**Finding 12**

**BCPS did not ensure the reasonableness of payments for certain employee and retiree health care costs.**

**Analysis**

BCPS lacked procedures and controls to ensure that the amounts paid to Baltimore County were reasonable.

- The Baltimore County government informs BCPS each year of the amount that it will have to pay for its share of health insurance costs. The amount that BCPS is required to pay is included in the annual appropriation from the County to BCPS; however, the County does not actually transfer the funds related to health insurance. The County withholds the funds and BCPS records a journal entry to record the funds as revenue and an expense. BCPS does not receive any documentation to support the calculation of the amount it is required to pay.
- BCPS does not receive any documentation regarding claims paid on behalf of BCPS employees and retirees. Consequently, BCPS is unable to audit the propriety of the claims paid on its behalf by the County to ensure that the services were actually provided, were covered by the health plans, and were appropriately priced. BCPS relies entirely on the County to administer the plan.

Under the current arrangement, BCPS lacks assurance that the amounts that it pays to the County for health insurance are reasonable. For example, BCPS could possibly be overpaying for its share and be subsidizing the County's share. We met with a County representative and attempted to determine what procedures and controls the County had in place to ensure the propriety of the premium calculations and claims payments. However, we were unable to readily obtain any information related to this issue from the County.

**Recommendation 12**

**We recommend that BCPS establish procedures to determine the reasonableness of the amounts paid for health insurance. Specifically, we recommend that BCPS work with the County to**

- a. obtain the documentation to determine the reasonableness of the amount allocated to health insurance costs; and**
- b. obtain documentation to support actual claim payments, and determine the reasonableness of the claims paid by the County.**





## Audit Scope, Objectives, and Methodology

We conducted a performance audit to evaluate the effectiveness and efficiency of the financial management practices of the Baltimore County Public Schools (BCPS). We conducted this audit under the authority of the State Government Article, Section 2-1220(e) of the Annotated Code of Maryland, and performed it in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We had two broad audit objectives:

1. To evaluate whether the BCPS procedures and controls were effective in accounting for and safeguarding its assets
2. To evaluate whether the BCPS policies provided for the efficient use of financial resources

In planning and conducting our audit of BCPS, we focused on 11 major financial-related areas of operations as approved on September 14, 2004 by the Joint Audit Committee of the Maryland General Assembly in accordance with the enabling legislation. The scope of the work performed in each of these areas was based on our assessments of significance and risk. Therefore, our follow-up on the status of findings included in our preceding audit report on BCPS dated October 15, 2008, was limited to those findings that were applicable to the current audit scope for each of the 11 areas.

The audit objectives excluded reviewing and assessing student achievement, curriculum, teacher performance, and other academic-related areas and functions. Also, we did not evaluate the BCPS Comprehensive Education Master Plan or related updates, and we did not review the activities, financial or other, of any parent teacher association, group, or funds not under the local board of education's direct control or management.

To accomplish our objectives, we reviewed applicable State laws and regulations pertaining to public elementary and secondary education, as well as policies and procedures issued and established by BCPS. We also interviewed personnel at BCPS, the Maryland State Department of Education

(MSDE), and staff at other local school systems in Maryland (as appropriate).<sup>5</sup> Our audit procedures included inspections of documents and records, and observations of BCPS operations. We also tested transactions and performed other auditing procedures that we considered necessary to achieve our objectives, generally for the period from July 1, 2012 through December 31, 2013. For certain areas within the scope of the audit, we relied on the work performed by the independent accounting firm that annually audits BCPS' financial statements and conducts the federal Single Audit.

We used certain statistical data — including financial and operational — compiled by MSDE from various informational reports submitted by the Maryland local school systems. This information was used in this audit report for background or informational purposes, and was deemed reasonable.

We also extracted data from BCPS' automated finance management system for the purpose of testing expenditure, inventory, and payroll transactions. We performed various audit procedures on the relevant data and determined the data were sufficiently reliable for the purposes the data were used during the audit.

BCPS' management is responsible for establishing and maintaining effective internal control. Internal control is a process designed to provide reasonable assurance that objectives pertaining to the reliability of financial records, effectiveness and efficiency of operations including safeguarding of assets, and compliance with applicable laws, rules, and regulations are achieved.

Because of inherent limitations in internal control, errors or fraud may nevertheless occur and not be detected. Also, projections of any evaluation of internal control to future periods are subject to the risk that conditions may change or compliance with policies and procedures may deteriorate. In addition to the conditions included in this report, other less significant findings were communicated to BCPS that did not warrant inclusion in this report.

