

## CHAPTER 8 – TRANSPORTATION

### BACKGROUND

The Metropolitan Nashville Public Schools System (the School System) is located in Davidson County, Tennessee and encompasses an area of approximately 533 square miles in and around the City of Nashville, Tennessee. The School System’s Transportation Department operates its own fleet of school buses providing transportation to over 51,000 eligible pre-kindergarten through twelfth grade students daily. There are a total of 682 school buses in the fleet of which 653 are active. Of the 653 active school buses there are 202 buses that transport students with special needs. The School System also uses the services of the Metropolitan Transportation Authority for the transportation of students in systemwide programs including magnet schools. The Transportation Department is instrumental in the School System’s vision to “build and sustain effective and efficient systems to support finances, operations, and the academic and personal growth of students”. The Transportation Department fulfills this vision by providing safe, on-time, and efficient services busing students to and from school as well as athletic and co-curricular trips.

The 2013-2014 Transportation Department budget of \$35,933,000 is approximately 4.8 percent of the School System’s \$746,420,300 operating budget. The Transportation Department budget does not include capital expenditures for new buses. A transportation department’s performance is rated in several categories against national school transportation measures as well as peer district measures. These measures include rankings from the Council of Great City Schools, which represents more than 60 large urban school districts across the country. Performance measures include, but are not limited to the following:

- cost per student per year overall and individually within general and exceptional education;
- cost per bus per year overall and individually within general and exceptional education;
- number of buses required to transport 100 students;
- capacity use or how well the department fills the buses;
- number of accidents per one million miles; and
- percent of the transportation budget relative to the total School System budget.

### CHAPTER HIGHLIGHTS

- The Transportation Dispatch Center provides excellent customer service and routing support information.
- Changes to maintenance practices have had a positive and substantial impact on the department’s ability to provide on-time service.
- Transportation and maintenance operations are understaffed.
- Improvements in information technology are necessary to increase the efficiency and effectiveness of fleet maintenance services.
- A significant backlog of fleet replacement has accumulated and must be addressed.
- Exceptional education transportation costs are significantly above norms due to the legal requirements of an ongoing consent decree.
- Estimates from a national student transportation outsource provider suggest that the School System could potentially save \$4,097,300 annually and avoid investment costs of \$3,200,000 on an annual basis associated with school bus and white fleet replacement over the next five years if outsourcing student transportation is implemented.

These and other performance measures are detailed and discussed later in this chapter.

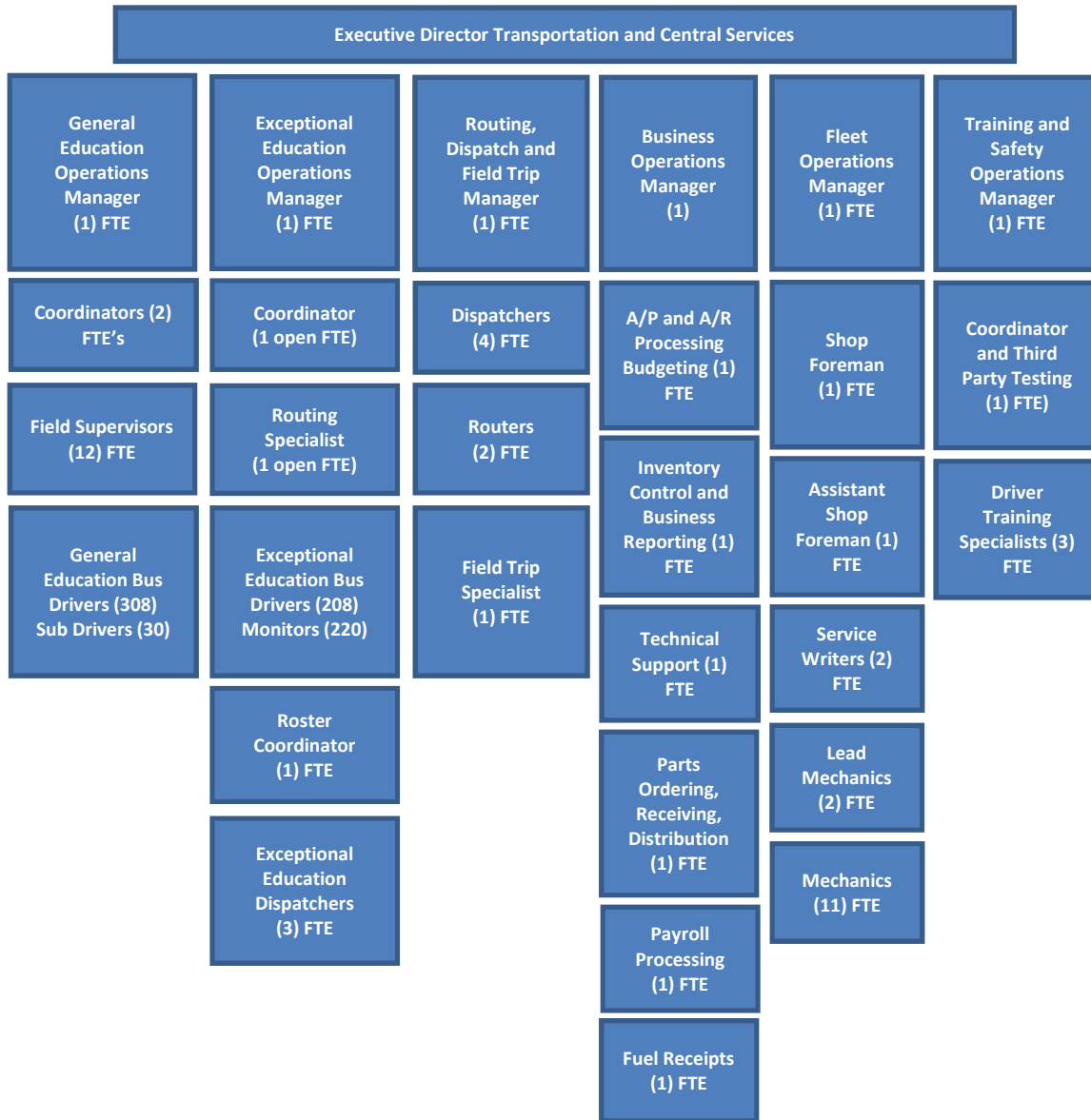
## **ORGANIZATIONAL STRUCTURE**

Any large school system requires substantial supervisory and employee support within the organizational structure to provide for:

- planning and routing of school buses;
- athletic and co-curricular field trips;
- dispatching of vehicles and personnel;
- fleet maintenance;
- safety training for new and current staff;
- budgetary support;
- inventory control;
- technical support including office and garage software and hardware;
- bus video systems; and
- customer service.

**Exhibit 8-1** represents the multi-faceted organizational support structure of the Transportation Department, which includes a total of 827 employees.

**Exhibit 8-1  
Transportation Department Organization-2012-2013 and 2013-2014**



Source: Metropolitan Nashville Public Schools.

The department is led by the executive director of Transportation and Central Services and is supported by the positions that include the following:

- general education operations manager who is supported by:
  - two coordinators;

- twelve field supervisors;
  - 308 general education bus drivers; and
  - 30 general education substitute bus drivers.
- exceptional education operation manager who is supported by:
  - one coordinator (open position);
  - one routing specialist (open position);
  - 208 exceptional education bus drivers;
  - 220 exceptional education bus monitors;
  - one roster coordinator; and
  - three exceptional education dispatchers.
- routing, dispatch and field trip manager who is supported by:
  - four dispatchers;
  - two routers; and
  - one field trip specialist.
- business operations manager who is supported by:
  - one accounts payable and receivables processing and budgeting employee;
  - one inventory control and business reporting employee;
  - one technical support employee;
  - one parts ordering, receiving and distribution employee;
  - one payroll processing employee; and
  - one fuel receipts employee.
- fleet operations manager who is supported by:
  - one shop foreman;
  - one assistant shop foreman;
  - two service writers;
  - two lead mechanics; and
  - eleven mechanics.
- training and safety operations manager who is supported by:
  - one coordinator and third-party testing employee; and
  - three driver training specialists.

The transportation director and managers recently (October 2013) reorganized the department to better represent each division’s goals and objectives and to provide clarity of employee responsibilities. The reorganization is ongoing. There are two open positions under the Exceptional Education Operations Division that include the coordinator and routing specialist. Routing and dispatch operations are short one dispatcher. As with most school districts across the country, the School System struggles with maintaining bus drivers. Employment opportunities for drivers are routinely on the School System’s website. Bus mechanic shortages are discussed later in this chapter.

## BEST PRACTICES

Best practices are methods or techniques that have consistently shown positive results and that can be replicated by other organizations as a standard way of performing work. When comparing best practices, similarity of entities is not as critical a factor as it is with benchmarking. In fact, many best practices transcend organizational characteristics.

McConnell Jones Lanier & Murphy LLP identified 16 best practices against which to evaluate the School System’s transportation operations. **Exhibit 8-2** provides a summary of these best practices. Unmet best practices resulted in an observation, which is discussed in the chapter. However, not all observations are related to a best practice.

