

## **7.0 TRANSPORTATION**

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## **7.0 TRANSPORTATION**

This chapter presents findings and recommendations relating to transportation use and management in Bath County Public Schools (BCPS). The major sections of this chapter are as follows:

- 7.1 Introduction and Division Comparisons
- 7.2 Organization, Planning, Policies, and Procedures
- 7.3 Training and Safety
- 7.4 Routing and Scheduling
- 7.5 Vehicle Maintenance and Bus Replacement Schedule
- 7.6 State Reporting

### **CHAPTER SUMMARY**

The Bath County Public Schools transportation office provides competent transportation services for its students. It is in compliance with Commonwealth of Virginia policies and procedures and exceeds some functional area expectations. The transportation office satisfactorily delivers students to and from their destinations and has an effective maintenance support program.

Commendable accomplishments of the transportation office are:

- The secretary to the superintendent who devotes .5 full time hours' equivalent supporting Office of Transportation administrative requirements is commended for a job well done.
- The accident prevention program is commended for having positive safety and training initiatives.
- Radio communications between buses and base stations strategically located throughout the county to support student transportation services are commendable.

MGT found that the division should improve in the areas of its spare bus policy, routing and scheduling, substitute driver procurement/retention, bus replacement policy, parts control and inventory, maintenance management, automotive service excellence, and state reporting. Many of the problems in areas needing improvement are aggravated by the thin organization structure and the frequent use of the Director of Transportation and mechanic as substitute drivers. The following is a brief summary of selected areas needing improvement (other areas are discussed in the subsequent sections of this chapter):

- Spare bus policy. The BCPS spare bus policy should be reviewed and adjusted. Normally, a 10 per cent bus policy is considered adequate for school buses. BCPS spare bus policy of 34 percent is considered excessive and could be reduced.
- Routing and Scheduling. The routing and scheduling of student transportation services is antiquated and not efficient. The

transportation section does not use automated software technology available for routing and scheduling bus transportation.

- Substitute driver recruiting and retention. BCPS Office of Transportation has serious challenges recruiting and retaining substitute bus drivers and developing an effective substitute bus driver program. Consequently, when there is shortage of bus drivers and replacements are needed, it is common practice for the Director of Transportation and the only assigned mechanic to be taken away from their critical transportation duties or functions to drive buses.
- Parts control and inventory. Parts control and inventory in BCPS needs to be improved. There is not adequate inventory and control of parts and equipment used for bus and vehicle maintenance in BCPS.
- Automotive Service Excellence (ASE). BCPS does not require Automotive Service Excellence certification as a condition of employment, nor are there any ASE certified mechanics in the school division

The division can do more to make its transportation operations more efficient and cost effective. This chapter presents observations and recommended improvements that if implemented could result in improved operational efficiencies for transportation functional areas.

Bath County, located in the western portion of the Commonwealth of Virginia, is one of the smaller counties in the state, with a 2006 estimated population of 5,391 (the 2000 U.S. Census count was 5,048). The county seat is Warm Springs, Virginia. The world-renowned Homestead luxury mountain resort, with its hot mineral springs, including the Jefferson Pools, is in Bath County. The county is 92 percent white, six percent Black/African American, 0.22 percent Native American, 0.38 percent Asian, 0.06 percent Pacific Islander, and 1.34 percent other races. The county has a rich history, and there are many monuments, buildings, and other properties attesting to its cherished traditions.

Transporting students safely to and from school, special events, and extracurricular activities is a major responsibility and significant expense for our nation's schools. Bath County Public Schools (BCPS) a division covering 535 square miles is nestled along the border between the Commonwealth of Virginia and the State of West Virginia. The terrain is picturesque, beautiful, and mountainous. The county's geographic configuration is rural with a slow pace of growth and development. According to school officials, Bath County Public Schools provided regular and exclusive/special education school bus service to 779 of its students at three school centers throughout the county during the 2005-06 school year. Among those served are alternative or exclusive/special education students, who, because of disabilities or special needs, require special transportation arrangements to school or other sites in the county.

## **7.1 Introduction and Division Comparisons**

The *Code of Virginia*, Section 22.1-176, states, in part, “County School Boards may provide transportation of pupils, but nothing herein contained shall be construed as requiring such transportation.” BCPS provides all qualified students free bus transportation to and from school within the student’s attendance area. Transportation is also provided between the home or school and other educational facilities operated by BCPS. Students may be required to meet a bus at an assigned stop up to one-half mile from their residence on a state-maintained road.

Throughout this chapter, BCPS is compared to six other school divisions in the Commonwealth of Virginia, namely:

- Bland County Public Schools
- Craig County Public Schools
- Mathews County Public Schools
- Rappahannock County Public Schools
- Richmond County Public Schools
- Surry County Public Schools

To provide some basis for this comparison, a series of exhibits present data on these selected school divisions and BCPS. The six school divisions are relevant in that they are rural and have comparable student populations. School transportation data and information for 2004-05 were the most recent provided by the Virginia Department of Education for comparisons. More current data either were not available or had not been approved for public release when this report was prepared. Therefore, comparative analysis of Bath County Public Schools with the six school divisions cited above will use five-year reports from 2000 to 2005 and other information provided by the Virginia Department of Education. Other data cited in this chapter are for the particular year indicated in the relevant exhibit.

A survey of BCPS administrators, principals, and teachers, was conducted as part of this performance audit. Two of the questions related to transportation. One asked respondents to rate various parts and functions of the school division, including transportation, and to determine whether the function *needs major improvement, needs some improvement, is adequate, or is outstanding*. In rating transportation in Bath County Public Schools Division, 50 percent of central office administrators, 51 percent of principals, and 44 percent of teachers stated that the transportation function *needs some improvement or needs major improvement*.

Exhibit 7-1 benchmarks these survey ratings against those of administrators and teachers in other school systems across the country. As shown, administrators in BCPS are less satisfied with the transportation function in their school division than administrators in other school systems. BCPS principals and administrators rate transportation services about the same. Teachers in Bath rate transportation services more favorably than their counterparts in other school systems in terms of the need for improvement (20 percent versus 32 percent); however, the percentages rating the services adequate or outstanding among this group are about the same.

**EXHIBIT 7-1  
TRANSPORTATION COMPARISON SURVEY RESPONSES  
BATH COUNTY PUBLIC SCHOOLS  
2005-06**

| RESPONDENT GROUP                          | % INDICATING <i>NEEDS SOME OR MAJOR IMPROVEMENT</i> | % INDICATING <i>ADEQUATE OR OUTSTANDING</i> |
|---|---|---|
| Bath County Public Schools Administrators | 50%   | 51%   |
| Administrators in Other School Divisions  | 33%   | 60%   |
| Bath County Public School Teachers        | 20%   | 44%   |
| Teachers in Other School Divisions        | 32%   | 46%   |

Source: MGT surveys of school systems, 2006.

Exhibit 7-2 provides an overview of the number of students for which each school division reported providing some form of transportation paid for by public funds during the school years indicated. It is important to note that the numbers of pupils for the 2000 through 2005 school years are the total numbers of riders (morning and afternoon runs) using school transportation services. The data show that from 2000-01 to 2004-05 BCPS increased slightly its transportation services from 779 to 783 for a net increase of four students. Conversely, the peer division average decreased slightly from 815 to 803 for a net loss of six students. The data show that BCPS had a less than one percent increase and its peer divisions had a less than one percent decrease in transportation services over the five-year period.

**EXHIBIT 7-2  
ALL TRANSPORTATION SOURCES  
STUDENTS TRANSPORTED YEARLY  
BATH COUNTY PUBLIC SCHOOLS  
COMPARED TO PEER DIVISIONS  
2000-05 SCHOOL YEARS**

| SCHOOL DIVISION              | 2000-01    | 2001-02    | 2002-03    | 2003-04    | 2004-05    |
|------------------------------|------------|------------|------------|------------|------------|
| <b>Bath County</b>           | <b>779</b> | <b>746</b> | <b>733</b> | <b>783</b> | <b>783</b> |
| Bland County                 | 0*         | 608        | 798        | 781        | 787        |
| Craig County                 | 584        | 589        | 539        | 582        | 523        |
| Mathews County               | 1,214      | 1,080      | 1,163      | 1,016      | 1,020      |
| Rappahannock County          | 882        | 936        | 852        | 735        | 798        |
| Richmond County              | 1,134      | 1,163      | 885        | 795        | 781        |
| Surry County                 | 1,077      | 895        | 864        | 863        | 910        |
| <b>PEER DIVISION AVERAGE</b> | <b>815</b> | <b>879</b> | <b>850</b> | <b>795</b> | <b>803</b> |

Source: Commonwealth of Virginia, Department of Education, 2006.

\*No data available.

Exhibit 7-3 shows the number of regular students provided student transportation services in Bath County and its peer divisions. Data provided to the Department of Education show that BCPS provided transportation services for 779 regular students in 2000-01 and 783 in 2004-05 for an increase of four students, or less than one percent. The number of regular students transported by the peer divisions fluctuated from 2000 through 2005, with an overall increase from 769 to 796 (27 students or less than one percent). In sum, Exhibit 7-2 reflects a marginal increase for both BCPS and the peer division average.

**EXHIBIT 7-3  
REGULAR STUDENTS TRANSPORTED IN  
BATH COUNTY PUBLIC SCHOOLS DIVISION  
COMPARED TO PEER DIVISIONS  
2000-05 SCHOOL YEARS**

| <b>SCHOOL DIVISION</b>       | <b>2000-01</b> | <b>2001-02</b> | <b>2002-03</b> | <b>2003-04</b> | <b>2004-05</b> |
|------------------------------|----------------|----------------|----------------|----------------|----------------|
| <b>Bath County</b>           | <b>779</b>     | <b>746</b>     | <b>733</b>     | <b>783</b>     | <b>783</b>     |
| Bland County                 | 0*             | 607            | 797            | 781            | 787            |
| Craig County                 | 583            | 588            | 538            | 580            | 521            |
| Mathews County               | 1,207          | 1,067          | 1,141          | 1,009          | 1,008          |
| Rappahannock County          | 875            | 929            | 852            | 720            | 786            |
| Richmond County              | 888            | 867            | 881            | 789            | 773            |
| Surry County                 | 1,061          | 880            | 851            | 855            | 903            |
| <b>PEER DIVISION AVERAGE</b> | <b>769</b>     | <b>823</b>     | <b>843</b>     | <b>789</b>     | <b>796</b>     |

Source: Commonwealth of Virginia, Department of Education, 2006.

\*No data available.

Exhibit 7-4 shows the numbers of exclusive/special education students provided transportation services in BCPS and the peer divisions. As indicated, BCPS reported transporting no exclusive/special education students. The peer average shows high numbers of 46 and 55 respectively for 2000-01 and 2001-02, drops to seven and six respectively for 2002-03 and 2003-04, and then increases slightly to seven for 2004-05. An anomaly is caused by Richmond County Public Schools, which reported transporting 246 and 296 exclusive/special education students for 2000-01 and 2001-02 and then made dramatic reductions in the subsequent school years.