We conducted our fieldwork from November 2013 to September 2014. The BCPS response to our findings and recommendations is included as an appendix to this report. As prescribed in the State Government Article, Section 2-1224 of the Annotated Code of Maryland, we will advise BCPS regarding the results of our review of its response.

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<sup>5</sup>During the course of the audit, it was necessary to contact other systems to identify policies or practices for comparative purposes and analysis.

APPENDIX

BALTIMORE COUNTY PUBLIC SCHOOLS

S. Dallas Dance, Ph.D., Superintendent

6901 Charles Street

Towson, MD • 21204-3711

June 24, 2015

Mr. Thomas J. Barnickel III, CPA  
Legislative Auditor  
Department of Legislative Services  
Office of Legislative Audits  
Maryland General Assembly  
301 West Preston Street, Room 1202  
Baltimore, MD 21201

Dear Mr. Barnickel:

Enclosed is Baltimore County Public Schools' response to your Financial Management Practices Audit Report of June 2015.

Baltimore County Public Schools values your recommendations and has already implemented most of them. Our staff will continue to work on the remainder during the coming fiscal year, as indicated.

Sincerely,



S. Dallas Dance  
Superintendent

sdd/gls

Copies:

Mr. Kevin D. Smith, Chief Administrative and Operations Officer  
Mr. George L. Sarris, Executive Director, Fiscal Services

#### Finding 1

BCPS did not adequately separate user duties on the procurement system used by schools to order supplies.

#### Recommendation 1

We recommend that BCPS strengthen its controls over the automated procurement system used to order supplies for schools. Specifically, we recommend that BCPS restrict user access capabilities to eliminate the ability of users to perform incompatible duties, such as initiating and approving the same procurement transactions, and limit administrator access rights to those employees requiring such access.

#### Response 1

The 168 employees initiating and approving requisitions are primarily school administrators. School administrators are the financial managers of their budgets and are held to high standards of accountability. The automated supply system is subject to random internal audits and regular review by the Department of Fiscal Services. Additional controls will slow the distribution of supplies to students and increase administrative costs, however, it will be piloted for consideration. BCPS will reduce the number of purchasing personnel with administrative rights.

#### Finding 2

BCPS did not prepare written determinations that it was in BCPS' best interest to participate in intergovernmental cooperative purchasing agreements.

#### Recommendation 2

We recommend that BCPS comply with State law and ensure that a written determination substantiating its use of an ICPA is prepared.

#### Response 2

BCPS has developed a purchasing procedure, checklist, and form for preparing written justification when presenting intergovernmental cooperative purchasing agreements from other government entities.

#### Finding 3

BCPS' procurement policies did not require competitive procurements for certain contractual services.

#### Recommendation 3

We recommend that BCPS amend its existing policies to require competitive procurement methods to be used for all contracts for services.

### Response 3

BCPS complies with all applicable state, federal, and local statutes. State law is silent as to the purchase of services valued at \$25,000 or more and BCPS' Policy 3210, Purchasing Guidelines, Section VI., provides that BCPS shall have the option to issue bids, requests for proposals, or solicit price quotations for any requirements that do not require formal bids. BCPS' Rule 3210, Purchasing Guidelines, Section V., provides for the establishment of procedures for informal bids, RFPs, and price quotations and these are incorporated in Purchasing Procedure 3210.006.

#### Auditor's Comment:

Our report finding did not indicate non-compliance with State statutes by BCPS, but questioned the lack of a policy requiring the use of a competitive procurement process for all service contracts. A comprehensive procurement policy requiring competitive procurements for all types of purchases is a recognized best practice and it helps ensure fairness and integrity in the expenditure of public funds. Other Maryland school systems have established comprehensive policies, including competitive procurement requirements for service contracts. BCPS' apparent reluctance to establish a policy requiring competitive procurement for all service contracts is perplexing given that its procurement manual already requires it to obtain price quotes for lower cost services (that is, services valued at less than \$25,000).

#### Finding 4

Independent reviews of certain payroll and personnel transactions were lacking and access to the automated system was not properly restricted.

#### Recommendation 4

We recommend that BCPS

- a. perform a documented independent review of personnel and payroll transactions,

#### Response 4a.

Internal controls are important and BCPS will continue to improve them and reinforce the separation between personnel and payroll functions.