**Exhibit 8-2**  
**Summary of Best Practices - Transportation**

Best Practice Number	Description of Best Practice	Met	Not Met	Explanation
1.	Customer service procedures exist and are performed.	X		
2.	Buses are equipped with communications and video equipment.	X		
3.	Employee performance evaluations are performed.	X		
4.	Organization plans, prepares, reviews and establishes safe bus stops and routes.	X		
5.	Bus driver initial training and in-service training (also require cardio pulmonary resuscitation training) occur.	X		
6.	Accident response and accident review procedures exist and are performed.	X		
7.	Inclement weather procedures exist and are performed.	X		
8.	Fully implemented routing software exists and is used.	X		
9.	Accurate methods of mileage recording exists and are used.		X	Methods of maintaining accurate mileages are labor intensive. <b>See Observation 8-M.</b>
10.	Maintenance software exists and is used.		X	Existing maintenance software is outdated. <b>See Observation 8-J.</b>

**Exhibit 8-2**  
**Summary of Best Practices - Transportation (Cont'd)**

Best Practice Number	Description of Best Practice	Met	Not Met	Explanation
11.	Sufficient department staffing exists.		X	Recommend two additional route planners. <b>See Observation 8-B.</b> Recommend additional mechanics. <b>See Recommendation 8-D.1.</b>
12.	Targeted performance measurements exists and are used.		X	Exceptional education transportation costs are well above the national average. <b>See Observation 8-K.</b>
13.	Policies, procedures, practices exist and are performed.		X	Asset allocation practices limit management discretion. <b>See Observation 8-H.</b>
14.	Fleet replacement planning processes are in place and implemented.	X		
15.	Capital expenditures budget for fleet replacement planning process exists.		X	Inadequate to meet needs of department. <b>See Recommendation 8-I.1.</b>
16.	Fuel management and supply processes exists and are implemented.		X	Need for better internal controls at the fuel pumps. External process is appropriate. <b>See Observation 8-G.</b>

Source: McConnell Jones Lanier & Murphy LLP Review Team.

## ACCOMPLISHMENTS

### ACCOMPLISHMENT 8-A

**The Transportation Department maintains comprehensive school bus accident response procedures and has an effective crash review process.**

The safety of children on school buses is of the utmost priority in any school district. However, crashes do occur. When crashes involve the School System's vehicles, the Office of School Security responds to the scene and provides an investigation into the crash for all vehicles including school buses, administrative vehicles, and maintenance vehicles.

The investigation is conducted independently of the Metropolitan Nashville Police Department. The Security Dispatch Office, in conjunction with the dispatchers for the Transportation Department, dispatches security officers to the scene. Security officers work independently of the Transportation Department as well and provide an autonomous and impartial report of the crash. Once the School System's security officer completes the report, it is reviewed by a security supervisor and then submitted to the Metropolitan Nashville Legal Office for insurance processing and, in the event of future litigation, the Transportation Department. The Security Office maintains original copies. A copy of the report is also sent to the Vehicle Accident Review Committee.

The accident review meetings are divided into yellow fleet (school buses) and white fleet (remainder of the School System's fleet). Yellow fleet meetings are held monthly while white fleet meetings are held quarterly. The accident review committee consists of one security officer, who directs the meeting, three to four bus drivers recommended by the Transportation Department in the capacity of reviewers, and a representative of the Transportation Department, who records training recommendations and develops a plan of action for future in-service training. The reviewers evaluate the crash reports, statements, and photos to determine if the crash was preventable by the bus driver. The results are sent to the bus driver and appropriate supervisors. Additional training and/or discipline are decided within individual departments.

For the 2013-2014 school year, the Security Office investigated 277 vehicle crashes. It is important to note that for purposes of reporting, any incident, whether it is minor or severe, is reported as a crash. Of these crashes, 234 involved school buses in documented crashes. Twenty crashes involved incidents where the driver found damage but did not know where or how the damage occurred. Of the 234 investigated crashes, 110 were deemed by the accident review committee to be preventable by the school bus driver, and 84 were non-preventable. Data to conduct an analysis of the remaining 40 crashes were not available.

The School System's buses, based on a 180 day school year, traveled approximately 2,674,971 miles in 2012-2013. These represent miles traveled while students were on the bus (includes 95,883 field trip miles). To determine the number of miles between preventable accidents, a key measure of performance, total annual miles is divided by total number of preventable accidents. Therefore, 2,674,971 miles divided by 110 preventable accidents equals 24,318 miles between preventable accidents. The 2012 Council of Great City Schools median value is 103,386. The School System is 76 percent below the median value in this performance measurement.

Deadhead miles are miles traveled while students are not on the bus. They include miles incurred traveling to and from the vehicle's parked location during the day when it is not transporting students. Deadhead miles also include miles traveled before and after picking up and dropping off students.

The School System does not track deadhead miles effectively. Therefore deadhead miles are not included in the preventable accident calculation. However, deadhead miles should be tracked because they are a significant number of miles. This issue is addressed later in the chapter.

The Security Office has a standard reporting form that was last revised in June 2013. The current form is being phased out and will be replaced in July, 2014 by an improved, more comprehensive form that will allow for enhanced data capture and crash analysis.

### **ACCOMPLISHMENT 8-B**

#### **The Transportation Dispatch Center is well designed and is incorporated within the School System's Customer Service Center.**

The systemwide customer service location also houses transportation dispatch operations. This location provides for the School System's two-way bus communications on a 900 megahertz radio system that is leased from Metropolitan Nashville/Davidson County authorities. The dispatch area is divided into two functional areas that maintain communications with general education buses on one side and exceptional education buses on the other side. The radio system operates on six separate channels that allow for specific communications between the two educational groups. This configuration allows a controllable dialogue between dispatch and bus drivers. An additional split within the radio channels provides for two channels of operation for the general education population. This split is due to a higher volume of communications among these buses simply due to a higher number of buses serving general education. One channel coordinates communications with the west and south portions of the School System. The other channel coordinates communications with the east and north portions. Additional channels allow for transportation dispatchers to contact the School System's security personnel. There is an administrative channel for communications with the Transportation Department's twelve field supervisors and other authorized upper management personnel, which allows for a coordination of efforts during unusual or emergency events without interference from users of the other channels.

As Customer Service handles incoming calls from other locations as well as the public, the School System employs SPARK. This is an instant messaging software client providing communications between Customer Service and Transportation Department dispatch personnel. This service allows for simultaneous communication with dispatchers facilitating more efficiency and immediacy of appropriate responses.

All dispatch operations cover communications between 5:00 am and 5:00 pm. Transportation also has an additional full-time dispatch employee who services a majority of transportation related customer service requests. This arrangement expedites responses to the public while effectively keeping minor issues from burdening upper management. The employee works from 6:30 am to 3:00 pm.



**ACCOMPLISHMENT 8-C****Students with special needs are provided transportation services within three days.**

There are about 9,000 students with special needs in the School System of which approximately 3,000 are provided transportation on specially equipped buses with bus monitors. There is a three-day waiting period to provide transportation services to students with special needs. Operating under the mandate of the court ordered Lopez Decree (requires the School System to provide a monitor on all exceptional education buses and follow a protocol of reporting requirements that assure the order is followed), the three-day placement accomplishment in the context of the number of students served is considered a major step forward in meeting the special needs of these children.

The effort includes the designation of an exceptional education manager and a roster coordinator. The manager is responsible for the assignment of all students to buses. The manager acts as liaison with school personnel to implement mandated Individual Education Program requirements involving transportation of special needs students. The position must ensure adequate bus monitors are on staff to adhere to the Lopez Decree. The roster coordinator must, by decree, maintain all student rosters for these buses regardless of the change of information. Any change in information and assignments of students to buses must be documented. All appropriate personnel must sign a document that they have received the changes. Reviews of record keeping indicate that the School System is adhering to the criteria in the decree. Every designated special needs bus must have at least one monitor; however, more may be necessary depending on the requirements of each student's Individualized Education Program. The School System is exploring converting the current paper storage system to an electronic form – a process that is highly recommended.

**ACCOMPLISHMENT 8-D****The School System has policies and procedures that clearly define student eligibility standards for transportation services. Further, there is a description of how buses will be routed for picking up and dropping off students.**

Policies and procedures should be an integral part of any transportation program. Many school districts have significant deficiencies and difficulties meeting this standard. Too often, those that have written policies do not adhere to them consistently. Consequently, fair, equitable, cost-effective student transportation is compromised. Commendably, the School System adheres to its transportation policies and procedures. Transportation eligibility criteria include, but are not limited to the following:

- students must be legally enrolled in a system school;
- kindergarten to eighth grade students living more than 1-¼ miles from their zoned school are eligible;
- ninth to twelfth grade students living more than 1-½ miles from their zones school are eligible;
- distances are measured from the center of the student's driveway where it intersects with the public thoroughfare and along the nearest public route, meaning public vehicular route or pedestrian walkway;

- students living less than the required distances may apply for temporary transportation due to certain hardships if seats are available. The School System will not require additional stops nor have the bus deviate from the designed route nor shall it incur additional expense for these accommodations;
- buses will be routed along roadways approved by Metropolitan Nashville Government and Davidson County. Buses will only serve streets that are in excess of three-tenths of a mile in length from a main surface road and have sufficient space for the bus to reverse route at the end of the street without the bus having to backup;
- regular education buses will not travel private roadways or driveways; and
- in certain circumstances, due to federal law, special education buses may deviate from the policies for regular education due to Individualized Education Program requirements.

District school boards and school administrators across the country often make decisions to transport students that are not required by local policy or state law eligibility requirements. These decisions cause increases in transportation costs that are typically borne by the school district. In contrast, the School System strictly enforces its transportation eligibility policies.

#### **ACCOMPLISHMENT 8-E**

**The employee performance evaluation tool is well written and supports transportation employee development as well as the School System's goals.**

Employee evaluations are an important component of an employee's development. Evaluations provide a tool to recognize accomplishments while supporting employees who are not performing up to standard. The goal of performance evaluation is to retain good employees; improve an employee's substandard performance; and terminate employees who fail consistently to meet the School System's high standards. Performance evaluation goals include the following:

- ensure the quality and quantity of work performed by staff members achieves the School System's goals;
- allow for continuous open communication between supervisors and employees about job performance;
- allow for the supervisors and employees to develop a set of expectations for future performance;
- assess past performance and provide for future development of employees; and
- provide supporting documentation for pay decisions, promotions, transfers, grievances, complaints, disciplinary actions, and terminations.