During MGT's on-site visit to BCPS it was noted that the division's transportation requirements reflect that it provided no transportation services for exclusive/special education students from 2000 through 2005 school years. However, the BCPS Office of Transportation maintains special education buses as part of its inventory and indicated it had transported exclusive/special education students for quite some time. At issue is why these students are not reflected in state reporting? The answer was not readily available from the Director of Transportation because he had only been in his position for six months and was not fully aware of state reporting requirements. However, he appeared to be learning the job and showed promise. The MGT on-site team found that the individual working as a secretary to the superintendent had been compiling and submitting the reports and was not fully cognizant of exclusive/special education

reporting procedures. Therefore, data on exclusive/special education reporting requirements over the past several years had not been compiled.

**EXHIBIT 7-4  
EXCLUSIVE/SPECIAL EDUCATION STUDENTS TRANSPORTED IN  
BATH COUNTY PUBLIC SCHOOLS  
COMPARED TO PEER DIVISIONS  
2000-05 SCHOOL YEARS**

| SCHOOL DIVISION              | 2000-01   | 2001-02   | 2002-03  | 2003-04  | 2004-05  |
|------------------------------|-----------|-----------|----------|----------|----------|
| <b>Bath County</b>           | <b>0</b>  | <b>0</b>  | <b>0</b> | <b>0</b> | <b>0</b> |
| Bland County                 | 0*        | 1         | 1        | 0        | 0        |
| Craig County                 | 1         | 1         | 1        | 2        | 2        |
| Mathews County               | 7         | 13        | 22       | 7        | 12       |
| Rappahannock County          | 7         | 7         | 0        | 15       | 12       |
| Richmond County              | 246       | 296       | 4        | 6        | 8        |
| Surry County                 | 16        | 15        | 13       | 8        | 7        |
| <b>PEER DIVISION AVERAGE</b> | <b>46</b> | <b>55</b> | <b>7</b> | <b>6</b> | <b>7</b> |

Source: Commonwealth of Virginia, Department of Education, 2006.

\*No data available.

The total numbers of regular and exclusive/special education students are important variables in determining total transportation costs for any school division. Exhibit 7-5 shows the combined total of regular and exclusive/special education students transported in BCPS and the peer divisions. As noted in Exhibit 7-3 and Exhibit 7-4, BCPS reported transporting only regular students from school year 2000 through 2005, while the peer divisions reported transporting both categories of students, with increases or decreases as shown for each respective division.

From 2000 through 2005, BCPS increased the total number of students provided transit services from 779 to 783 or .5 percent. The peer average for the same period was an overall decrease of 815 to 803 students or about 1.5 percent. Therefore, the data reflect that BCPS had a slight increase and its peer comparisons a slight decrease. The data do not at this time indicate the percentages of increase and decrease as statistically significant.

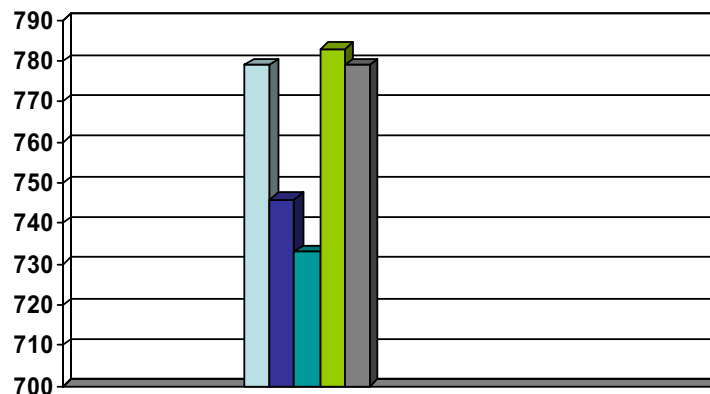
Exhibit 7-6 below includes the 2005-06 school year and shows the numbers of students provided transportation services in Bath County Public Schools over a five-year period from 2001 to 2006. It shows no continued increase in the numbers of students requiring transportation services. The figure rose from 779 in 2000-01 to 783 in 2004-05 and then declined to 779 for 2005-06, for a zero gain in the number of students transported over the five-year period.

**EXHIBIT 7-5  
REGULAR AND EXCLUSIVE/SPECIAL EDUCATION STUDENTS TRANSPORTED IN  
BATH COUNTY PUBLIC SCHOOLS  
COMPARED TO PEER DIVISIONS  
2000-05 SCHOOL YEARS**

| SCHOOL DIVISION              | 2000-01    | 2001-02    | 2002-03    | 2003-04    | 2004-05    |
|------------------------------|------------|------------|------------|------------|------------|
| <b>Bath County</b>           | <b>779</b> | <b>746</b> | <b>733</b> | <b>783</b> | <b>783</b> |
| Bland County                 | 0*         | 608        | 798        | 781        | 787        |
| Craig County                 | 584        | 589        | 539        | 582        | 523        |
| Mathews County               | 1,214      | 1,080      | 1,163      | 1,016      | 1,020      |
| Rappahannock County          | 882        | 936        | 852        | 735        | 798        |
| Richmond County              | 1,134      | 1,163      | 885        | 795        | 781        |
| Surry County                 | 1,077      | 895        | 864        | 863        | 910        |
| <b>PEER DIVISION AVERAGE</b> | <b>815</b> | <b>879</b> | <b>850</b> | <b>795</b> | <b>803</b> |

Source: Commonwealth of Virginia, Department of Education, 2006.

**EXHIBIT 7-6  
REGULAR AND EXCLUSIVE/SPECIAL  
EDUCATION STUDENTS TRANSPORTED OVER  
FIVE-YEAR PERIOD  
BATH COUNTY PUBLIC SCHOOLS  
2001-06 SCHOOL YEARS**



GRAPH DEPICTS GROWTH FROM 779 STUDENTS IN SCHOOL YEAR 2001 TO 779 IN CURRENT SCHOOL YEAR 2005-06 FOR A ZERO GAIN IN NUMBER OF STUDENTS TRANSPORTED.

Source: MGT of America, 2006.

Exhibit 7-7 captures the combination of regular and exclusive/special education student transportation costs for the years indicated. BCPC shows transportation costs in school year 2000-1 of \$594,797. These rose to \$688,117 for school year 2004-05 for an increase of \$93,320 or 16 percent. The peer division average in school year 2000-01 was \$533,868 and rose to \$629,644 in school year 2004-05 for an increase of \$95,776 or 18 percent. The BCPS increase was slightly lower than that of the peer average—only two percent, which is not considered statistically significant.



**EXHIBIT 7-7  
TOTAL STUDENT TRANSPORTATION COSTS  
BATH COUNTY PUBLIC SCHOOLS  
COMPARED TO PEER DIVISIONS  
2000-04 SCHOOL YEARS**

| <b>SCHOOL DIVISION</b>       | <b>2000-01</b>   | <b>2001-02</b>   | <b>2002-03</b>   | <b>2003-04</b>   | <b>2004-05</b>   |
|------------------------------|------------------|------------------|------------------|------------------|------------------|
| <b>Bath County</b>           | <b>\$594,797</b> | <b>\$619,024</b> | <b>\$596,524</b> | <b>\$709,782</b> | <b>\$688,117</b> |
| Bland County                 | \$587,213        | \$515,959        | \$671,524        | \$512,846        | \$600,854        |
| Craig County                 | \$261,831        | \$269,609        | \$275,588        | \$261,388        | \$282,813        |
| Mathews County               | \$445,904        | \$483,742        | \$525,782        | \$556,067        | \$626,841        |
| Rappahannock County          | \$580,683        | \$648,206        | \$574,585        | \$728,045        | \$767,130        |
| Richmond County              | \$536,579        | \$609,108        | \$573,184        | \$627,246        | \$659,389        |
| Surry County                 | \$790,997        | \$672,741        | \$709,783        | \$797,146        | \$840,834        |
| <b>PEER DIVISION AVERAGE</b> | <b>\$533,868</b> | <b>\$533,228</b> | <b>\$555,074</b> | <b>\$580,456</b> | <b>\$629,644</b> |

Source: Commonwealth of Virginia, Department of Education, 2006.

Exhibit 7-8 shows that BCPS compiled more deadhead miles than any of its peer comparisons, with the exception of Bland County. Deadhead miles are defined as mileage spent moving to begin a route or going to a designated location to pick up a student prior to commencing transportation service. If not rigidly controlled and supervised, deadhead miles can result in significant transportation costs.

Exhibit 7-8 shows that BCPS incurred 15,984 deadhead miles compared with its peer division average of 12,962. This is a difference of 3,022 miles. In other words, BCPS accumulated 23 percent more deadhead miles than its peers.

**EXHIBIT 7-8  
DEADHEAD MILES  
BATH COUNTY PUBLIC SCHOOLS  
COMPARED TO PEER DIVISIONS  
2004-05 SCHOOL YEAR**

| <b>SCHOOL DIVISION</b>       | <b>MILES</b>  |
|------------------------------|---------------|
| <b>Bath County</b>           | <b>15,984</b> |
| Bland County                 | 29,690        |
| Craig County                 | 12,431        |
| Mathews County               | 11,242        |
| Rappahannock County          | 14,510        |
| Richmond County              | 0             |
| Surry County                 | 9,900         |
| <b>PEER DIVISION AVERAGE</b> | <b>12,962</b> |

Source: Commonwealth of Virginia, Department of Education, 2006.

Exhibit 7-9 below shows the significance of costs associated with deadhead miles. BCPS personnel presented the rationale that the mountains, hilly terrain, distances from

schools, and multiple student pickup points were variables that increased the division's deadhead miles compared to its peers. However, the peer divisions selected by BCPS all face similar challenges. BCPS spends \$21,091 more on deadhead miles than the peer division average. The significant difference indicates that BCPS officials should review the relevant data, evaluate their current practices, and take prudent measures to reduce deadhead miles.

**EXHIBIT 7-9  
COST OF DEADHEAD MILES  
BATH COUNTY PUBLIC SCHOOLS  
COMPARED TO PEER DIVISIONS  
2004-05 SCHOOL YEAR**

| SCHOOL DIVISION              | COST OF DEADHEAD MILES |
|------------------------------|------------------------|
| <b>Bath County</b>           | <b>\$49,032</b>        |
| Bland County                 | \$63,914               |
| Craig County                 | \$24,600               |
| Mathews County               | \$24,127               |
| Rappahannock County          | \$39,022               |
| Richmond County              | \$0                    |
| Surry County                 | \$15,981               |
| <b>PEER DIVISION AVERAGE</b> | <b>\$27,941</b>        |

Source: Commonwealth of Virginia, Department of Education, 2006.

Overall, BCPS compares favorably with the peer group. Its transportation budget and operational efficiencies are in line with those of other divisions in the Commonwealth of Virginia as it accomplishes its core mission to transport students safely to and from school, special events, and extracurricular activities.

**7.2 Organization, Planning, Policies, and Procedures**

There was no chart in the BCPS Office of Transportation that accurately depicted its organization and support relationships. Exhibit 7-10 shows the organization of the Office of Transportation as described by BCPS staff and based on interviews with the Supervisor of Transportation and the supporting secretary. The chart also reflects the proposed addition of an administration/parts specialist position. The rationale and recommendation for that position is discussed in detail in Section 7.5, Vehicle Maintenance.