- b. eliminate the capability of system users to perform incompatible functions,

#### Response 4b.

BCPS has removed access for Payroll staff to enter grade and step salary information for regular employees, although this has not resulted in any known inappropriate transactions. A proposed upgrade of human resources and payroll software will offer workflow enhancements that should address concerns about employee's address and direct deposit information.

- c. and limit assignments of critical system functions to those employees who require such capabilities to perform their job duties (repeat).

**Response 4c.**

Internal controls are important and BCPS will continue to improve them and reinforce the separation between personnel and payroll functions.

**Finding 5**

Policies, controls, and record keeping over equipment were not adequate.

**Recommendation 5**

We recommend that BCPS

- a. ensure that all locations with custody of sensitive equipment properly maintain equipment records and perform annual physical inventories in accordance with written procedures or require that such items be recorded in the centralized equipment records and be counted during physical inventories of capital equipment (repeat);

**Response 5a.**

We agree. BCPS recently acquired the Destiny Asset Manager system and we have developed a procedure referenced in Board Policy and Rule 3620, Inventories, for recording sensitive equipment in this centralized inventory system. Approximately 36,800 digital devices acquired in 2013-2015 are being recorded in this system now and the entire inventory will be added over the next one to two years.

- b. establish a policy to verify the accuracy of the completed capital equipment inventory counts (repeat);

**Response 5b.**

We agree. BCPS maintains a policy which requires periodic independent physical inventories, and annual verifications of the fixed assets records by the custodial school administrator or office manager. We will also work with our Internal Audit staff to develop a process for them to test fixed assets and sensitive equipment inventory records when they perform periodic school audits.

and

- c. ensure that equipment disposals are approved by supervisory personnel prior to deleting items from the capital equipment inventory records.

**Response 5c.**

We agree. A standard form has been updated to ensure appropriate approvals are obtained for all disposals before the item is removed from the inventory.

## Finding 6

The BCPS computer network was not adequately secured.

### Recommendation 6

We recommend that BCPS

- a. configure its firewall rules to adequately secure connections from untrusted third parties (including the Internet and Baltimore County Government);

#### Response 6a.

BCPS has removed rules from the firewall that were no longer needed. All firewall changes now require a full review of the request, as well as the clear definition of source/destination IP addresses and specific port numbers. This has now become a standard practice. The BCPS firewall rules will be reviewed on an annual basis, and documentation will be produced showing the review and if any changes or issues were found.

- b. relocate all publicly accessible servers to a separate neutral network zone to limit security exposures to the internal network segment;

#### Response 6b.

BCPS has removed several servers that were accessible from the outside, and either placed them into the demilitarized zone (DMZ), or have removed the servers from production completely. The remaining publicly accessible servers are being redesigned so that either they can be placed in the DMZ or a proxy server front end will be placed into the DMZ. This work will continue until the end of the 2016-2017 school year to ensure that all servers have been properly moved, but the content is still accessible.

- c. perform a documented review and assessment of its network security risks and identify how IDPS and HIPS coverage should be best applied to its network and implement this coverage;

#### Response 6c.

A budget request was submitted for the FY2016 operating budget, but was unfortunately not approved by the local funding authority. BCPS will continue to research and focus on IDPS and HIPS implementation for critical systems, and will implement based on budget availability.

and

- d. complete the wireless network conversion project to properly segment all guest wireless users and require authentication and encryption for all wireless users accessing internal resources.

#### Response 6d.

As of June 12, 2015, 165 schools have had the new secure wireless installed, along with multiple bus/grounds yards, and two major office complexes. The secure wireless project will be completed by the end of December 2015, with

all schools, offices, and bus/grounds yards having the new secure wireless installed.

#### Finding 7

Workstations and servers were not sufficiently protected against malware.

#### Recommendation 7

We recommend that BCPS

- a. ensure that administrative privileges on workstations are restricted to network administrators,

#### Response 7a.

The granting of administrative privileges on workstations is currently being reevaluated and only authorized IT support personnel are being granted local administrative rights on workstations. This will ensure that any potential spread of malware, etc. will be contained.

- b. keep its computers up-to-date for all critical security related updates to potentially vulnerable installed software,

#### Response 7b.

Two key systems management software products are being fully deployed to all BCPS schools and offices. These software products will allow for the poling and inventory of critical/security patches, as well as antivirus/malware.