All non-exempt support employees have their job performance evaluated at least annually. These evaluations are performed as required.

**ACCOMPLISHMENT 8-F**

**Maintenance operating hour revisions supporting “fast lane” services have increased vehicle availability.**

Fast lane services are available for repairs and services that can be performed quickly (generally within about 15 minutes). Previously, this service concluded early in the morning, which discouraged drivers from addressing minor problems before they became more significant problems. In addition, expanding service hours boosted productivity and increased on time school arrival. Moreover, fewer routes had to be doubled to cover for buses that were not ready for service.

**ACCOMPLISHMENT 8-G**

**Commercial fuel auditing procedures are effective at identifying potential abuse or inconsistencies in the use of fuel cards.**

The decentralization of fleet staging led to the development of a commercial fueling strategy. The School System contracts with a vendor to provide fueling services at a variety of commercial facilities across the metropolitan area and throughout the region. Drivers are issued an access card for which they are personally responsible. The card is limited to the purchase of the designated fuel type (diesel or gasoline) for the type of vehicle the driver typically operates. Some supervisors and support vehicle drivers are allowed to purchase multiple fuel types and car washes using the fuel card; however, this group is limited. Drivers with such cards must submit receipts and are subject to discipline for non-compliance.

The department has developed a weekly reconciliation process for these transactions that matches transactions to receipts submitted by drivers. This process identifies individuals who have not submitted receipts and individuals who have had five or more fueling transactions in a week. These are both sound processes to address both accountability and any potential abuse in the system. Later in this report, we discuss the inability to integrate fuel transactions with the fleet management information system.

**DETAILED OBSERVATIONS****GENERAL OPERATIONS****OBSERVATION 8-A**

**The Transportation Department’s budget is not reimbursed for athletic and curriculum based trips.**

The Transportation Department provides transportation for athletic events and fieldtrips. Expenses for these trips are not reimbursed to the Transportation Department budget but instead are deposited into the General Fund. Transportation is not funded to cover these costs thereby causing a shortfall in the Transportation budget.

Transportation, according to a report from the trip management software (Transportation Operations Manager) provided for 1,722 trips in 2012-2013 to the School System schools and programs that cost \$418,585 in vehicle and personnel costs. The School System's field trip policy states that many of these trips are paid for by the school taking the trip. There are additional resources as in Pencil Partners and Parent Teacher Organizations that also cover the costs of trips. However, the Transportation Department does not receive the funds into its account. **Exhibit 8-3** shows details and expenses from the trip report:

**Exhibit 8-3  
Metropolitan Nashville Public Schools' Field Trips  
2012-2013**

Fund	Number of Trips	Number of Students	Number of Adults	Total Number of Passengers	Total Hours	Total Miles	Total Amount of Trip
Athletic/Band	81	6,130	561	6,691	34	6,620	\$31,003
Athletic/Basketball	3	109	6	115	4	209	\$549
Athletic Football	43	2,424	235	2,659	12	1,595	\$9,058
Next Feeder School Visits	55	5,653	329	5,982	321	1,018	\$12,939
Lifeskills/Special Education	5	73	29	102	15	102	\$732
Christmas Parade	14	1,174	57	1,231	0	770	\$4,508
Regular Field Trips	1,520	127,304	10,824	138,128	8,014	85,539	\$359,602
Veteran's Day Parade	1	50	2	52	0	30	\$194
<b>Report Totals</b>	<b>1,722</b>	<b>142,917</b>	<b>12,043</b>	<b>154,960</b>	<b>8,400</b>	<b>95,883</b>	<b>\$418,585</b>

Source: Metropolitan Nashville Public Schools' Transportation Operations Manager's field trip report.

The School System's departments are required to submit, manage, and stay within a board-approved budget. Each department that provides a service to other areas of the School System should be reimbursed for services provided. For the Transportation Department, this is evidenced by the field trip policy that details charges for trips so that requesting schools and programs can budget for the expense. **Exhibit 8-4** presents the charges a school, department, or program can expect to reimburse the Transportation Department:

**Exhibit 8-4  
Metropolitan Nashville Public Schools' Field Trip Costs**

Field Trip Type	Initial Costs	Additional Costs
Regular	\$120 per hour for first three hours	\$33 per hour for each additional hour
Band and football	\$161 for the first five hours	\$33 per hour for each additional hour
Summer time trips	\$125 for the first three hours	\$33 per hour for each additional hour

Source: Metropolitan Nashville Public Schools' field trip policy.

**RECOMMENDATION 8-A.1**

**Reimburse the Transportation Department budget for expenses related to field trip expenditures.**

The business/finance department and operations department should collaborate to explore the accounting and operational requirements to support the justification for this observation. The department heads should develop accounting procedures to ensure the transportation department is reimbursed for expenses, per the School System's policy, when providing services to other departments, schools and programs.

### **FISCAL IMPACT**

The School System can implement these recommendations with existing personnel. The financial impact affects the Transportation Department only and will vary year to year depending on the number of trips completed and changes in trip charges. The financial impact is positive for the Transportation Department as the costs of these trips would no longer be borne by the Department. However, there is no impact on the School System as a whole because the charges are transfers from one department to another.

### **OBSERVATION 8-B**

#### **The School System is understaffed by two route planners.**

The School System has two full-time employees providing route planning for regular education and a vacant position for one full-time route planner for students with exceptional needs. Route planning, a complex, multifaceted transportation discipline, is one of the most critical components of an efficient and effective school bus routing system. Students, stops, times, vehicles, speeds, bell times, and hazardous conditions, must be managed, monitored, and kept in balance. The ultimate goal of route planning is to operate a bus at the highest possible capacity within a given routing window and to reuse it on multiple routes (route pairings) to achieve maximum efficiency.

Requests for stop changes typically come through school administration to the Transportation Department. The School System uses PowerSchool™ for its student information system. Downloads of adds, drops, and changes of students in the routing software occur weekly over the weekend. PowerSchool™ does not provide for validation of addresses prior to entering into Edulog™. Consequently, when school personnel enter information incorrectly, it remains incorrect unless the error is brought to the school's attention by transportation personnel. This lack of validation requires transportation personnel to verify address information manually to match the geocoding records within Edulog™. Accurate information is critical for effective routing of students to their destinations.

Exceptional need student routing lacks automated entry of student information into Edulog™ from PowerSchool™. Students with exceptional needs often have multiple levels of information that are student-specific based on a student's Individualized Education Program. Student information is manually entered into the routing system from information provided from HELPSTAR™, the School System's help desk software. This information is loaded from the Exceptional Education Department into HELPSTAR™ software, which is then manually transferred into Edulog™. Manual entry of this information is a time consuming task. However, the entry of this information is critical to ensure that School System bus drivers, bus monitors, and emergency personnel have up-to-date medical information about allergies, medications and disabilities.

Many regular education routes are fairly static year to year. Department route planners work within a three-tier routing structure meaning that up to three routes could be assigned to a bus in both morning and afternoon deployments. Planners now have a 55-minute routing window, which is up from a 45-minute routing window in the past. This increase allows the buses to run longer and gain higher capacities thereby increasing opportunities for efficiencies. However, as changes in student and stop assignments occur routes can become less efficient over time. Therefore, routes must be reviewed regularly to assess the impact of changes affecting capacity utilization, time of routes, and additional utilization of buses.

Route planners say that they stay within the parameters of the School System's policy to maintain efficient bus routes. Street corners take priority as bus stops in consideration of safety as students walk from home to the stop. When additional stops are requested, a team, including transportation leadership and school security, are directly involved in reviews for determination of the safety of the proposed stop. However, transportation staff indicate that there is no formal, documented process.

There is a process of notification when stops are added to any route that does not change the timing by more than two minutes. Planners inform the field supervisors of the changes who in turn notify the drivers who then notify the students. Parents are notified by letters sent to their home if the stop time change is more substantial or stops move to another bus. Students are advised of School System policy that they should be at the bus stop ten minutes prior to scheduled time.

Route planners also provide for routing of after-school activities that include individual stop assignments for students. Schools provide the Transportation Department with a list of students involved in after-school activities. However, the list includes all students participating in the activity, not only the students requiring transportation.

The 2012 Council of Great City Schools median performance measurement is 88 buses per route planner. The School System has 480 regular and 202 exceptional education buses. **Exhibit 8-5** demonstrates that the School System is understaffed by five route planner positions when compared to the Council of Great City School's standard of 88 buses per route planner.

Given recommendations elsewhere in this report, we believe the School System should proceed systematically to address the comparative route planner differences between the Council of Great City School's standards and the School System's current staffing. Likely efficiencies in the planning process available with improved use and availability of technology resources do not justify the hiring of five additional planners. Therefore, the School System should fill the vacant exceptional needs route planner position and one of the regular bus route planner positions initially and then reassess any additional capacity requirements after the technology recommendations have been fully addressed.

**Exhibit 8-5  
Route Planners per Number of Buses**

	<b>Total Metropolitan Nashville Public Schools' Buses</b>	<b>Recommended Route Planner Positions (Total Buses/Great City School's standard of 88)</b>	<b>Current Route Planner Positions</b>	<b>Route Planner Positions Needed</b>
Regular Buses	480	6	2	4
Exceptional Education Buses	202	2	1	1
<b>Total</b>	<b>682</b>	<b>8</b>	<b>3</b>	<b>5</b>

*Source: Metropolitan Nashville Public Schools' Transportation Department and Council of Great City Schools 2012.*

**RECOMMENDATION 8-B.1**

**Fill the vacant exceptional needs route planner position, and hire one route planner for regular education and one route planner for exceptional education.**

Route planning for exceptional needs students requires significant individual attention to student records due to Individualized Education Program requirements. The individual attention adds to the significant additional personnel time required to route this group of students as compared to regular education students. With the additional route planning for after school activities beyond the day-to-day school bus routes, students not needing transportation should be excluded from after-school activity list and only those students who require transportation should be included on the list. School staff should poll students attending after-school programs to obtain the number of students who require transportation. Only those students should be reported to the Transportation Department for routing.