Four functions on the organizational chart in Exhibit 7-10 are marked with asterisks to provide information obtained during MGT's on-site interviews. Two of these items are discussed briefly below; the other two are explained on the chart. Two of the 16 bus drivers who are full-time BCPS employees work as custodians. They should not be driving buses since they are FTE for BCPS as custodians and not bus drivers. The second observation pertains to substitute drivers. While the chart shows nine substitute drivers, that number reflects only the number trained and does not indicate routine daily

availability of substitute drivers. The impact of the substitute driver situation on transportation operations will be discussed subsequently.

It is very important to note that the .5 FTE secretary, who works for the superintendent and devotes half of her administrative time to the Office of Transportation, performs critical transportation operations functions that are not merely clerical; she is the principal source of continuity in the Office of Transportation because both the Director of Transportation and the mechanic have been in their positions for less than a year.

### **COMMENDATION**

**The secretary to the superintendent is commended for excellent performance supporting the Office of Transportation's administrative requirements. She performs this critical function in an exceptional manner.**

In addition to her duties in support of the school board, the secretary accomplishes the following tasks for the transportation department:

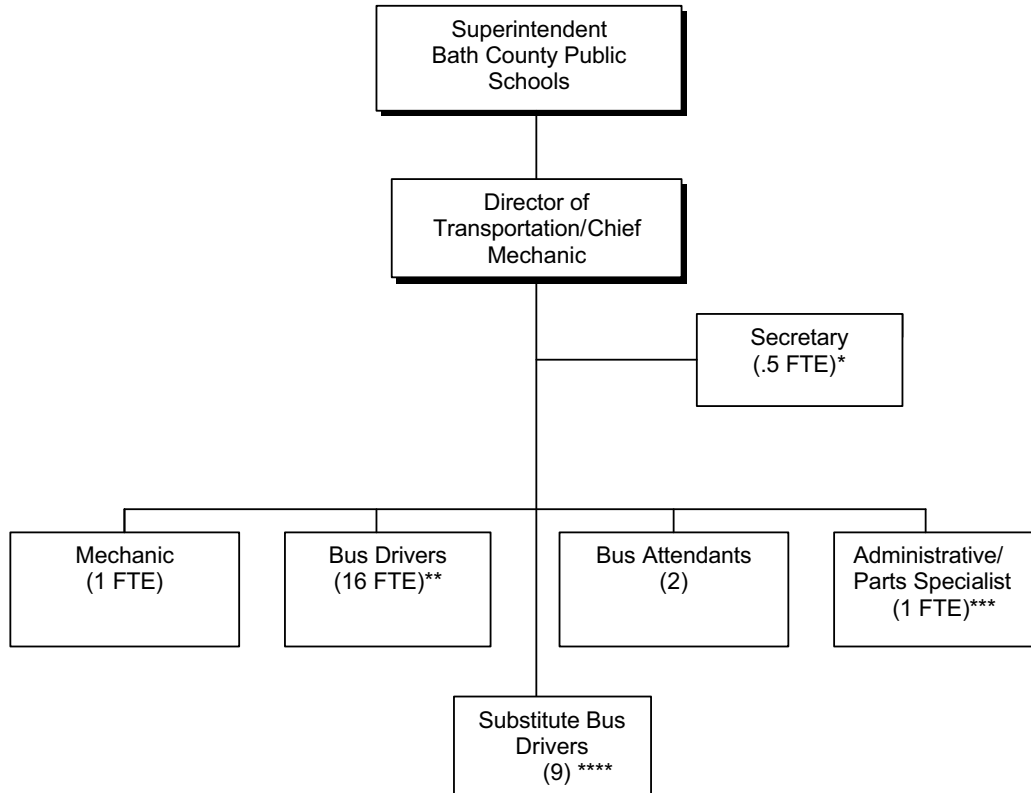
- Coordinates and schedules travel in support of school activities.
- Updates annually the vehicle list.
- Plans and manages the annual bus driver in-service training to include first aid and CPR training.
- Prepares bus driver notebooks.
- Schedules bus driver physicals.
- Arranges drug/alcohol testing for safety and compliance programs.
- Prepares reports to DOE Transportation and state police, accident reports, payroll.
- Orders inspection station stickers.
- Maintains DMV records.
- Maintains bus driver contracts and processes safe driving supplemental pay.

The secretary supporting the transportation department is essential for effective transportation operations and adds significant value to transportation services for the students of Bath County Public Schools.

The opening discussion of Exhibit 7-10 mentioned that the number shown for substitute drivers does not reflect the daily operational availability of substitute drivers. Through on-site interviews the MGT team learned that only a few drivers could be counted on as available for regular route runs and activity runs. Of the nine shown, one exercises limited choice to drive; one lives 90 miles away; two are school teachers; one has

decided to be inactive; and one is a teacher aide. Thus only three are actively available to perform as substitute drivers.

**EXHIBIT 7-10  
PROPOSED ORGANIZATIONAL CHART  
OFFICE OF TRANSPORTATION  
BATH COUNTY PUBLIC SCHOOLS  
2005-06 SCHOOL YEAR**



Source: MGT of America from BCPS information/data, April 2006.

\*secretary to the superintendent, BCPS who devotes .5 administrative time to the Office of Transportation.

\*\*Two of the bus drivers are 12-month full-time custodial employees.

\*\*\*Position is recommended. It is not currently approved as a permanent position.

\*\*\*\*Reflects only trained drivers and not those available.

Exhibit 7-11 shows the demand for substitute drivers and the numbers used during five months of 2005 (May data were not provided). Clearly the need is always greater than three. Exhibit 7-12 presents comparison cost data for substitute drivers during three months of 2005 and 2006, illustrating a comparable demand for substitute drivers from one year to the next. Thus, if only three or four substitute drivers are considered by transportation management (the Director of Transportation and the secretary who schedules activity support) to be reliably available, and the need is always greater than three, the question arises: How is the predictable substitute driver shortfall to be resolved?

**FINDING**

To address the predictable shortfall in the availability of substitute drivers, BCPS relies on the Director of Transportation/Chief Mechanic and the mechanic to serve as substitute drivers when necessary. This is made possible by staggering the work schedules of the Director of Transportation and the mechanic. The director is available to substitute for afternoon routes. The mechanic is available to substitute for morning routes.

This system might appear to be an effective and cost-efficient solution since the Director of Transportation/Chief Mechanic is an exempt employee, and if he drives and exceeds a forty hour-week there is no cost. But there is a cost in that his position is paid \$30,000 annually to accomplish the full range of responsibilities in the job description, whereas hiring an extra driver full time to address the shortfall would cost \$19,050 (the base salary for 2005-06 plus a 27 percent benefits package). There are two other options to address the shortfall that takes the Director of Transportation away from his core duties:

- Create a part-time substitute driver position with benefits, which would reduce the cost described above by half (\$9,520).
- Approve the administration/parts specialist position (\$26,670) discussed in the vehicle maintenance section of this chapter and qualify that employee to drive while improving overall maintenance management and increasing office administration.

All three options avoid the cost of using the Director of Transportation as a substitute driver. When that occurs, there is a cost due to a reduction in management effectiveness, as the director is not available to supervise, respond to emergencies, investigate accidents, address complaints, plan training, review fiscal management information, or perform other functions other functions.

**EXHIBIT 7-11  
REGULAR AND ACTIVITY BUS DRIVER REQUIREMENTS  
AND THE NUMBER OF DRIVERS USED SATISFYING  
DRIVER ABSENTEES  
BATH COUNTY PUBLIC SCHOOLS  
JANUARY-JUNE 2005**

| <b>MONTH IN YEAR 2005</b> | <b>ABSENTEE DRIVEN REQUIREMENT FOR DRIVERS</b> | <b>NUMBER OF DIFFERENT DRIVERS USED</b> |
|---------------------------|--|---|
| January                   | 23   | 4                                       |
| February                  | 32   | 5                                       |
| March                     | 20   | 4                                       |
| April                     | 18   | 4                                       |
| May                       | None   | None                                    |
| June                      | 20   | 6                                       |
| <b>AVERAGE</b>            | <b>23</b>                                      | <b>5</b>                                |

Source: MGT of America from BCPS Transportation data, April 2006.

**EXHIBIT 7-12  
COMPARABLE BUS DRIVER SUBSTITUTE COSTS  
BATH COUNTY PUBLIC SCHOOLS  
JAN-MARCH 2006**

| <b>MONTH</b> | <b>TOTAL 2005 COSTS<br/>FOR AM AND PM</b> | <b>TOTAL 2006 COSTS<br/>FOR AM AND PM</b> |
|--------------|---|---|
| January      | \$1,300                                   | \$925                                     |
| February     | \$1,350                                   | \$900                                     |
| March        | \$625                                     | \$1,475                                   |
| <b>TOTAL</b> | <b>\$3,275</b>                            | <b>\$3,300</b>                            |

Source: MGT of America from BCPS Transportation data, April 2006.

**RECOMMENDATION**

**Recommendation 7-1**

**Reduce the workload on the Director of Transportation and frequent requirements for him to perform as a substitute driver and approve the hiring of the full-time Administrative/Parts Specialist position discussed and justified in Recommendation 7-12 in Section 7.5 (Vehicle Maintenance) of this chapter.**

There is false economy in using a \$30,000 a year employee to perform functions that cost less when such functions, such as serving as a substitute driver, take the Director of Transportation away from his core transportation responsibilities.

**FISCAL IMPACT**

It would cost \$133,350 over the five-year budget cycle to create and hire the Administrative/Parts Specialist. A breakdown of the fiscal impact and full justification are in Recommendation 7-12.

**FINDING**

A policy change is required to resolve the substitute driver shortages in the Office of Transportation.

Key transportation personnel who have to resolve the substitute driver shortage suggested a possible solution that would require a change in policy. Currently substitute drivers are paid for the one-day annual in-service training. Persons interviewed indicated that recruitment and retention of substitute drivers would be enhanced if they were paid for the 48-hour driver training/qualification program after they earned at least \$400 as substitute drivers performing activity or regular runs.

If the training of four potential substitute drivers resulted in the retention of two, then the substitute driver need illustrated in Exhibit 7-11 would be satisfied adequately. The 48-hour training of four candidates would cost \$1,992 (\$15,000 base annually without benefits divided by 180 days = \$83.33 per day X 6 days X 4 persons). This initiative would free the mechanic to focus fully on maintenance, and only one retained substitute would add to the current costs since substitute pay previously received by the mechanic

would pay for the other substitute driver. Two retained substitute drivers would eliminate the requirements to use key transportation personnel as substitute drivers.

Substitute drivers are paid a flat rate of \$25 per run. If each made two runs per day for 180 days, the maximum annual cost would be \$18,000. A portion of that cost is already incurred whenever the mechanic is used as a substitute driver. During the on-site review, the MGT team could not obtain accurate data on how frequently the mechanic is used as a substitute driver and thus the associated costs could not be determined.