- c. configure its malware protection software so that users cannot disable the settings which allow users to override and modify default security controls established by management,

#### Response 7c.

With the removal of the administrative privileges for end users, the ability to configure and/or disable the malware protection software is being eliminated starting with the 2015-2016 school year.

and

- d. ensure that the current versions of malware protection software and related signatures are installed and running properly on all workstations and servers.

#### Response 7d.

With the full implementation of two system management software products, malware protection software and signatures will remain up to date.



**Finding 8**

Controls over BCPS' network domain accounts, passwords, and administrative access were not sufficient.

**Recommendation 8**

We recommend that BCPS

- a. implement strong controls over domain accounts and passwords in accordance with best practices identified in the aforementioned *Information Security Policy* (repeat),

**Response 8a.**

BCPS financial and HR users have been required to follow strong password policies and routine changing of their passwords for the past several years. BCPS is working on a procedures to have all users of other critical systems to follow strong password policies and routine changing of passwords.

and

- b. ensure that membership in powerful domain groups only be assigned to users requiring such privileges.

**Response 8b.**

Only IT support personnel who require domain administrative rights now have these rights. All others have been removed from the domain administrative group, and the default administrator account in all critical systems has been renamed and the password is changed on an annual basis. To ensure that domain administrators' regular user accounts are not compromised, BCPS is creating a separate user account for each domain administrator.

**Finding 9**

Controls over the student information and financial management databases were inadequate.

**Recommendation 9**

We recommend that BCPS

- a. limit access to critical databases to personnel whose job duties require such access;

**Response 9a.**

Access to critical databases has been restricted to BCPS IT personnel whose job functions require them to have such access.

- b. limit the assignment of access and privileges to the student information database and server to only those accounts requiring such access and privileges;

**Response 9b.**

BCPS concurs with this finding and has taken the necessary steps to limit the access and privileges to the student information database and server.

and

- c. log all critical audit events and direct changes to critical tables, review these logs on a regular basis with appropriate investigation of unusual activity, document these reviews, and retain the documentation for subsequent verification.

**Response 9c.**

BCPS is in the process of hiring a full time IT Security Analyst who will be working with the various critical system administrators on setting up the necessary logging of events, and in the review and documentation of logged events to determine appropriate response actions to be taken. Database administrators of the critical systems are reviewing critical events in the log monitoring of their appropriate systems.

**Finding 10**

BCPS is paying a significantly higher cost per square foot for roof replacements compared to other local school systems, and could not adequately justify the rationale for its practice of using the same roofing contractor for a number of years.

**Recommendation 10**

We recommend that BCPS

- a. obtain a thorough independent evaluation of the of the cost effectiveness of using the purchasing cooperative program's roofing vendors, and if those vendors continue to be used, select the vendor whose proposal provides the best value;

**Response 10a.**

BCPS is confident that it delivers cost efficient capital projects and will work to further demonstrate this. BCPS did engage an independent consultant for the previously mentioned 2013 study. BCPS is very interested in any additional studies or reviews conducted by any state agency or independent organization that may have considered this issue or that could provide further guidance in this matter.

and

- b. adopt a policy similar to the cited State law prohibiting those involved with developing project specifications from bidding on those projects.

**Response 10b.**

BCPS currently complies with all applicable federal, state, and local laws and will continue to do so.

**Finding 11**

BCPS was not fully using its automated routing software to develop more efficient routes.

**Recommendation 11**

We recommend that BCPS use its automated routing software to develop more efficient bus routes on a system-wide basis (repeat).

**Response 11**

BCPS approved funding in 2013 for the implementation of automated routing software. Implementation of the automated routing software started in the Southeast and Southwest regions of the county during fall 2013 and spring 2014. BCPS routes were entered in the system as they existed on paper. BCPS approved additional funding in March 2015, and regular education routes for the Northeast, Northwest, and Central regions are now being entered in the routing system.

BCPS is also implementing a new student information system and the full implementation of the routing software will interface with this student information system. Regular education routes for the 2015-16 school year will be produced using the automated routing software. Special Education routes are scheduled for implementation in October 2015.

**Finding 12**

BCPS did not ensure the reasonableness of payments for certain employee and retiree health care costs.

**Recommendation 12**

We recommend that BCPS establish procedures to determine the reasonableness of the amounts paid for health insurance. Specifically, we recommend that BCPS work with the County to

- a. obtain the documentation to determine the reasonableness of the amount allocated to health insurance costs; and
- b. obtain documentation to support actual claim payments, and determine the reasonableness of the claims paid by the County.

**Response 12**

BCPS will continue to work with Baltimore County Government to obtain requested information.

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