**FISCAL IMPACT**

Based upon the salary ranges of the existing route planners, the total salary of two additional planners would be \$83,100 calculated as \$41,550 per planner times two, and is exclusive of benefits. The \$41,550 is the average of the current route planner's salaries.

**FLEET MAINTENANCE AND MANAGEMENT**

Maintenance and repair functions account for the overwhelming majority of fleet-related activities and associated costs. Such functions include vehicle and equipment maintenance and repair and developing, implementing, and evaluating preventive maintenance programs. Duties also include assigning and monitoring demand repairs brought to the shop, managing technician resources, managing outsourced repairs, ensuring shop safety, and communicating with customer organizations. These functions consume the majority of fleet resources and have the immediate, direct impact on the overall success of a fleet services organization. Next to fueling, customers use maintenance and repair services most frequently. Compared to the capital cost of fleet units, maintenance and repairs account for the majority of fleet costs. An organization cannot be a high-quality and low-cost provider of fleet services without having a cost-effective and high-quality maintenance operation.

**OBSERVATION 8-C**

**Parts management processes provide for the proper recording of transactions, but the function is understaffed, and technology availability is inadequate.**

Parts management is a distinct function within the fleet maintenance operation. One employee is primarily responsible for managing, ordering, receiving, and stocking parts inventory. The individual has significant expertise as a technician and parts manager. The employee manages all parts for both the school bus and the support vehicle fleet. The number and diversity of parts complicates the Transportation Department's management responsibilities. However, the employee has managed effectively despite the absence of technology systems to support parts management.

Supplies and materials are mostly purchased using blanket purchase orders with local vendors or via a quoting system from multiple vendors. Given the comparatively unique demands of the school bus fleet, there is also a substantial volume of ordering directly from original equipment manufacturers. There is no systematic tracking of non-stock (demand buy) items due to the technical limitations of the existing fleet management information system. Stocking levels and reorder points are established based purely on subjective judgment and prior experience.

Technicians have access to the parts room to obtain parts. This is important because parts would otherwise not be available to them when they are scheduled to work. There is a general process that requires a part to be identified and recorded for the parts manager to charge to a specific work order. When parts must be ordered, the parts manager is responsible for sourcing and managing the order. When received, the part is directly charged to a work order without passing through inventory. The exceptions to this ordering procedure include bulk fluids such as oil and fuel that are managed by the manager of Fleet Operations.

The department has recently reconfigured the physical space associated with parts storage. This reconfiguration included a major effort to identify and dispose of obsolete inventory. The additional space has allowed for some, but not all, materials to be brought into the parts room. A number of bulk items remain unsecured from the parts room including items such as tires. Upholstery items necessary for seat repairs are also stored in the parts room but are managed by the technician responsible for seat repair.

As is detailed in the Technology Availability and Use section of this report, technology support for parts operations is inadequate. The system provides for the basic recording, parts use, and association of use with specific work orders. However, there is limited functionality within the system to manage the entire ordering process. For example, the process to establish minimum and maximum stocking points to facilitate the ordering process is deficient. Additionally, the reporting is rudimentary and difficult, and the development of customized reports that would allow for the export of data for further analysis is limited.

**RECOMMENDATION 8-C.1**

**Invest in a fleet maintenance management system with a robust inventory management module, which is critical to repair parts cost control and inventory management.**



The lack of regular controls, including the inability to assess optimal minimum, maximum, and reorder points, limits the opportunities to assess the efficiency and effectiveness of ordering practices, stocking procedures and management. Existing procedures generally include a large volume of paper-based record keeping. The lack of technology support results in a process that is overly reliant on the knowledge and experience of a specific individual or group of individuals. In addition, the lack of control mechanisms, such as periodic or annual inventory counts, prevents a full and complete accounting and auditing of this function.

The lack of an automated inventory management system within an organization of the size and scope of the School System increases operational and financial risk. The significant dollar and transaction volumes that occur, particularly in the parts area, necessitate a structured approach. There should be appropriate technology support to ensure that repair parts are available when required and that such parts have been acquired at the most advantageous prices and are properly accounted for in their use. The goal of a repair parts inventory management system would be to improve the quantity and quality of data available to evaluate, manage, and control a variety of inventory management activities including:

- determining whether or not to stock specific parts and commodities;
- establishing inventory minimum, maximum, and reorder points;
- identifying and disposing of obsolete inventory;
- measuring performance; and
- accounting and record-keeping procedures for receipt, storage, and disbursement of goods.

Many public sector fleet operations question the need to establish and perform many of the basic inventory control functions used in the private sector. However, the large-dollar volume of parts transactions (approximately \$1,800,000 in Fiscal Year 2013) and the disparate and often expensive items required to support a fleet such as the School System's more than justifies the implementation of formal inventory control systems and procedures. The systematic and coordinated implementation of an inventory management information system would greatly improve the department's ability to control and audit the parts supply function.

## **FISCAL IMPACT**

There is no additional incremental cost to the implementation of the recommendation beyond the system costs identified in **Recommendation 8-J.1**. Staff training on the use of the module should be included in the overall system cost.

## **RECOMMENDATION 8-C.2**

**Develop inventory management procedures to guide the decision making process relative to stock and non-stock parts and operational practices.**

The identification of the parts to be kept in stock involves analyzing the timing of parts usage, parts and parts supplier performance, and parts accessibility from local vendors. Determining proper inventory size and composition requires an understanding of cost trade-offs between volume and individual

purchases, the impact of inventory carrying and parts delivery costs, and the operational implications of parts availability and delivery times. It also requires identifying inventory items that have become obsolete due to changes in fleet composition and that no longer should be replenished. Inventory control involves the tracking and physical control of parts from the point of receipt through consumption.

The parts supply function currently operates in the absence of established guidelines that would assist in determining the most appropriate and fiscally responsible mix of stock and non-stock parts and materials. Existing shop management generally has complete discretion over the type and volume of items that are retained in inventory. While this discretion is informed by a long history of technical and practical skills and experience, it is highly dependent on individuals rather than a systematic process that would be readily transferable between staff. The department should capitalize on existing expertise to establish reasonable procedures and formula-based approaches to inventory management. This would include developing policies for inventory stocking parameters and reorder points that are consistently applied to all items. An example would be a policy that requires an item to be used four times per year before it can be added to stock. Once in stock, the policies should establish how many to keep based on its cost and frequency of use.

Over-investment in inventory is costly for several reasons. First, funds expended on inventory represent real cost for which no benefit has yet been derived since the parts have not been used on a fleet unit. Once inventory has been purchased, there is also a cost associated with maintaining that inventory. This cost, referred to as inventory carrying or holding cost, is incurred because it requires space to store, poses a risk of loss that must be insured through a risk management fund, ties up capital that could be used elsewhere, and is faced with loss due to obsolescence, damage, pilferage, or other reasons.

### **FISCAL IMPACT**

This recommendation can be implemented with existing resources and can begin immediately. Staff time to analyze parts use history to determine appropriate stocking levels and document recommended procedures would be the primary resource required for implementation.

### **RECOMMENDATION 8-C.3**

#### **Assess current stocking levels and establish and maintain bids and formal contracts for all parts procurement.**

The functionality of the current fleet management system limits the ability of the department to systematically assess the number of individual line items and the volume of individual parts retained in inventory. Assessing the value of the inventory and the appropriateness of the purchasing methodologies cannot be conducted without a more complete evaluation of the number and types of both purchase and use transactions. The availability of a more robust transaction management system as part of a broader fleet management package would allow for a detailed assessment of inventory volumes.

The assessment of volume should address the most effective method of procurement for repair parts and supplies. The department has a number of part bids and contracts and makes aggressive use of interagency agreements for its procurement practices. However, the majority of parts and supplies are

acquired using blanket purchase orders that lack designated pricing targets or volume discounts. While establishing and maintaining formal contracts or blanket agreements for the majority of part requirements is time consuming and complex, it is the only practical method available to ensure that competitive pricing and overall service is being obtained on all part purchases.

A systematic and coordinated approach to parts contracting is necessary to get this result. The industry is structured such that many different pricing levels are available depending on the importance of the customer's business and the quality of its contracting methods. In order to garner the best possible pricing, the department should develop a formal process of parts contracting that considers the following factors:

- **Price versus total cost** – When developing contracts, it is important to keep in mind that the lowest price does not necessarily translate into the lowest cost. Rather, the School System must consider vendor service, location, delivery availability, and other similar factors when making purchasing decisions.
- **Price across product lines** – Sometimes, getting the lowest price on product “A”, product “B” and product “C” individually does not translate into the best price on product “A, B, and C” combined. Bundling products together on a single contract may mean a higher price on certain items in order to garner the best price for the overall group of items.
- **Logical grouping of product lines** – In general, the largest volume that can be concentrated with a single vendor will yield the best possible overall price and service combination. Given the diversity of equipment in the fleet, it will be impractical to concentrate all purchases with a single or even a small group of vendors. Nevertheless, the School System should strive to group product lines together to the extent possible in order to limit the number of vendors from which it is purchasing.
- **Service-based specifications** – Finally, the School System should recognize that service quality from its vendors is equally important to price. Parts contract specifications should incorporate expectations associated with product availability, delivery time requirements, account management, and other service oriented issues.