**RECOMMENDATION**

**Recommendation 7-2:**

**Experiment with a policy change to enhance the recruitment and retention of reliable substitute drivers, with the objective of retaining at least two, by offering the incentive of paying for the 48 hours of driver training after the trained substitute has earned at least \$400 as a substitute driver.**

Having a sufficient number of substitute drivers is critical to operating regular and activity runs without using key transportation personnel as substitute drivers.

**FISCAL IMPACT**

There would be two fiscal impacts. The first would be the recruitment/retention incentive, which would amount to a maximum \$1,992 for the training of four substitute drivers. The second would be the annual cost of \$18,000 for two substitute drivers driving two runs per day for 180 days. The total fiscal impact would be \$93,984 over the five-year budget cycle.

| <b>Recommendation</b>  | <b>2006-07</b>    | <b>2007-08</b>    | <b>2008-09</b>    | <b>2009-10</b>    | <b>2010-11</b>    |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| Experiment with a 48-hour Training Recruiting/ Retention Incentive Program for Four Substitute Driver Trainees with the Objective of Retaining Two Reliable Substitute Drivers | (\$1,992)         | (\$1,992)         | \$0               | \$0               | \$0               |
| Retain Two Reliable Substitute Drivers and Free Key Transportation Personnel From Substitute Driver Duties   | (\$18,000)        | (\$18,000)        | (\$18,000)        | (\$18,000)        | (\$18,000)        |
| <b>TOTAL</b>   | <b>(\$19,992)</b> | <b>(\$19,992)</b> | <b>(\$18,000)</b> | <b>(\$18,000)</b> | <b>(\$18,000)</b> |

## **FINDING**

The organizational structure is too thin in capacity to accomplish the multiple functions typical of transportation operations. Some of the impact of limited capacity will be discussed in the subsections that address planning, policies, and procedures. However, the basic mission of safely transporting students to and from school is being accomplished. Daily bus operations are enhanced by the fact that the drivers are experienced, know each other, and readily help each other to get the job done. Additionally, radios are located in many offices at the school board and in each school, so if there is a problem with a bus and the BCPS Director of Transportation/Chief Mechanic cannot be reached, others, including the superintendent, can intervene as necessary.

## **COMMENDATION**

**BCPS is commended for the teaming and responsive cooperation to ensure the safe transportation of Bath County students.**

Given the organizational capacity limitations and the frequent use of the Director of Transportation and the one mechanic as substitute drivers, teaming and responsive cooperation are essential for effective daily school bus operations.

## **FISCAL IMPACT**

There are no costs associated with this recommendation.

## **FINDING**

Planning is a weakness except as described in the aforementioned commendation of the work of the supporting secretary. This condition is partly due to the short tenure (less than one year) of the Director of Transportation/Chief Mechanic in his position. The weakness is aggravated by the inexperience of the Director of Transportation in overall transportation management and operations; the encroachment on learning and planning time by the occasional use of the director as a substitute driver; and the absence of an opportunity for a mentor relationship with an experienced school system transportation manager.

An example of a planning shortfall is reflected in the absence of in-service training other than the annual one-day in-service training event. Neither the Director of Transportation nor the supporting secretary thinks this one-day event is sufficient. In the bus driver/aide focus group there were expressions of dissatisfaction about in-service training. Improving training opportunities would require a plan, program, and alignment with the budget cycle to accommodate associated costs.

Another example of a planning deficiency is in the area of preventive maintenance. There is no preventive maintenance plan. Such a plan should have been in place when the incumbent came to this position. Preventive maintenance planning involves more than the inspection of buses; it is integral to the total management of the fleet.



The incumbent is eager to learn and improve the management of the transportation function. Investment in his professional development will improve transportation operations and will result in undetermined cost savings. Professional development can occur internally in BCPS through a planned program drawing on the relevant expertise of the Business Manager and the directors of instruction and personnel, technology and administrative services, maintenance, and special education and pupil personnel. Externally, the Director of Transportation should spend time with an experienced counterpart in a nearby county and attend learning opportunities sponsored by the Commonwealth. However, not much can occur if he continues to be used as a substitute driver.

The superintendent indicated that earlier in his career he had been a transportation director; and therefore, he is well positioned to guide the development of the incumbent.

## **RECOMMENDATION**

### **Recommendation 7-3:**

**The superintendent should guide the professional development of the Director of Transportation/Chief Mechanic, ensure the cooperation of the BCPS staff, and support external professional development opportunities.**

Guided professional development is essential for any Director of Transportation with limited management experience and limited staff capacity to accomplish the range of transportation function requirements.

## **FISCAL IMPACT**

The fiscal impact would be associated with the time of the key staff engaged in the professional development of the Director of Transportation and the travel required for external learning opportunities. Thus, cost will be determined by the program guidance of the superintendent.

## **Policies**

The MGT on-site team reviewed the BCPS policies governing transportation services for students and their families. Generally, the policies are very adequate and conform to best practices elsewhere in the Commonwealth of Virginia.

There is an exception, which is contrary to MGT's view of a best practice and pertains to who evaluates bus drivers and recommends continued contracting. BCPS policy provides for the school principal to evaluate driver performance annually and recommend contract renewal. The June 2005 job description for the Director of Transportation/Chief Mechanic establishes a supervisory responsibility and states that he assists in the evaluation.

A review of performance evaluations and contract renewal documents did not show evidence that the Director of Transportation had any input to the evaluation. Moreover, the MGT observation is that school principals have only a limited basis for evaluating

driver performance, such as timeliness, how well drivers interact with school staff, number of parental complaints, and how drivers manage on-bus student behavior problems. There are other performances areas that principals generally make no effort to observe, such as actual safe driving practices, performance of required pre- and post-operations inspections, timely compliance with reports, adherence to scheduled maintenance programs, and cooperation with other drivers. Moreover, participants in the driver/aide focus group indicated that some of them drove for more than one principal.

Under normal circumstances, MGT would recommend that the Director of Transportation evaluate drivers and receive input from the school principals. However, our usual view of the best practice would conflict with “Board Policy GCCB, Section G, Personnel,” which pertains to nepotism. The Director of Transportation/Chief Mechanic was hired in conflict with this policy, which states: “No family member may be employed by the School Board if the family member is to be employed in a direct supervisory and/or administrative relationship in the same organization....” Several members of the Director of Transportation’s family are bus drivers, including his father, grandfather and uncle.

This issue is addressed in detail in the Human Resources chapter.

## **RECOMMENDATION**

### **Recommendation 7-4:**

**The superintendent and Director of Transportation should adhere to the observation and recommendation on nepotism in the Human Resources chapter.**

Having to supervise and evaluate family members would be very difficult for the best, most experienced manager and leader. Moreover, prior to the on-site visit, the MGT diagnostic team heard views such as, “transportation is a ‘good ole boys’ organization.”

## **FISCAL IMPACT**

There is no fiscal impact associated with this recommendation.

## **Procedures**

Procedures are adequately addressed and are supported by manually produced forms. Because of the small size of this school division a largely manual system is sufficient.

Several operational procedures are split between the Director of Transportation and the supporting secretary, such as scheduling and coordinating transportation support for school activities, scheduling drug/alcohol testing, submitting reports to DOE, and maintaining certain qualification and compliance records. The Director of Transportation needs to become familiar with all that is done by the secretary in that he is responsible to the BCPS School Board for those activities.

## **FINDING**

The formatted procedure for the budget cycle does not contain a line item for transportation training.

The Director of Transportation needs to plan improvements in driver and aide training. Therefore, he must identify costs and discuss with the Business Manager how best to reflect planned training costs, and how best to justify the planned training.

## **RECOMMENDATION**

### **Recommendation 7-5:**

**The Director of Transportation should develop the driver/aide training plan, confer with the Business Manager on how best to reflect the costs and justifications, and seek the superintendent's approval to submit all or a part of the plan in the budget process.**

Unless training that has costs is presented and approved in the budget process, there will not be any improvements in training.

## **FISCAL IMPACT**

There is no fiscal impact associated with this recommendation.

### **7.3 Training and Safety**

## **FINDING**

The only significant in-service training is the annual all-day training that occurs at the end of the school year. In many ways this is an excellent initiative and prepares the workforce for the coming school year. In addition to selected training topics that include first aid and CPR training, drug and alcohol testing is performed (there is still random drug testing during the year). A good feature of this annual event is that drivers and substitute drivers are paid for the day of training.

Long-time drivers in the focus group expressed the view that the annual in-service training is too redundant and is therefore perceived as boring. The supporting secretary who manages this program opined that the program is good but does not address all training needs. Both the Director of Transportation and the supporting secretary shared their views on other training needs that should be offered at times during the school year. Both suggested that the training be conducted on days when school calendars reflect activities not involving student presence at school. Both mentioned that attendees should be paid for these additional in-service training events. The following represents topics that at minimum should be considered for in-service training beyond the one-day annual event:

- Holding bus evacuation drills for special needs students.

- Purchasing CPR masks for all drivers and training drivers on their use (budget issue).
- Familiarizing drivers on the August kindergarten screening.
- Managing student behavior (both regular and special needs students).
- Reviewing railroad crossing procedures.
- Reviewing driving under adverse weather conditions and reviewing routes not driven in certain road conditions.
- Reviewing actions when schools close early or open late.
- Reviewing transportation of special needs students.

The MGT on-site team examined a random sample of training records and found them well maintained. The training for drivers and aides is based on the Virginia Manuals for Regular and Special Needs Drivers.

Two four-hour in-service training sessions can be scheduled for 20 drivers (16 regular and four substitute drivers or bus aides). Using the base rate of \$15,000 for 180 days (\$83 per full day), two four-hour in-service training days for 20 participants would cost \$1,660.

**RECOMMENDATION**

**Recommendation 7-6:**

**Collaborate with the supporting secretary to design two in-service training sessions for 20 participants, schedule the sessions on days when students do not require bus services, and obtain the superintendent’s approval.**

**FISCAL IMPACT**

The implementation of this recommendation should provide the drivers with the in-service training required to improve their efficiency and effectiveness.

Two four-hour in-service training sessions would cost \$1,660 per year and \$8,300 over the five-year budget cycle.

| <b>Recommendation</b>   | <b>2006-07</b> | <b>2007-08</b> | <b>2008-09</b> | <b>2009-10</b> | <b>2010-11</b> |
|---|----------------|----------------|----------------|----------------|----------------|
| Design and Budget for Two Four-hour In-service Training Events for 20 Employees | (\$1,660)      | (\$1,660)      | (\$1,660)      | (\$1,660)      | (\$1,660)      |

## **FINDING**

Signage and crosswalks at two school sites are inadequate. This situation should be corrected.

During the on-site review, MGT learned of two safety issues on Route 220. The issues were brought to the attention of the MGT team by parents at the public forum, and MGT confirmed the problem with bus drivers and conducted a site inspection. The safety conditions that need to be addressed are as follows:

- Approaches to the high school have faded “SCHOOL” markings on the road surface, but there are no “Slow School Zone” warning signs. Oddly, there are slow zones for golf cart crossings farther down the highway, but not for the high school students. Vehicles were observed in the area traveling in excess of the posted 45 MPH limit.
- Students who live on the east side of Route 220 within walking distance from the elementary school must cross the highway without a marked crosswalk, traffic light, or crossing guard.

## **RECOMMENDATION**

### **Recommendation 7-7:**

**The superintendent should seek corrective actions to correct these safety hazards at school crossings for BCPS students.**

The safety of students should not be risked, and the implementation of this recommendation should assist in this important task.

## **FISCAL IMPACT**

There is no fiscal impact associated with implementing this recommendation.

## **FINDING**

Bus drivers in the focus group cited two safety issues that should be corrected:

- At Valley Elementary, children are playing in the area where drivers park their buses. This could result in a serious accident.
- At the high school, students and coaches are parking cars in the fire lane.

**RECOMMENDATION**

**Recommendation 7-8:**

**The superintendent should advise school principals to correct the safety deficiencies at Valley Elementary and the high school.**

The implementation of this recommendation should result in all rules relating to safety being enforced.

**FISCAL IMPACT**

There is no fiscal impact associated with this recommendation. The actions required are routine supervisory actions.

**COMMENDATION**

**Bath County Public Schools is commended for their reportable accident rate.**

While being accident free is desired, as shown in Exhibit 7-13 the BCPS Office of Transportation's reportable accident rate is commendable. The supporting secretary submits accident reports to the Commonwealth of Virginia using the Virginia State Bus Accident Reporting System, which is an Access 2000-based program.

A key component for safe vehicle operations is the required state police inspection. The MGT review of records revealed that 31 inspections were performed in July 2005. In driver focus groups conducted by MGT, bus drivers discussed their safety concerns and due diligence they employ while driving school buses. They pointed out that the roads and terrain conditions on their routes require extra caution. In addition, the Director of Transportation indicated that he places emphasis on safe driving and accident prevention.

**EXHIBIT 7-13  
TRANSPORTATION REPORTABLE ACCIDENT  
RATE PER 100,000 MILES  
BATH COUNTY PUBLIC SCHOOLS  
2002-03 TO 2004-05 SCHOOL YEARS**

| SCHOOL YEAR    | NUMBER OF ACCIDENTS | NUMBER OF FATALITIES | NUMBER OF MILES DRIVEN | ACCIDENT RATE PER 100,000 MILES |
|----------------|---------------------|----------------------|------------------------|---------------------------------|
| 2002-03        | 1                   | 0                    | 206,204                | .000005                         |
| 2003-04        | 2                   | 0                    | 232,204                | .000009                         |
| 2004-05        | 1                   | 0                    | 216,168                | .000005                         |
| <b>AVERAGE</b> | <b>1.33</b>         | <b>0</b>             | <b>218,192</b>         | <b>.000006</b>                  |

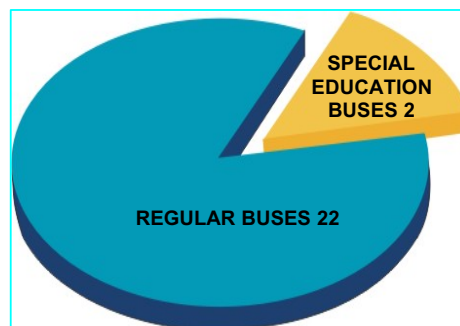
Source: BCPS Office of Transportation, 2006.

#### 7.4 Routing and Scheduling

Routing and scheduling in BCPS are the responsibility of the Director of Transportation and the superintendent of Bath County Public Schools. The superintendent indicated that he had served as a Director of Transportation several years ago. As stated earlier in this chapter, the Director of Transportation is new to the job and is not fully versed in routing and scheduling procedures. When the Director of Transportation was hired, the superintendent had been involved in routing and scheduling for several years. Therefore, current and past routing and scheduling practices are strongly influenced by the superintendent.

The Director of Transportation and superintendent reported that BCPS currently utilizes 16 of its assigned 24 buses daily providing school transportation services for students attending one high school and two elementary schools. Transportation records examined by MGT substantiate their accounts that 16 buses are used to complete bus routes in the morning and 16 in the afternoon for a total of 32 routes for regular and exclusive/special education students. Children are picked up and discharged at pre-assigned bus stops, at their home, or at other specially designated pickup points. Exhibit 7-14 shows current BCPS bus inventory.

**EXHIBIT 7-14  
BUSES IN CURRENT INVENTORY  
BATH COUNTY PUBLIC SCHOOLS  
REGULAR BUSES/SPECIAL EDUCATION BUSES  
2005-06 SCHOOL YEAR**



Source: BCPS Office of Transportation, 2006.

#### **FINDING**

BCPS does not use an automated computer-based route scheduling system to manage bus routes and student pickup points.

During the MGT on-site interview with the superintendent, he explained routing and scheduling procedures. He indicated that roads used as lines of communication in Bath County are fairly constant and rarely change. When considering student transportation services, each school submits its requests to the superintendent's office where they are processed. Since the routes are fairly constant in BCPS, the students previously

transported remain on existing routes and new students are assigned to the route closest to their home. Bus drivers add students to their routes and make arrangements for transportation on the bus serving the area where the student lives.

Requests for regular and exclusive/special education routes call for a determination as to where students live in relation to existing routes. A new student's parents/guardians are informed by the school the student is to attend of the location of the bus stop, which is supposed to be the one closest to the students' home address. According to bus drivers, this is accomplished by them during their assignment of routes and pre-run phase (negotiating the route before the start of school) and looking up the location of the student in relation to pickup points already in existence. In some circumstances, a new pickup point may be established. Under this system, very few changes are made to regular and exclusive/special education routes from year to year. As a result, since this is a manual process, student pickup points may or may not be at the best locations.

As previously stated, bus routes within the BCPS transportation area of responsibility have been in existence for many years. In this mostly rural area, school bus routes parallel existing roads of communication. The superintendent pointed out to MGT during the on-site visit that bus routes currently used by BCPS have been in use for many years and are only minimally changed or deleted. Major changes usually occur when there is a requirement to service new housing complexes or subdivisions.

Transporting students efficiently is important because bus routes drive a significant portion of any school division's budget. The routing of buses determines the transportation resources required (number of buses, bus drivers, and logistical support). A bus route is when a bus departs from its start location and while in transit picks up students at stops along the way and drops them off at one or more schools. Dropping off the last students constitutes completion of a route. The same bus upon completing one route could then be used to start a second route. The same process applies when determining resources for exclusive/special education students. Any number of exclusive/special students can comprise a route. The trip to deliver one or more students to their respective destination(s) represents a regular or exclusive/special education route.

The Director of Transportation provided information and data on the number of regular and special education students using student transportation services. Exhibit 7-15 shows the number of routes and number of students transported.

**EXHIBIT 7-15  
REGULAR AND EXCLUSIVE/SPECIAL EDUCATION BUS ROUTES  
BATH COUNTY PUBLIC SCHOOLS  
2005-06 SCHOOL YEAR**

| <b>CATEGORY</b>             | <b>NUMBER OF BUSES USED MORNING AND AFTERNOON</b> | <b>NUMBER OF STUDENTS TRANSPORTED DAILY (MORNING AND AFTERNOON)</b> | <b>NUMBER OF DAILY ROUTES (MORNING AND AFTERNOON)</b> | <b>NUMBER OF ROUTES FOR THE SCHOOL YEAR</b> |
|-----------------------------|---|---|---|---|
| Regular Education           | 14  | 773   | 28  | 5,040                                       |
| Exclusive/Special Education | 2   | 6   | 4   | 720   |
| <b>TOTAL</b>                | <b>16</b>   | <b>779</b>  | <b>32</b>   | <b>5,760</b>                                |

Source: BCPS Office of Transportation, April 2006.



The MGT on-site consultant observed that BCPS personnel have a mixed view of automated routing and scheduling. The Director of Technology and Administrative Services is highly receptive and would be supportive and willing to provide technical assistance to the Office of Transportation to implement automated routing and scheduling. Others have a more dubious attitude toward routing and scheduling efficiencies.

MGT obtained estimates from major route scheduling software vendors on costs associated with purchasing and implementing routing and scheduling software packets. Prices range from \$20,000 to \$60,000, with maintenance costing approximately 10 percent of the package price. The Office of Transportation's bus garage has a direct Ethernet connection to the VES local area network, including server and internet access. Any other technical requirements could be provided by the Director of Technology and Administrative Services. The Office of Transportation could put in place an automated routing and scheduling system that could meet its needs to improve the efficiency and generate cost savings. This could be accomplished at modest cost.

The benefits to BCPS of implementing an automated system would be significant. *School Bus Fleet Magazine*, computer experts, and other school divisions in the Commonwealth of Virginia (Isle of Wight, York, Fairfax, Prince William, Arlington) report that a 10 to 15 percent or more reduction in routes is achievable initially using automated computer-based route scheduling to manage bus routes and student pickup points.

Implementing a computer-based routing and scheduling system for regular and exclusive/special education students will identify optimum routes and produce significant cost savings. The Office of Transportation can contact current vendors in the business community for advice and subsequent purchase of a computer-based system. Several major vendors now serving school divisions in the Commonwealth of Virginia are shown in Exhibit 7-16.

**EXHIBIT 7-16  
BATH COUNTY PUBLIC SCHOOLS  
ROUTE SCHEDULING SOFTWARE VENDORS  
2005-06**

| NAME OF SOFTWARE | VENDOR NAME AND LOCATION                  | TELEPHONE    |
|------------------|---|--------------|
| Bustops          | MicroAnalytics, Ontario, Canada           | 416-691-1222 |
| EDULOG           | Education Logistics, Missoula, MT         | 406-728-0893 |
| Transfinder      | Forth & Associates, Ltd., Schenectady, NY | 518-377-3609 |
| Versa Trans      | Creighton Manning, Delmar, NY             | 800-433-5530 |

Source: MGT of America, Inc., 2006.

**RECOMMENDATION**

**Recommendation 7-9:**

**Implement an automated computer-based system to manage bus routes and student pickup points in Bath County Public Schools.**

**FISCAL IMPACT**

It is accepted that initially a 10 to 15 percent reduction in routes is achievable when utilizing automated routing and scheduling technology. Human error inherent when using the current manual routing and scheduling system could be eliminated. Automated routing and scheduling is state-of-the-art technology that helps to maximize bus fleet management. The basic foundation of the system is the Geographic Information System (GIS). Once the map is created, student addresses or locations in student databases create a match. Critical information is provided on which student(s) are at which bus stop, by name and address. Changes may be made to the database (if a student moves or is reassigned) at any time to keep the routing and scheduling system current.

The fiscal impact of implementing this recommendation is calculated at a 10 percent reduction of the 32 daily bus routes in BCPS (16 mornings and 16 afternoons). Sixteen buses are used to cover these routes each day. A 10 percent route reduction of 16 bus routes could result in the elimination of four routes (two in the morning and two in the afternoon). Since the same buses perform both morning and afternoon runs, BCPS could eliminate two buses and two bus driver positions from its inventory through efficiencies using automated routing and scheduling.