The diversity of vehicles and parts in the department's fleet represents a significant challenge for the effective management and control of parts inventory. The development of an acquisition strategy supported by logical policy statements and analysis from a well implemented inventory control system will promote increased vehicle reliability and reduce the cost of services.

#### **FISCAL IMPACT**

This recommendation can be implemented with existing resources and can begin immediately. Staff time to analyze parts use, count and document existing inventory values, and determine appropriate stocking levels would be the primary resource required for implementation. This recommendation should be implemented concurrent with the activities in **Recommendation 8-C.2**.

**RECOMMENDATION 8-C.4****Acquire and implement an effective fleet management information system and develop a parts contracting process.**

The acquisition of an effective parts management module will come as part of the overall process of acquiring a fleet management information system. However, it will require the development of specific parts management criteria for use in the solicitation document. These efforts could be completed at any time prior to the release of the solicitation. It is expected that this would require approximately two weeks of staff time.

The development of a parts contracting process is a longer term goal and would be far better supported after the acquisition of a fleet management information system. After a limited period of use, the department would have sufficient transaction data to fully evaluate the use of particular product lines and the volume of purchases from designated vendors. Once this material is available, the department can establish the market-basket of products that would allow for the best value proposition for purchasing. It is expected that this process could not begin until approximately six months after the new system is fully implemented.

**FISCAL IMPACT**

While there will be no additional incremental costs to acquire the parts management component of the fleet management information system, it is likely that incremental training would be required. One-time training costs are estimated to be approximately \$5,000 based upon four days of training at an average rate of \$1,250 per day. The fiscal impact of revised parts procurement practices cannot be reasonably estimated until improved data collection processes are established. Given the longer term nature of this recommendation, it would be at least two years before there was any fiscal impact of this type of change.

**OBSERVATION 8-D****Maintenance staffing and the established shift schedules are inadequate to support the current inventory of vehicles.**

The number of technicians required is dictated by the size, composition, and condition of the fleet it serves. An approach known as vehicle equivalent unit analysis is used to equate the level of effort required to maintain dissimilar types of vehicles to a common basis of comparison. A standard administrative sedan is given a baseline vehicle equivalent unit of 1.0. Work with other fleet organizations has shown that a vehicle equivalent unit of 1.0 consumes between 10 and 15 annual maintenance labor hours, depending on fleet condition. All other types of vehicles are allocated a vehicle equivalent unit value based on their relationship to an administrative sedan. For example, a police squad car is given a vehicle equivalent unit of 3.0. This means that a squad car requires three times the annual maintenance effort of a passenger car, or between 30 and 45 hours per year.

A vehicle equivalent unit value assigned to every unit in the School System's inventory results in a fleet total of 3,310 vehicle equivalent units. With this number the review team was able to evaluate the appropriateness of the current mechanic staffing level.

The standard American work week is 40 hours, or 2,080 hours per year (52 weeks x 40 hours per week). The actual hours available for productive labor are reduced by vacation, sick, and other paid time off. These reductions result in approximately 1,600-1,700 available work hours per year. Using these two factors, the review team estimated the number of technicians required relative to the total available.

**Exhibit 8-6** illustrates the staffing requirements:

**Exhibit 8-6  
Vehicle Equivalency Unit Evaluation**

Labor Component	Full-time Equivalent Positions	Hours
Available: 11.0 full-time employees at 1,600 available hours	11.0	17,600
Requirement: 3,310 vehicle equivalent units at 10-15 hours per vehicle equivalent units	20.7 – 31.0	33,100 – 49,650
Capacity excess / (shortage)	(9.7) – (21.0)	(15,500) – (32,050)

*Source: United States Air Force Vehicle Equivalency Unit Rating.*

As the exhibit indicates, the current complement of 11.0 full-time equivalent technician positions is approximately one-half the number of positions required to cover the service demands of the fleet. It should be noted that the analysis above assumes that all paid time off hours (sick, vacation, and personal days) are used by all personal, and that all available hours are put to productive use.

It would be preferable to evaluate the actual productive output of the technicians in order to further evaluate the adequacy of current staffing levels. However, the current data and collection methodologies are inadequate to provide an accurate portrayal of actual productivity. This fact and the above analysis illustrate the need to improve the use of information technology as discussed below.

The presence of a single shift in the fleet maintenance operation is further limiting the effectiveness of the maintenance program. Fleet maintenance services are most effective when they can be provided while vehicles are not in service, as the recent “fast lane” experience has demonstrated. Allowing for the provision of preventive maintenance and repair service during off hours generally results in higher rates of vehicle availability and a lower ratio of the number of spare buses required. However, the decentralized nature of vehicle domicile procedures greatly complicates off-hour operations because of the need for transport from and to the service center in those off-hour periods. Further analysis of maintenance costs and out of service rates is required to determine whether consideration of a second shift is a reasonable option.

**RECOMMENDATION 8-D.1**

**Provide additional staffing resources to the maintenance operation.**

Industry guidelines indicate that the department is significantly understaffed given the size and composition of the current fleet. The limitations of the current fleet management information system prevent a detailed assessment of current productivity levels to determine the number of additional technicians required. However, it is clear that additional staffing and a revised shift schedule would allow the maintenance operation to be increasingly responsive to the needs of an older fleet.

Assuming the department is able to support a more aggressive replacement schedule, the most reasonable approach would be to incrementally increase technician staffing while also realigning work

hours. Given a baseline requirement of approximately nine new technicians, the addition of as many as five additional technician positions should be considered immediately. This would allow for the employment of a range of technician types including light duty specialists to support the fleet and heavy duty specialists to support school bus maintenance. Additionally, this would provide a sufficient base of staff to support a second shift operation that would allow for buses and other fleet vehicles to be serviced when they are not being used.

The employment of additional staff would be a relatively straight forward effort that would follow existing School System hiring procedures. Given the training and in-servicing demands of any staff member, it would be valuable to create at least two and possibly three groups of employees that are hired at something approximating 60 day intervals.

### FISCAL IMPACT

Based on a recent bid prepared on another engagement, we estimate an average cost of \$41,000 annually for salary costs excluding benefits. Eleven additional positions would represent \$451,000 in additional expenditures when all positions are filled. It is both operationally preferable and fiscally responsible to phase any new positions in over time. Assuming an implementation schedule of three positions per year for three years and two positions in the final year, the fiscal impact is displayed in **Exhibit 8-7**. The exhibit ignores the effect of salary inflation.

**Exhibit 8-7  
Additional Mechanic Costs**

New Positions (Carryover positions)	2015-2016	2016-2017	2017-2018	2018-2019
3	\$123,000			
3 (3)		\$246,000		
3 (6)			\$369,000	
2 (9)				\$451,000

*Source: School Bus Consultants, LLC; Metropolitan Nashville Public Schools' Payroll report, 2013.*

### OBSERVATION 8-E

**The Transportation Department's preventive maintenance program is not robust enough to meet its needs.**

The preventive maintenance program is designed with a three-tiered or echeloned structure, using A, B, and C service levels that increase from a basic lubrication and general inspection (Level A) to an intensive full service of the chassis and mechanical subsystems (Level C) over the summer. Checklists for each service level have been established but are generic. Details are provided at the most basic level feasible.

Detailed manufacturer recommended maintenance procedures and sub-unit maintenance cycles have been generally integrated into the overall preventive maintenance procedures for each type and model vehicle. However, specific repair procedures, intervals, and sequences have not been tailored to specific

vehicle types. This basic structure is driven by the limited number of staff available to perform the procedures. The competing time demands prevent the development of an extensive service array. Given the limited reporting capabilities of the School Transportation Information Management System, it is not possible to effectively evaluate the impact that a more aggressive schedule would have on costs.

### **RECOMMENDATION 8-E.1**

#### **Expand the scope of the preventive maintenance program.**

The need for a robust preventive maintenance program is particularly acute when fleet replacement programs have been underfunded in current and historical operations. Well designed and implemented preventive maintenance programs allow the fleet maintenance technicians to recognize and correct problems before they become expensive and cause disruptive breakdowns.

A multi-tiered program built on manufacturer's recommended service intervals that are based on both mileage and time will ensure that vehicles continue to be cost effective, safe, reliable, and environmentally responsible to operate. Expanding the current program to proactively service component and subsystem failures that are inherent in older units would reduce vehicle downtime and improve the ability of the department to effectively allocate resources across the organization.

The key to ensuring that any newly designed program is effective is to establish a rigorous methodology for scheduling, monitoring, and enforcing compliance with the program. Additionally, preventive maintenance programs should be thoroughly documented including the services to be performed and the procedures to be followed.

The scheduling and documentation process must be supported by a high-quality information system that has capabilities currently unavailable in the School Transportation Information Management System. The system should provide work orders that detail the services and procedures necessary to be performed at each interval. It is important that the system also provide department staff with information regarding compliance rates that can be used to monitor and enforce program participation. In addition, the system should maintain service hours and procedures to support the scheduling of services and the rescheduling of missed appointments. This is particularly important with the decentralized nature of the department's workforce and vehicle domicile.

The enhancement of the preventive maintenance program should, as indicated, be preceded by the acquisition of an enhanced fleet management information system. As part of the implementation of the new system, the department would evaluate the additional services that could be added to the preventive maintenance schedule to address known issues that have been occurring. Following this setup, the system would be able to generate service checklists that could be provided to technicians who have been assigned to provide these services.

### **FISCAL IMPACT**

This recommendation can be implemented with current staff at no additional incremental costs.