In October 2004, school bus prices ranged from \$65,000 to \$75,000. According to the Director of Transportation, BCPS purchases its school buses at an average cost of \$68,000 per bus and pays entry-level bus drivers \$15,500 plus a 27 percent benefits package.

School bus salvage value is estimated at \$2,000 per bus and could thus generate revenue of \$4,000. The savings as to the cost of new school buses is based on a purchase price of \$68,000 per vehicle. In addition, elimination of one bus driver position, including the 27 percent benefits package, produces \$19,685 per driver or \$39,370 for two drivers. Yearly cost savings from this recommendation are as shown below. The five-year cost savings would be \$846,370.

| <b>Recommendation</b>                         | <b>2006-07</b>   | <b>2007-08</b>   | <b>2008-09</b>   | <b>2009-10</b>   | <b>2010-11</b>   |
|---|------------------|------------------|------------------|------------------|------------------|
| Sell Two Excess Buses                         | \$4,000          | \$0              | \$0              | \$0              | \$0              |
| Capture Budgeted Annual Bus Replacement Costs | \$136,000        | \$136,000        | \$136,000        | \$136,000        | \$136,000        |
| Eliminate Two Bus Driver Positions            | \$39,370         | \$39,370         | \$39,370         | \$39,370         | \$39,370         |
| Purchase Bus Routing Software (estimate)      | (\$30,000)       | \$0              | \$0              | \$0              | \$0              |
| Maintain Software                             | \$0              | (\$1,000)        | (\$1,000)        | (\$1,000)        | (\$1,000)        |
| <b>TOTAL</b>                                  | <b>\$149,370</b> | <b>\$174,370</b> | <b>\$174,370</b> | <b>\$174,370</b> | <b>\$174,370</b> |

**FINDING**

Parents and citizens attending the public forum held at Bath County High School during the MGT on-site visit strongly objected to, and expressed alarm about, the current practice of high school and elementary school children riding the same buses in BCPS. They want it stopped.

BCPS has in place a staggered bell schedule, shown in Exhibit 7-17, that ensures transportation of elementary and high school students to meet school opening and closing times, free breakfast programs, student enrichment programs, and after-school educational activities requiring transportation assets.

**EXHIBIT 7-17  
BELL SCHEDULE  
BATH COUNTY PUBLIC SCHOOLS  
TRANSPORTATION OPERATIONS  
2005-06 SCHOOL YEAR**

| <b>GRADE LEVEL</b>         | <b>SCHEDULE</b>       |
|----------------------------|-----------------------|
| Bath County High School    | 8:28 a.m. – 3:30 p.m. |
| Millboro Elementary School | 8:30 a.m. – 3:20 p.m. |
| Valley Elementary School   | 8:40 a.m. – 3:30 p.m. |

Source: School principals, Bath County Public Schools, April 2006.

MGT interviewed the Director of Transportation and principals at BCPS schools to solicit their views and concerns about buses transporting both high school and elementary school students. The following options were presented:

- Ensure that all high school students are transported on one series of buses and elementary school students on another.
- Develop a program to have parents volunteer to serve as monitors on school buses. No parent(s) would be allowed to be monitor on a school bus transporting his or her child(ren). A monitor would be on each bus (morning and afternoon) to ensure decorum was maintained on buses transporting both high school and elementary school students.
- Hire and compensate individuals to serve as monitors on school buses.

Principals, the Director of Transportation, and others in BCPS administration rejected the above options for various reasons and could not at the time offer any other remediation.

The current morning and afternoon bus schedules are staggered in response to bell times used by the schools. BCPS should devise and implement a more effective and efficient transportation procedure that would ease the fears and concerns of parents who do not want a mix of high school and elementary school children on the same buses.

Resolution and implementation of any devised solution will have to come from BCPS stakeholders.

## **RECOMMENDATION**

### **Recommendation 7-10:**

**School principals, administrators, the Director of Transportation, and a random selection of parents should meet, discuss, and provide a solution to the current controversial issue of high school and elementary school children riding the same buses.**

At the time of the MGT on-site visit, BCPS could not fully address and resolve the issue of elementary and high school students riding the same buses. In view of the circumstances that BCPS stakeholders were not receptive to options presented by MGT team, BCPS principals, the Director of Transportation, administrators, and a random selection of parents should meet and determine an acceptable solution and take necessary action to resolve the issue.

## **FISCAL IMPACT**

This recommendation can be implemented with current BCPS resources.

## **COMMENDATION**

**BCPS is commended for their radio communications between buses and the myriad of base stations located throughout the school division.**

BCPS covers 535 square miles and has commendable communications between buses with radios and base stations located at the central office, the Office of Transportation, and the schools. These base stations have capability to communicate with buses at any location in the county. Though there are a few “dead spots” caused by atmospheric and terrain conditions, they are of minor consequence.

A great deal of effort and planning was expended by BCPS to ensure effective communications. This effort took into consideration that several base and relay stations would be required at key locations to ensure communications throughout the county. This has been done in a commendable manner. As a result, bus drivers are able to communicate from every spot in the county except a few minor “dead spot” that are of little or no consequence.

## **7.5 Vehicle Maintenance and Bus Replacement Schedule**

BCPS vehicle maintenance responsibilities are performed by one full-time mechanic and the Director of Transportation, who is qualified and works part-time as a mechanic to meet vehicle repair demands. Both are located at the BCPS vehicle maintenance facility adjacent to Valley Elementary School. There are no other personnel assigned to the vehicle maintenance section.

The maintenance section of the Office of Transportation is open from 6:00 a.m. to 5:00 p.m. daily. The Director of Transportation and the full-time mechanic stagger their hours in order to ensure at least one of them is present to cover the established working hours. The full-time mechanic and the Director of Transportation had been in their respective positions less than nine months at the time of the MGT on-site visit. The Director of Transportation is responsible for managing the BCPS bus fleet and other vehicles. He reports to the superintendent. He informed MGT that there are 46 vehicles in the fleet: 24 school buses, 21 other vehicles, and one trailer.

Though both individuals help maintain the fleet, repairs beyond their capability are accomplished by private vendors in the area or evacuated to the manufacturer's representative in Roanoke, VA, as required.

## **FINDING**

The number of mechanics in BCPS, maintenance administration, and parts accountability and inventory controls is inadequate.

The current fleet consists of 24 school buses and 22 other vehicles (cars, vans, trucks and trailer) for a total of 46 vehicles. There is one full-time mechanic, and the Director of Transportation/Chief Mechanic performs part-time mechanic duties and responsibilities when required. Though counted as a mechanic, the Director of Transportation performs additional responsibilities as a parts specialist clerk, maintenance clerk, records preparation and management clerk, and trainer and supervisor of bus drivers and the mechanic. He is overextended, and these multiple demands preclude him from performing any meaningful part-time mechanic duties.

In addition, during the MGT on-site visit, both the mechanic and the Director of Transportation had to abandon their respective responsibilities to serve as substitute drivers due to bus driver shortages. During their absence, MGT observed that there was no one to run the bus garage and phone calls were routed to the BCPS Central Office. This arrangement is extremely counterproductive, in part because while the mechanic and Director of Transportation are acting as substitute drivers they are being paid the higher wage of their respective positions. Moreover, critical vehicle maintenance is not performed by the mechanic and supervisory functions critical to the overall management of the Office of Transportation are not accomplished by the Director of Transportation.

MGT also observed that no parts accountability procedure or vehicle maintenance information system (VMIS) was in effect because there is no one designated responsible for these critical functions. The Director of Transportation estimates the parts inventory to be worth in excess of \$45,000; however, he is only guessing and has no data or information to substantiate the claim. Parts in the Office of Transportation are organized in a haphazard fashion, and there is no inventory of exactly what is on hand because it is not part of a VMIS. It is essential for there to be an accountable person in the Office of Transportation to maintain effective control of maintenance administration and also ensure adequate parts inventory and accountability controls are in effect.

Based on the fleet and mechanic information detailed above, BCPS has a mechanic (not including the Director of Transportation) to vehicle ratio of 1:46. As pointed out earlier,

the Director of Transportation should not be included in this ratio because his myriad of duties and responsibilities preclude his meaningful performance of mechanic duties, except under unusual or emergency conditions. For purposes of reality and clarity, only one assigned vehicle mechanic for BCPS is considered for peer comparisons.

The transportation industry and majority of school divisions nationwide have a common ratio of one mechanic per 20 to 30 vehicles with the average being approximately 1:30. As shown at Exhibit 7-18, the BCPS mechanic to vehicle ratio of 1:46 is above the national average of 1:30, and also above the peer division average of 1:22.

**EXHIBIT 7-18  
MECHANICS RATIO COMPARISON WITH OTHER DIVISIONS  
BATH COUNTY PUBLIC SCHOOLS DIVISION  
COMPARED TO PEER DIVISIONS  
2005-06 SCHOOL YEARS**

| SCHOOL DIVISION              | MECHANICS | VEHICLES  | MECHANIC TO VEHICLE RATIO |
|------------------------------|-----------|-----------|---------------------------|
| <b>Bath County</b>           | <b>1</b>  | <b>46</b> | <b>1:46*</b>              |
| Bland County                 | 2         | 47        | 1:24                      |
| Craig County                 | 1         | 23        | 1:23                      |
| Rappahannock County          | 2         | 37        | 1:19                      |
| Richmond County              | 2         | 57        | 1:29                      |
| Surry County                 | 3         | 50        | 1:17                      |
| <b>PEER DIVISION AVERAGE</b> | <b>2</b>  | <b>43</b> | <b>1:22</b>               |

Source: MGT of America, Inc., 2006.

\*Director of Transportation not included in this ratio.

It has been pointed out that the mechanic to vehicle ratio in BCPS is not a reflection of the actual workload because the Office of Transportation does not keep accurate data or records to support the mechanic's labor expenditure. Considering the reported workload provided to the MGT on-site team by the Director of Transportation and mechanic, current arrangement of having both individuals performing substitute driver duties, inadequate VMIS to manage the parts inventory, and vehicle maintenance performance requirements, there is a need for an additional person in the Office of Transportation for maintenance administration and parts inventory control and accountability.

**RECOMMENDATION**

**Recommendation 7-11:**

**Hire a full-time administrative and parts control position to manage parts inventory and maintenance records as part of a vehicle management information system (VMIS).**

BCPS should hire a full-time administrative and parts clerk position to alleviate problems associated with not utilizing the mechanic and Director of Transportation for their designated functions and to implement parts control inventory and vehicle information system management. The addition of this position should improve efficiency, maximize

employment functions, and provide greater maintenance administration and control of parts inventory and accountability in the Office of Transportation.