## **FUEL MANAGEMENT AND SUPPLY**

Fueling is one of the simplest but most critical components of the fleet operation. Fuel management includes monitoring fuel inventory levels, capturing and analyzing utilization data, evaluating fuel efficiency to identify possible maintenance issues, administering accounts receivable from users, managing user access, and ensuring the security of fuel sites and inventory. The use of commercial fueling operations necessitates a rigorous and structured audit and data management process so that accounts payable and accounts receivable balances are reconciled timely and accurately. Additionally, controls on the commercial fueling process must be established to ensure that appropriate data is captured and transferred to the fleet maintenance operation to support the scheduling of preventive and other maintenance services.

### **OBSERVATION 8-F**

#### **The availability of useful fueling data is limited by the setup of the commercial fueling card.**

The decentralization of fleet staging led to the development of a commercial fueling strategy. The School System currently contracts with Wright Express to provide fueling services at a variety of commercial facilities across the metropolitan area and throughout the region. Drivers are issued an access card for which they are personally responsible. This card is limited to the purchase of the designated fuel type (diesel or gasoline) for the type of vehicle the driver typically operates. Some supervisors and support vehicle drivers are allowed to purchase multiple fuel types and car washes using the fuel card. This group is very limited. Drivers with such cards are provided with receipt submittal requirements. They are advised of disciplinary procedures in the event of non-compliance.

The department has developed a weekly reconciliation process for these transactions that matches transactions to receipts submitted by drivers. This process identifies individuals who have not submitted receipts and individuals who have had five or more fueling transactions in a week. These are both sound processes to address both accountability and any potential abuse in the system. Earlier in this report, this process was cited as an accomplishment.

The primary concern with the current commercial fueling approach is the inability to integrate fuel transactions with the fleet management information system. Not all of the fuel cards issued require the entry of an odometer reading in order to obtain fuel, which limits the ability of the department to use this data for maintenance scheduling or management purposes. However, even if the system did capture odometer readings, the School Transportation Information Management System is not designed to allow for the import of that data such that it could be used for scheduling maintenance services. This basic functionality is inherent in every modern fleet information system.

### **RECOMMENDATION 8-F.1**

#### **Revise fuel management procedures to improve data available for maintenance services and analysis.**

The current data capture procedures should be revised to require all users of the commercial fueling card to enter an odometer or hour meter reading unless the equipment is specifically exempted. This structure should ensure that standard data validation practices are in place to ensure that the value entered:



- is not less than the previous value;
- does not include invalid readings such as 00000; and
- is not abnormally high or low for that particular unit (e.g., not more than 500 miles greater than the previous value).

The Wright Express system is used by many municipal fleets, including the Metropolitan Nashville Government, and commercial fleets while permitting of the functionality described above. Instituting these requirements may limit the fueling stations employees can use because it will be necessary to use only stations with the technical infrastructure on fuel pumps to support these requirements. However, the availability of this readily auditable data would substantially outweigh any minor inconvenience imposed on staff. After odometer data is validated, the department should work towards a process that allows for the uploading of fueling transactions into the fleet maintenance management system. This upload would provide a more complete understanding of the total cost of ownership, support preventive maintenance scheduling, and identify vehicles whose average fuel economy has changed, which may be an indication of underlying maintenance concerns.

The transition to a more robust commercial fueling strategy should be relatively simple from a technical perspective but will likely require enhanced employee training in the new procedure. Staff would be required to research the number of locations where fueling has occurred that could not support the new procedure and identify the feasibility of alternate sites for those staff. Training would then need to be provided regarding the importance of entering accurate meter readings at each fueling station. Finally, staff would need to be available to address instances involving cards that were invalidated due to incorrect meter reading entries. These instances would serve as an opportunity to reinforce the importance of proper data entry.

### **FISCAL IMPACT**

The primary cost associated with a revision to the commercial fuel management process is administrative. The School System would not incur any additional costs to use this functionality in the Wright Express network. However, limited administrative effort would be required to address issues of incorrect meter entries resulting in cards being denied and in training employees on the new process.

### **OBSERVATION 8-G**

#### **Internal fuel management controls require improvement.**

The School System uses a combination of fuel management techniques to support its decentralized bus driver workforce and a more centralized support services workforce. The first technique is a School System-owned fueling station located at the primary transportation maintenance center. There are two fuel tanks at this location. One is a 5,000 gallon gasoline tank and one is a 10,000 gallon diesel tank. Each of the pumps remains under lock and key and must and can only be opened by a transportation or maintenance supervisor.

The fleet manager manages in-house fueling. This individual is responsible for reviewing the reports for the automated tank monitoring system to ensure that there are no leaks. The employee is also responsible for ensuring compliance with state and federal inspection requirements and ordering fuel.

Fuel ordering occurs on an as needed basis using traditional bidding processes. Competitive bidding is appropriate for a fueling operation of this size and scope.

Transactions at the fuel depot are recorded on a log sheet located at the pump. There is no auditing process to ensure that all transactions are recorded. Additionally, there is no systematic process in place to transfer fueling data into any centralized system for purposes of fuel management. This deficiency is partially due to the inadequacies of the current fleet management information system and the nature of the manual system that is maintained.

### **RECOMMENDATION 8-G.1**

#### **Review existing onsite fueling services to determine whether a modernized fuel management system is warranted.**

The fuel system as currently configured is appropriately controlled to prevent abuse, but it does not effectively support secondary processes such as maintenance services. Acquiring a modern fuel pump management system would allow the capture of key transaction and maintenance-related data to support vehicle management and maintenance operations.

This data could be used for analyses such as the following:

- fleet sizing (Are there too many, too few or the right number of support vehicles?);
- systemic abuse (Are certain employees fueling at a rate and at a volume that indicates a negative impact on productivity?); and
- material ordering (Could the system get better pricing for fuel using an alternative to the current approach?).

Each of these analytical efforts has the opportunity to avoid cost and to reduce marginally near-term costs through more effective fleet management. While the cost of automated systems vary, it also may be possible to piggyback on existing contracts used by the Metropolitan Nashville Government in its fleet management operation. This would alleviate the burden and cost of the research, specification development and solicitation, and implementation costs associated with this type of product.

The decision to upgrade the on-site fueling facility would involve a more long-term project. Initial research could be conducted by staff in conjunction with Metropolitan Nashville Government fleet management staff to determine the feasibility of sharing contracts used for fueling infrastructure. If this option does not prove feasible, it would be necessary to develop competitive solicitations for fuel pump infrastructure. There are a number of these available publicly that could be reviewed and modified for use by the public system. It is estimated that this process would require approximately 18 to 24 months to implement.

### **FISCAL IMPACT**

The acquisition of improved fuel management technology and infrastructure for the onsite fuel location would require both one-time and ongoing expenditures. However, the magnitude of those expenditures is difficult to estimate until the method of acquisition is chosen. If the option to use existing Metropolitan Nashville Government contracts is available, that is likely to be far less expensive than the

one time purchase of this equipment due to the volume discounts likely to be received. Ongoing maintenance and software licensing costs would also be required if the infrastructure were upgraded.

## **FLEET MANAGEMENT**

One primary goal of every fleet management program is to provide a suitable and reliable fleet of vehicles in a cost-effective manner. Effective fleet management includes developing specifications for new and replacement vehicles, planning and managing the acquisition and disposal of fleet assets, managing vehicle licensing and titling procedures, monitoring vehicle and equipment utilization, risk management, and ensuring regulatory compliance.

Capital replacement policies are the cornerstone of a fleet replacement program. Such policies are normally expressed as the age and/or mileage at which a particular class or type of equipment will be targeted for replacement. To be effective, these criteria should be reflective of several contributing factors, which include the following:

- economic tradeoff between capital and operating dollars;
- inherent useful life for the class of equipment;
- severity and type of use to which the class will be subjected;
- actual and/or perceived reliability of the class as it ages; and
- other qualitative factors, such as the importance of visual appearance, specific to a particular group that operates the class.

Although there should be flexibility provided within the constraints imposed by these criteria to shorten or extend the operational life of individual fleet units when justified by that unit's operating costs and relative reliability. This "repair versus replace" decision-making process forms the tactical component of the fleet replacement program. It provides additional structure and detail to the entire process.

### **OBSERVATION 8-H**

**The Transportation Department's vehicle allocation practices limit management discretion.**

The assignment of a vehicle to a driver is a critical management control concern related to the balancing of fleet utilization. The fall 2012 Procedure and Driver's Manual clearly indicates that the assignment of new buses is at the discretion of the board of education. However, it also provides for an allowance where new buses will be allocated based on a combination of seniority and current bus age and the creation of a joint management and work force committee related to fleet assignment. The manual does not provide for any procedure to detail the reassignment of an existing bus to better balance utilization.

### **RECOMMENDATION 8-H.1**

**Remove bus assignment procedures from the 2011-2012 Driver's Manual and assign as a management responsibility.**

Controlling asset allocation is a key element of cost control for any fleet organization. The fleet manager and executive director of Transportation should have sole discretion and accountability related to the allocation of vehicles such that it promotes the most advantageous cost and operational structure for the School System. Departmental standard operating procedures should be established to guide decisions regarding allocation strategies. Such procedures should consider vehicle age, mileage, and operating conditions. Employee groups should be encouraged to participate in the development of these procedures, but once established, authority and responsibility should reside solely with management and not with an advisory committee.