**FISCAL IMPACT**

According to the Director of Transportation, the anticipated salary of the administrative and parts control position is \$21,000 plus a 27 percent benefits package of \$5,670, for a total cost of \$26,670. Hiring an additional full-time position in the Office of Transportation would thus cost \$133,350 over the five-year budget cycle.

| <b>Recommendation</b>  | <b>2006-07</b> | <b>2007-08</b> | <b>2008-09</b> | <b>2009-10</b> | <b>2010-11</b> |
|--|----------------|----------------|----------------|----------------|----------------|
| Hire a Full-Time Administrative and Parts Control Position to Manage Parts Inventory and Maintenance Records as Part of a Vehicle Management Information System (VMIS) | (\$26,670)     | (\$26,670)     | (\$26,670)     | (\$26,670)     | (\$26,670)     |

**FINDING**

The Office of Transportation does not have a vehicle maintenance information system or performance indicators.

The transportation unit does not have a VMIS, nor does it have effective fleet management indicators. The mix of buses and other vehicles in BCPS is considerable. The 24 BCPS buses provide transportation services for students, and the “white fleet” vehicles (vans, automobiles, and others) provide administrative and logistical support services to the school division. Exhibits 7-19 and 7-20 show the fleet of vehicles in BCPS providing student transportation and other support services.

Exhibit 7-20 below shows the number of other vehicles in BCPS for which the Office of Transportation has maintenance and repair responsibilities. The 24 buses shown in Exhibit 7-19 plus the 22 “white fleet” vehicles in Exhibit 7-20 give the Director of Transportation repair and maintenance responsibilities for 46 vehicles, including one trailer.

The Director of Transportation indicated that buses and non-bus vehicles comprising the BCPS fleet consist of different model buses and a wide variety of other vehicles. He indicated that there was no comprehensive vehicle maintenance information system to assist in managing the diverse fleet. However, he did appear receptive to implementing a VMIS.

Effective VMIS fleet management using indicators allows transportation units to track service quality, cost to maintain vehicles, excessive maintenance repairs, vehicle downtime, high mileage, turnover time per bus repair, and other key fleet management variables.

**EXHIBIT 7-19  
FLEET MIX OF BUSES  
BATH COUNTY PUBLIC SCHOOLS  
2005-06**

| <b>VEHICLE CAPACITY</b>      | <b>VEHICLE MAKE</b> | <b>BUS NUMBER</b> | <b>NUMBER OF VEHICLES</b> |
|------------------------------|---------------------|-------------------|---------------------------|
| 20                           | Chevrolet           | 20                | 1                         |
| 34                           | Ford                | 1                 | 1                         |
|                              | Chevrolet           | 25                | 1                         |
| 52                           | Ford                | 18                | 1                         |
|                              | Freightliner        | 5                 | 1                         |
|                              | Thomas              | 2                 | 1                         |
| 54                           | Chevrolet           | 21                | 1                         |
| 65                           | Thomas              | 8                 | 1                         |
| 64                           | Ford                | 4                 | 1                         |
|                              | Ford                | 9                 | 1                         |
|                              | Ford                | 10                | 1                         |
|                              | Ford                | 12                | 1                         |
|                              | Ford                | 14                | 1                         |
|                              | Ford                | 16                | 1                         |
|                              | Ford                | 23                | 1                         |
|                              | Freightliner        | 11                | 1                         |
|                              | Freightliner        | 15                | 1                         |
|                              | Freightliner        | 17                | 1                         |
|                              | Thomas              | 7                 | 1                         |
|                              | Thomas              | 6                 | 1                         |
|                              | Thomas              | 13                | 1                         |
|                              | Thomas              | 19                | 1                         |
| 66                           | Thomas              | 3                 | 1                         |
| 76                           | Blue Bird           | 30                | 1                         |
| <b>TOTAL NUMBER OF BUSES</b> |                     |                   | <b>24</b>                 |

Source: MGT of America, Inc., from BCPS data, 2006.

It is important to point out that after examining vehicle maintenance work orders and interviewing staff it was not possible to prepare a list of all preventive and major maintenance task categories specifying the type of maintenance performed, the frequency of the maintenance, and who performed the maintenance and whether it was done in-house or by some external entity because the data were not readily available in BCPS. Neither workflow maintenance charts nor any other manual or automated system were available in the Office of Transportation. The lack of fleet management of maintenance tasks should be addressed.

A variety of automated fleet information management systems are currently available from many vendors. MGT does not endorse nor recommend a particular software system or vendor. Three types of systems are currently available: a wide area network, local area network, or a World Wide Web system. BCPS must consider the capability of its existing hardware, availability of communications lines, and cost implications in



determining which technical approach best meets the needs of the Office of Transportation.

**EXHIBIT 7-20  
FLEET MIX OF OTHER VEHICLES  
BATH COUNTY PUBLIC SCHOOLS  
2005-06**

| <b>VEHICLE DESIGNATION</b>      | <b>VEHICLE MAKE</b> | <b>VEHICLE NUMBER</b> | <b>NUMBER OF VEHICLES</b> |
|---------------------------------|---------------------|-----------------------|---------------------------|
| Trash Truck                     | Ford                | 58-958L               | 1                         |
| Dump Truck                      | Chevrolet           | 58-943L               | 1                         |
| Pickup Truck                    | Dodge               | 58-932L               | 1                         |
| Staff Assignment                | Caprice             | 77-533L               | 1                         |
| Staff Assignment                | LTD Crown           | 58-972L               | 1                         |
| Driver Ed                       | Taurus              | 114-942L              | 1                         |
| Trailer                         | Carry-on            | 112-3471              | 1                         |
| Staff Assignment                | Ranger Truck        | 5-953L                | 1                         |
| Staff Assignment                | Dodge               | 59-955L               | 1                         |
| Snow Removal                    | Chevrolet           | 58-957L               | 1                         |
| Fleet Assignment                | Lumina              | 77-534L               | 1                         |
| Fleet Assignment                | Crown Victoria      | 59-933L               | 1                         |
| Fleet Assignment                | Ford                | 58-942L               | 1                         |
| Fleet Assignment                | Ford                | 58-9621               | 1                         |
| Fleet Assignment                | Taurus              | 47-835L               | 1                         |
| Fleet Assignment                | Taurus              | 114-943L              | 1                         |
| Staff Assignment                | Chevrolet           | 58-967L               | 1                         |
| Trash/Supply                    | Chevrolet           | 58-964L               | 1                         |
| Staff Assignment                | Ford                | 59-938L               | 1                         |
| Staff Assignment                | Caprice             | 59-966                | 1                         |
| Staff Assignment                | Ford Escort         | 58-965L               | 1                         |
| Staff Assignment                | Chevrolet           | 76-874L               | 1                         |
| <b>TOTAL NUMBER OF VEHICLES</b> |                     |                       | <b>22</b>                 |

Source: MGT of America, Inc., from BCPS data, April 2006.

Three automated systems on the market today for managing large fleets, which may at some future date be considered by BCPS, are: Dossier 32 Fleet Management System by Arsenault Associates (800-525-5256), Fleetmaint 2000 by DP Solutions (800-897-7233), and FleetPro for Windows by EDULOG (406-728-0893).

One alternative to the wide area network is the Internet. Information systems are available that charge a monthly fee and use the World Wide Web. The Internet approach uses existing compatible hardware and existing communication lines. System integration would not be an issue, and there is no annual fee for software upgrades.

MGT does not believe that BCPS needs to invest resources in any of the automated systems mentioned above for a VMIS at this time. We are mentioning them to alert BCPS management of the technical approaches currently available. At present, considering the small size of the BCPS fleet, a more modest approach to fleet management challenges should be taken.

Fleet management indicators typically used by school transportation units are shown in Exhibit 7-21. These could be modified with any additional management and performance indicators unique to BCPS. With existing resources, the Office of Transportation should develop a simplified fleet management program to manage its small fleet of 46 vehicles. The present maintenance management procedures should be captured manually before moving to a more desirable automated system. The Office of Transportation should consider the following indicators. They are important in developing an effective VMIS.

**EXHIBIT 7-21  
FLEET MANAGEMENT INDICATORS  
BATH COUNTY PUBLIC SCHOOLS  
2005-06 SCHOOL YEARS**

| <b>OVERVIEW OF FLEET MANAGEMENT INDICATORS</b> | <b>PERFORMANCE INDICATOR</b>   |
|--|--|
| Maintenance Performance                        | Miles between road calls<br>Accidents per 100,000 miles<br>Percentage of preventive maintenance completed on time<br>Operational rate/percentage for buses and vehicles<br>Turnover time per bus repair<br>Entity performing repairs<br>Is repair maintenance performed in-house?<br>Driver-requested bus repairs<br>Type of maintenance performed |
| Cost Efficiency                                | Operation cost per mile<br>Annual operation costs per route for buses<br>Monthly operational costs for non-bus vehicles<br>Bus replacement costs<br>Time mechanics spend repairing vehicle(s)<br>Fuel  |
| Cost Effectiveness                             | Parts replacement and dollar amounts<br>Labor hours<br>Labor cost  |

Source: MGT of America, Inc., 2006.

**RECOMMENDATION**

**Recommendation 7-12:**

**Develop fleet management vehicle maintenance information system and performance indicators to more effectively manage the fleet.**

The fleet management performance measures in Exhibit 7-21 should be of significant value to the Director of Transportation and his mechanic in developing a vehicle maintenance information system.

**FISCAL IMPACT**

There are no fiscal impacts associated with this recommendation. A VMIS and fleet management indicators should be implemented by the Director of Transportation since both are expected and are implied in his job description.

**FINDING**

The number of spare buses is excessive and could be reduced.

BCPS has 24 diesel and gas buses, of which 16 are designated for regular or exclusive/special education student transportation services. Of the remaining eight buses, one is used as an activity bus and seven are considered spares. Seven spare buses equates to 44 percent of the fleet of 16 buses used daily for student transportation purposes.

Most school divisions in the Commonwealth of Virginia and nationwide maintain a spare bus policy of 10 percent unless unusual circumstances require them to keep a higher percentage. Spare bus determinants include normal life expectancy of school buses, average wear and tear, maintenance, and number of diesel versus gas-powered vehicles. Exhibit 7-22 shows the school bus spares and percentage of the fleet in BCPS.

**EXHIBIT 7-22  
SCHOOL BUS SPARES AND PERCENTAGE  
BATH COUNTY PUBLIC SCHOOLS  
2005-06 SCHOOL YEAR**

| <b>PASSENGER BUS UTILIZATION</b>  | <b>NUMBER OF BUSES</b> | <b>ROUTES FOR AM AND PM</b> | <b>NUMBER OF SPARES</b> | <b>PERCENT OF SPARES</b> |
|-----------------------------------|------------------------|-----------------------------|-------------------------|--------------------------|
| Exclusive/Special Education Buses | 2                      | 4                           | 1                       | 50                       |
| Regular Passenger Buses           | 14                     | 28                          | 6                       | 43                       |
| <b>TOTAL</b>                      | <b>16</b>              | <b>32</b>                   | <b>7</b>                | <b>44</b>                |

Source: MGT of America, Inc., from BCPS Director of Transportation data, April 2006.

All transportation operations require substitute vehicles to cover for units experiencing breakdowns or scheduled preventive maintenance. The generally accepted range for

school bus fleet spares is 10 to 20 percent of the regularly scheduled peak bus usage. The factors affecting the spare bus ratio are fleet age, effectiveness of the maintenance program, climatic and operating environment, fleet mix, and training program.