**FISCAL IMPACT**

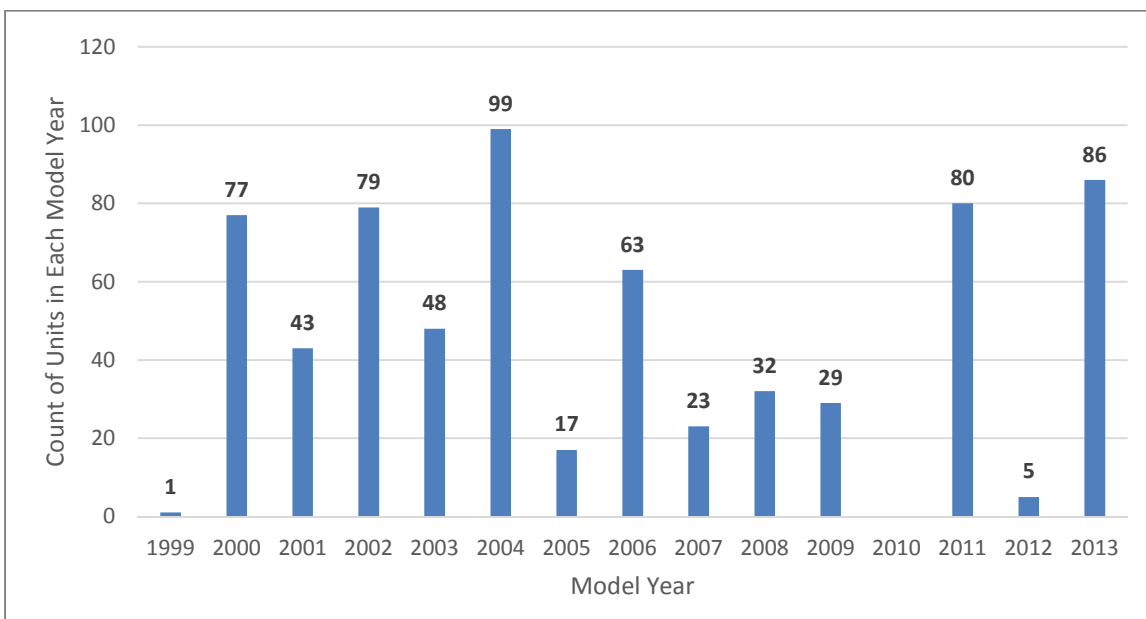
This recommendation can be accomplished with current staff at no cost.

**OBSERVATION 8-I**

**The funding process has not allowed for the timely replacement of vehicles consistent with established schedules.**

The School System has traditionally used cash financing to acquire all vehicles in its fleet. This practice has resulted in an ad hoc approach to vehicle replacement driven primarily by resource availability rather than a disciplined approach to vehicle replacement. This fact is clearly evident when analyzing the average age and mileage of the vehicle fleet. The average age of the School System’s buses is 7.6 years and about 125,000 miles. These numbers are above common industry guidelines. **Exhibit 8-8** indicates the distribution, by model year, of the School System’s buses. No purchases were made in 2010.

**Exhibit 8-8**  
**School Bus Model Year Distribution**



Source: Metropolitan Nashville Public Schools’ Data, School Bus Consultants, LLC Chart.

**Exhibit 8-9** summarizes the age and mileage distribution of the School System’s buses.

**Exhibit 8-9  
Age and Mileage Distribution of School Buses**

		Bus Mileage				Total	
		>500,000	>=350,000 to <500,000	>=200,000 to <350,000	>=100,000 and <=200,000		<100,000
<b>Bus Age</b>	>15					1	<b>1</b>
	>=12 and <15	7	3	19	100	70	<b>199</b>
	>=10 and <12	7	2	6	84	48	<b>147</b>
	>=8 and <10	1	4	2	50	23	<b>80</b>
	>=6 and <8	2	3	1	23	26	<b>55</b>
	>=4 and <6	4			11	14	<b>29</b>
	>=2 and <4	2	4	2	2	70	<b>80</b>
	<2		1			90	<b>91</b>
<b>Total</b>	<b>23</b>	<b>17</b>	<b>30</b>	<b>270</b>	<b>342</b>	<b>682</b>	

Source: Metropolitan Nashville Public Schools’ Data, School Bus Consultants, LLC Chart.

Current Tennessee law requires replacement of buses no later than 17 years of age or 200,000 miles of use. Typical desired replacement guidelines are between 12 and 15 years and approximately 200,000 miles. An analysis of the current age and mileage of the School System’s bus fleet indicates that approximately 35 percent of the fleet is at or beyond desired replacement criteria of over 12 years of age or more than 200,000 miles.

As can be seen in **Exhibit 8-8**, the significant number of purchases in 2000, 2002, and 2004 are of particular concern because these vehicles are all aging at the same time and thus will require replacement at the same time. These vehicles are scheduled for replacement in 2015, but were still in the fleet at the time of the review. The total fleet number of 682 buses includes 72 spare buses which includes some units used to provide services to charter schools. The industry standard for spare buses is 10 percent of the active fleet, which is consistent with the current number.

The number of buses in **Exhibit 8-9** in the equal to or greater than 200,000 miles category is 70 buses or 10 percent of the fleet. Absent some change to financing, it is unlikely that the School System will have the funds to replace these buses.

Proposed legislation in the previous state legislative session would remove the current age and mileage restrictions on fleet replacement. At the time of this report, the legislation had not been adopted. If this law is enacted, the School System would be required to undertake a more rigorous analysis of maintenance costs to determine replacement – a process, which is not feasible currently given the capabilities of the existing fleet maintenance information system.

The average age of the support vehicle fleet is 10 years and approximately 120,000 miles. Given the diversity of these units, there is no comparable overall industry guideline, but each unit type has its own established replacement cycles. Moreover, there are no legislatively defined replacement criteria for these types of vehicles. Therefore, they are more likely to be retained beyond reasonable time frames. Based on common industry cycles, it is clear that regular replacement of these vehicles has also not occurred.

**RECOMMENDATION 8-I.1****Develop a long-term capital replacement schedule and financing plan to support both school bus and white fleet replacement.**

The provision of consistent capital funding for the replacement of vehicles is a key element in any overall cost control strategy within a fleet operation. Minimizing the total cost of ownership, that is the combined capital and operating costs, must consider a variety of both regulatory and operational data elements. State established criteria for replacement generally require a ceiling from which vehicles must be replaced. However, an inability to fully aggregate and analyze the associated operating costs of units may prevent the department from identifying high cost units that should be replaced early as a result of a lack of capital funding.

While industry guidelines regarding the replacement of school buses vary, they generally target a fleet that is approximately 6 to 8 years old on average. For example, the Council of Great City Schools suggests using a benchmark of an average age fleet no older than 7.0 years while the National Association of State Directors of Pupil Transportation recommends replacement cycles of 12 to 15 years (implying a 6 to 7.5 year cycle in a normally distributed fleet).

Using a state requirement for replacement at between 150,000 and 180,000 miles with a current maximum of 200,000 miles, the School System's average replacement cycle would be calculated at approximately 12 years and 200,000 miles. Strong consideration must be given to the safety, reliability, cost effectiveness, and adequacy of active buses that are this age.

**Exhibit 8-9** demonstrates that 200 buses are at least 12 years old (representing 29 percent of total buses). As previously stated, nearly 35 percent of all units are at or beyond the replacement guidelines of between 12 and 15 years or approximately 200,000 miles. A projected replacement cost of approximately \$75,000 to the nearly 241 buses that would be due for replacement in 2015 would indicate that approximately \$18,000,000 of school buses are due or overdue for replacement.

Support vehicle fleets have much greater diversity and consequently many more considerations when developing a replacement schedule. Industry practices are well established in this area and have long been a staple of municipal and university fleets that operate similar unit types. The essence of all planning efforts involves the development of a projected replacement schedule using average time, mileage, or replacement cost criteria. This schedule is then evaluated for alternatives to traditional cash financing that may allow for the realization of a lower total cost of ownership and immediate improvements in fleet equipment and reliability. A major consideration in all of these analyses must be the indirect costs associated with downtime and spare vehicle retention that is inherent in older fleets.

The Transportation Department should establish a single inventory of all fleet and equipment assets requiring replacement and assign each a defined set of replacement criteria. Using existing age, mileage, and maintenance cost information, the department should project the replacement date of each asset over a multiyear (at least 10) period. Using current cost information, the department should then project the individual unit costs and the aggregate annual costs based on a reasonable inflation factor that will provide the system with a 10-year schedule of replacement and cost projections. This schedule could then be manipulated to reflect fiscal and operational plans to determine the following three key concerns:

- the dollar value of funding required to support agreed upon replacement criteria for vehicle and equipment across School System operations;
- the likely impact on operating expenditures if these funding requirements are not provided; and
- the viability of alternative funding mechanisms to support the acquisition of assets across all departments and functions.

The analysis of these three key concerns will ensure that policy makers and senior leadership within School System are fully informed of the operational and financial impact of capital funding practices.

### **FISCAL IMPACT**

Establishing the precise impact of implementing a more rigorous replacement of assets schedule can only be determined when the School System establishes a defined funding approach to finance the replacement of assets. Regardless of the approach chosen, there will be an ongoing and substantial fiscal impact to replace aging vehicles. Assuming approximately \$51,000,000 in total assets (682 buses requiring replacement multiplied by an average estimated replacement cost of \$75,000 per unit) and a maximum 17 year replacement cycle (under current law), the average annual replacement cost would be approximately \$3,000,000 in nominal dollars assuming cash financing (40 buses per year at \$75,000 each.) Use of alternative financing such as leasing or sinking funds would alter the annual funding requirement depending on interest earnings and the terms of any lease.

### **TECHNOLOGY USE AND AVAILABILITY**

The vast amounts of data related to maintenance, parts management, fuel management, and asset management that fleet organizations are required to collect and manage necessitates a robust information management system. Providing the fleet operation with ready access to repair histories, work standards, and inventory values is critical to effective operations, which includes planning, managing, and evaluating work. This goal can only be accomplished through the structured, disciplined, and organized collection and validation of data from daily operations. When data is accumulated in this manner, it will provide decision makers with the ability to analyze trends at various levels of detail. Without this information, fleet performance knowledge will be absent, which can result in less accountability and higher costs.