School divisions throughout the country and particularly those that MGT has evaluated over the past several years, including Isle of Wight (VA), Williamsburg (VA), Winchester (VA), Hillsborough County (FL), Fairfax County (VA), San Antonio Independent Schools (TX), Prince George's County (MD), Broward County (FL), and York (VA), maintain a spare bus policy of 10 to 12 percent.

Though it is the prerogative of BCPS to maintain a 44 percent spare bus policy, it may not be necessary and is not supported by the MGT on-site team as a continuing course of action. A 10 percent spare bus policy is considered appropriate for BCPS.

A 10 percent spare bus policy based on the current number of buses (16) used for student transportation purposes would equate to two buses. Since there are seven buses currently counted as spares (excluding the activity bus), BCPS could eliminate five buses from its spare bus inventory.

**RECOMMENDATION**

**Recommendation 7-13:**

**Implement a spare bus policy mandating 10 percent of the peak use bus fleet as spares.**

The BCPS bus fleet age is within the boundaries of other divisions in the Commonwealth of Virginia and school systems nationally. The BCPS fleet is 12 years old, and the majority of the buses are diesel power driven. A reduction to 10 percent spares and other initiatives in this chapter could result in trimming the fleet from 24 buses to 19 (16 buses for student transit, one activity bus, and two spares). Under the circumstances, a 10 percent spare bus policy is achievable.

**FISCAL IMPACT**

The sale of five excess buses at an average price of \$2,000 per vehicle should return \$10,000 to the school division. Budgeted five-year maintenance and operational costs (maintenance, repairs, bus driver salaries, fuel) for five vehicles are computed at \$21,250 per year. Removing five excess buses from the spare bus inventory, selling the vehicles, and capturing maintenance and operational costs would generate a cost savings of \$116,250 over the five-year budget cycle.

| <b>Recommendation</b>  | <b>2006-07</b>  | <b>2007-08</b>  | <b>2008-09</b>  | <b>2009-10</b>  | <b>2010-11</b>  |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Sell Five Excess Buses   | \$10,000        | \$0             | \$0             | \$0             | \$0             |
| Capture Five-year Budgeted Maintenance and Operational Costs for Five Vehicles | \$21,250        | \$21,250        | \$21,250        | \$21,250        | \$21,250        |
| <b>TOTAL</b>   | <b>\$31,250</b> | <b>\$21,250</b> | <b>\$21,250</b> | <b>\$21,250</b> | <b>\$21,250</b> |

**FINDING**

BCPS does not have a comprehensive school bus replacement plan.

The BCPS transportation unit maintains 24 vehicles, of which eight are spares and one is an activity bus. The typical useful life of a school bus is between 10 and 15 years. The Virginia Department of Education recommends a 10-year depreciation cycle for 64-passenger buses and a 12-year replacement cycle for 78-passenger buses. A significant number of divisions in the Commonwealth of Virginia have adopted a 12-year replacement cycle. In those situations where highly satisfactory maintenance programs or special circumstances are in existence, it is possible to have a 15-year bus replacement policy. Exhibit 7-23 presents the bus fleet inventory of BCPS. It shows that of the 24 buses in BCPS, 10 are over 12 years old (1994 or earlier).

**EXHIBIT 7-23  
BUS FLEET INVENTORY  
BATH COUNTY PUBLIC SCHOOLS  
2005-06 SCHOOL YEAR**

| <b>YEAR PURCHASED</b> | <b>NUMBER OF BUSES</b> | <b>FUEL USE TYPE</b> | <b>VEHICLE BODY TYPE/MODEL</b> |
|-----------------------|------------------------|----------------------|--------------------------------|
| 1984                  | 1                      | Gas                  | Chevrolet                      |
| 1984                  | 1                      | Gas                  | Chevrolet                      |
| 1987                  | 2                      | Diesel               | Chevrolet                      |
| 1988                  | 0                      | Diesel               | N/A                            |
| 1990                  | 1                      | Diesel               | Ford                           |
| 1991                  | 2                      | Diesel               | Ford                           |
| 1992                  | 1                      | Diesel               | Bluebird                       |
| 1993                  | 0                      | 0                    | N/A                            |
| 1994                  | 2                      | Diesel               | Ford                           |
| 1995                  | 1                      | Diesel               | Ford                           |
| 1996                  | 1                      | Diesel               | Ford                           |
| 1997                  | 3                      | Diesel               | Ford Thomas                    |
| 1998                  | 0                      | 0                    | N/A                            |
| 1999                  | 0                      | 0                    | N/A                            |
| 2000                  | 1                      | Diesel               | Freightliner                   |
| 2001                  | 2                      | Diesel               | Freightliner                   |
| 2002                  | 2                      | Diesel               | Freightliner                   |
| 2003                  | 1                      | Diesel               | Freightliner                   |
| 2004                  | 1                      | Diesel               | Thomas                         |
| 2005                  | 2                      | Diesel               | Freightliner                   |
| 2006-07               | 1                      | Diesel               | Freightliner                   |
| <b>TOTAL BUSES</b>    | <b>24</b>              | <b>Gas/Diesel</b>    | <b>Mixed Models</b>            |

Source: BCPS Office of Transportation, 2006.

Though accurate and complete data for mileage and purchase cost for buses since 1985 were not available, MGT consultants were able to determine bus purchases and

replacement strategy from existing information and discussions with the superintendent and Director of Transportation.

Until recently, bus purchases and replacements in BCPS were not systematic. As a result, management and the school board were often required to purchase several buses to keep the fleet running. For example, it is noted in Exhibit 7-23, that BCPS purchased no buses in 1993. The division then purchased two in 1994; one each in 1995 and 1996; and three in 1997. The irregular bus purchase pattern placed the school board in the position of budgeting and purchasing a higher number of buses when they got behind. This became imperative when the bus fleet was in danger of not having sufficient dependable buses to transport BCPS students. Minutes of board meetings reviewed by MGT reveal that the school board does not have a bus replacement policy. Therefore, the board makes arbitrary decisions and replacement purchases.

It is well known that a bus replacement plan is a valuable management tool that can increase efficiency, reduce costs, and improve inventory. BCPS is gradually moving to an all-diesel fleet, and its vehicle maintenance program is improving. These positives along with other plus factors in this chapter strongly suggest that BCPS should adopt a 12-year bus replacement cycle as a realistic goal.

**RECOMMENDATION**

**Recommendation 7-14:**

**Establish a 12-year bus replacement cycle in BCPS.**

BCPS should implement a 12-year replacement cycle. The decision by the school board to make bus replacements on a staggered schedule could be reviewed.

With the efficiencies from automated routing and scheduling that would lead to bus reductions as discussed earlier in this chapter; the reduction of spare buses from seven to two covered in the preceding section; and advantages from using bus maintenance and repair vendors discussed in the maintenance section, a total of five buses could be eliminated from the current inventory, resulting in a BCPS bus fleet of 19 vehicles for student transportation services.

A 12-year bus replacement policy directed by the board would result in purchasing two buses in one year and one bus in the subsequent years.

**FISCAL IMPACT**

As the average cost of a regular bus is approximately \$68,000, the cost to purchase two buses is estimated at \$136,000. The fiscal impact of this recommendation over the five-year budget cycle would be \$408,000.

| <b>Recommendation</b>                     | <b>2006-07</b> | <b>2007-08</b> | <b>2008-09</b> | <b>2009-10</b> | <b>2010-11</b> |
|---|----------------|----------------|----------------|----------------|----------------|
| Establish a 12-year Bus Replacement Cycle | (\$136,000)    | (\$68,000)     | (\$68,000)     | (\$68,000)     | (\$68,000)     |

## **FINDING**

BCPS does not require Automotive Service Excellence (ASE) certification as a condition of employment, nor are there currently any ASE-certified mechanics in the school division.

During the on-site review, MGT found the BCPS mechanic and Director of Transportation to have high regard and appreciation for ASE certification. They agreed enthusiastically that they would become ASE certified if offered the opportunity.

It is recognized throughout the transportation community that ASE-certified mechanics provide more accurate fault diagnosis, which allows for more effective troubleshooting and subsequent first-time correct repairs of defective equipment.

A well-trained mechanic can have a significant impact on the parts replacement and equipment repair program of any maintenance operation.

ASE certification is an important management tool that ensures mechanics are highly skilled and trained. These tests are administered at more than 775 locations nationwide. They determine the level of proficiency a mechanic has in a particular area or on particular kinds of equipment. They demand preparation. Mechanics who are ASE certified are considered superior in their profession. ASE certification is offered at several locations throughout the Commonwealth of Virginia.

Qualified mechanics are needed to maintain school buses and other equipment. ASE certification is an excellent way of determining mechanic qualifications. The training of mechanics is one of the important cornerstones of an effective maintenance organization.

## **RECOMMENDATION**

### **Recommendation 7-15:**

**Provide ASE certification training for the BCPS mechanic and Director of Transportation.**

The division should establish a policy encouraging its mechanics to be ASE certified, and ensure that funds are in the budget each year for ASE training. ASE certification should be stressed continuously until certification covers all major areas of maintenance in the transportation unit. The division should consider making certification a condition of initial employment for future hires.

This program should be continuous and begin in the 2006-07 school year.

## **FISCAL IMPACT**

The ASE registration fee per mechanic is approximately \$50, and the test fee is \$35 or a total of \$170 for the two individuals in BCPS. An additional cost of approximately \$35 per person should be allocated for travel to the test site and food expenses. The cost would thus be \$240 per year or \$1,200 over the five-year budget cycle.

| <b>Recommendation</b>                   | <b>2006-07</b> | <b>2007-08</b> | <b>2008-09</b> | <b>2009-10</b> | <b>2010-11</b> |
|---|----------------|----------------|----------------|----------------|----------------|
| Provide ASE Certification for Mechanics | (\$240)        | (\$240)        | (\$240)        | (\$240)        | (\$240)        |

## **7.6 State Reporting**

### **FINDING**

The requirement to submit information to the Commonwealth's Department of Education on the number of exclusive/special education students receiving transportation services is not being met in Bath County Public Schools.

In discussions with school officials, the MGT on-site team found that there was honest misunderstanding regarding exclusive/special education student reporting requirements. Those responsible for preparing the report indicated that they had discussed instructions on exclusive/special education reporting with Department of Education officials. It is MGT's analysis that those instructions were misunderstood in BCPS. As a consequence, and because for the past several years there has been a failure by BCPS to submit exclusive/special education student transportation information to the state, reimbursement from federal sources including Medicaid were lost.

The MGT on-site team explained the reporting process and how to report the exclusive/special education student population to the state. At the time of the consultants' departure, corrective action was in process.

### **RECOMMENDATION 7-16:**

**Ensure that exclusive/special education student data are reported to the Commonwealth's Department of Education.**

### **FISCAL IMPACT**

No fiscal impacts are associated with this recommendation since reporting duties are clerical and consist of the simple act of writing the numbers for exclusive/special education students and submitting them to meet an existing Commonwealth requirement. This recommendation can be implemented with existing resources.