### **OBSERVATION 8-J**

**The existing fleet management information system is inadequate to meet the needs of the Transportation Department.**

The Transportation Department currently uses a system called School Transportation Information Management System as its primary fleet management information system. The system is networked through one shop location with multiple terminals for shop supervisors, technicians, parts management staff, and the fleet manager. Access to the system is controlled through a user name and password and administered within the Transportation Department. The system is equipped with multiple modules associated with the typical services provided by a fleet maintenance operation including the following:

- maintenance and repair;

- preventive maintenance scheduling;
- parts management;
- vendor management;
- vehicle master records; and
- fuel management.

The ability of the system to support the current business practices of the fleet maintenance operation and the proposed operational changes is limited. Specifically, the data capture, input, verification, processing, analysis, and reporting requirements of each business area in which the Transportation Department engages are inadequate, overly complicated, and unsecure. The following is a brief summary of system inadequacies in five major functional areas, which include:

- **Fleet Asset Management** – A primary function of any fleet management operation is the efficient and cost-effective management of vehicle and equipment life cycle costs. A fleet management information system is a critical element in the effective life cycle management of fleet assets. The ability to capture, retain, and analyze the pertinent data is the key function of the system. In this area, we evaluated the ability of the system to support the full life-cycle management of each asset in the department’s inventory including vehicle specification development, asset utilization, acquisition, in-servicing, replacement planning, disposal management, and financial and accounting requirements. School Transportation Information Management System does not provide for basic replacement planning functionality offered by modern fleet management information systems. At best, the system is an electronic filing application for basic fleet inventory information. In addition, the system does not interact with School Systemwide asset management systems so there are likely differences in the inventories maintained in both systems.
- **Fleet Maintenance and Repair** – Large fleet maintenance organizations are complex and data intensive operations that require substantial technological infrastructure to ensure efficient and effective management. The system must support a wide variety of activities including: preventive maintenance scheduling and compliance monitoring, work scheduling and assignment, work order control, performance measurement, and customer communications. School Transportation Information Management System offers basic work order management functionality in that it will record labor effort and parts transactions and will allow for job-based recording of repairs. However, it lacks specific job coding functionality, technician management, and analysis tools available in modern systems.
- **Parts and Materials Management** – As a major adjunct to the maintenance and repair functionality, the effectiveness of any fleet maintenance operation will be dramatically affected by the acquisition, management, and provision of replacement parts. The fleet management information system is a key tool supporting the management and control of parts inventories. This includes the determination of what parts to stock, what parts to procure on an as-needed basis, and the control of inventory losses. School Transportation Information Management System allows for basic inventory management in that it records the use and acquisition of parts by individual item number and type. However, it lacks functionality to support the establishment of economic order quantities or to conduct detailed analysis of use. Additionally, there are highly limited data exporting tools that would allow for use of third party productivity software to assess inventory management practices.



- **Preventive Maintenance Management** – A significant inadequacy is in the preventive maintenance scheduling module. While the system has basic functionality to develop multi-level preventive maintenance programs, it is difficult to customize the programs to specific vehicle types and class codes of individual units. Additionally, the job coding functionality (the description of the types of services required) is inconsistent with current fleet management best practices. This prevents detailed analyses of system failures that would support targeted revisions to the preventive maintenance programs to avoid more costly and disruptive repairs.
- **Fuel System Functionality** – Fueling is one of the simplest but most critical components of the fleet operation. Providing users with the fuel necessary to accomplish their missions is only a small part of the operation. Fuel management includes the ability to provide operations managers with the data necessary to effectively schedule maintenance procedures, evaluate fuel efficiency, and identify potentially underutilized assets. There are currently two types of fuel transactions, neither of which is integrated with the School Transportation Information Management System. The system does not accept uploads from the system's commercial fueling provider. Additionally, there is no electronic capture of School System provided fuel and no process established to transfer manually captured data into the system. Moreover, the failure to capture odometer readings negatively affects preventive maintenance planning.

Operations that support large, diverse fleets such as the School System's require a robust data management tool that supports both the volume and complexity of transactions inherent to fleet maintenance services. The existing School Transportation Information Management System is, at best, marginally adequate to support the data collection and analysis requirements of an operation the size and scope of the School System. The most robust feature of the system is the vehicle master record, which allows for storage of all the necessary data to maintain a proper administrative and financial history of a vehicle. In virtually all other aspects of fleet maintenance, the system is inconsistent with current industry best practices and the analytical and reporting needs of the Transportation Department.

#### **RECOMMENDATION 8-J.1**

**Continue efforts to acquire, implement, and integrate a fully functional fleet management information system as soon as feasibly possible.**

The department has already identified the inadequacy of its existing fleet maintenance information system as a major impediment in its effort to transform the operations of the fleet function. Efforts continue to investigate alternatives to the existing system and the financial and operational impact associated with any system transition. We fully support and encourage the continuation of this effort and would recommend that the acquisition process be accelerated such that a system can be acquired during the 2014 calendar year.

The current fleet information system indicates that it is inadequate to support the current and future operations of the department. In addition, current plans to increase the magnitude of the performance measurement program cannot be implemented unless the functional inadequacy of the existing system is addressed. As part of this technology initiative, the department should also begin a systemwide upgrade of its fueling technology and fuel management practices (see the Fuel Management and Supply section of this report). An integrated implementation of these systems, and the processes and

procedures required for their use and management, would ensure that all necessary preventive maintenance and repair services are performed and accounted for in a manner that promotes cost effectiveness and operational efficiency.

The critical first step should be the development of a detailed request for proposal for a fleet management information system. The request for proposal should detail all of the functional and integration expectations of the system including:

- technician management;
- parts management;
- fuel capture and integration;
- asset management;
- preventive maintenance program design and scheduling;
- reporting and analysis; and
- integration with the routing software.

#### **FISCAL IMPACT**

Based on a recent bid prepared on another engagement, the estimated cost of system acquisition for a fleet of the size and complexity of the School System's would range from approximately \$80,000 to \$120,000. Annual maintenance costs for systems generally range from 10 to 15 percent of licensing costs. Taking the midpoint for the system results in a one-time cost of \$100,000. Annual maintenance at 15 percent of this cost would begin the second year at \$15,000 per year.

#### **COMPARATIVE COST ANALYSIS**

Performance measures are useful for improving the service delivery of transportation operations. Calculating quantitative measures of performance provides a starting point in analyzing performance. However, the resulting calculations should be considered in the context of the specific operational requirements and constraints faced by the School System. While some of these factors can be quantified, other important, albeit subjective areas, such as extra accommodations for special education students beyond those required for regular transportation, need to be considered as well. These accommodations may include special safety equipment as in safety vests, wheelchair tie downs, and additional onboard personnel needed for the safety and welfare of these students. In the case of the School System, these extra accommodations do include the additional monitors that are required on buses transporting students with special needs due to the Lopez Decree.

Two quantitative analyses were conducted to assess the efficiency of existing service delivery practices. The first analysis involved allocating each individual budget line item to a specific category of service. The second analysis was an assessment of routing services using School System data captured from the Edulog™ routing software. The data sources used were actual 2013 school year expenditures that were further adjusted to reflect non-budget costs such as benefits and do not include fleet depreciation or Metropolitan Transit Authority's pass costs. **Exhibits 8-10** and **8-11** summarize these analyses.

**Exhibit 8-10  
Allocated Costs**

	Total System Costs	Regular Education	Exceptional Education
<b>Total Costs</b>	<b>\$35,318,000</b>	<b>\$18,573,915</b>	<b>\$16,744,085</b>

Source: Metropolitan Nashville Public Schools' Allocated Budget.

**Exhibit 8-11  
School System Transportation Indicators**

UNIT TOTALS	TOTAL	REGULAR ED	EXCEPTIONAL EDUCATION	COUNCIL OF GREAT CITY SCHOOLS
<b>TOTAL BUSES</b>	682	480	202	-
<b>TRANSPORTED STUDENTS (ACTUAL)</b>	38,841	36,223	2,618	-
UNIT COSTS	TOTAL	REGULAR ED	EXCEPTIONAL EDUCATION	-
<b>ANNUAL COST PER STUDENT</b>	\$909	\$513	\$6,396	\$989
<b>ANNUAL COST PER BUS</b>	\$51,786	\$38,696	\$82,892	\$58,565
<b>DAILY COST PER BUS</b>	\$288	\$215	\$461	\$325

Source: School System Allocated Budget, Edulog™ Routing Software, and Council of Great City Schools.

In 2012, the Council of Great City Schools reported a median cost per student of \$989 for all transported students. The School System's cost per student is \$909 or 8 percent less than the Council of Great City Schools. The Council of Great City Schools also reported the median annual cost per bus for School System operated buses, for all services, to be \$58,565. The School System's annual cost per bus is \$51,786 or 12 percent lower than the Council of Great City Schools. All costs are calculated based on a 180 day school year.

**Exhibit 8-11** demonstrates that the School System's transportation operation is more efficient for regular education transportation but higher for exceptional education routing when compared to the Council of Great City Schools. These higher costs for exceptional education are attributable to the higher personnel requirements under the Lopez Decree. Furthermore, it is clear that exceptional education costs are disproportionate to regular education costs as the transported exceptional education population is seven percent of the total transported population but represents 47 percent of the total transportation budget. Nationally, the cost for transporting students with special needs is typically 6 to 10 times higher than transporting the regular student population. For the School System, the cost to transport students with special needs is over 12 times higher than the regular student population, on a per student basis.

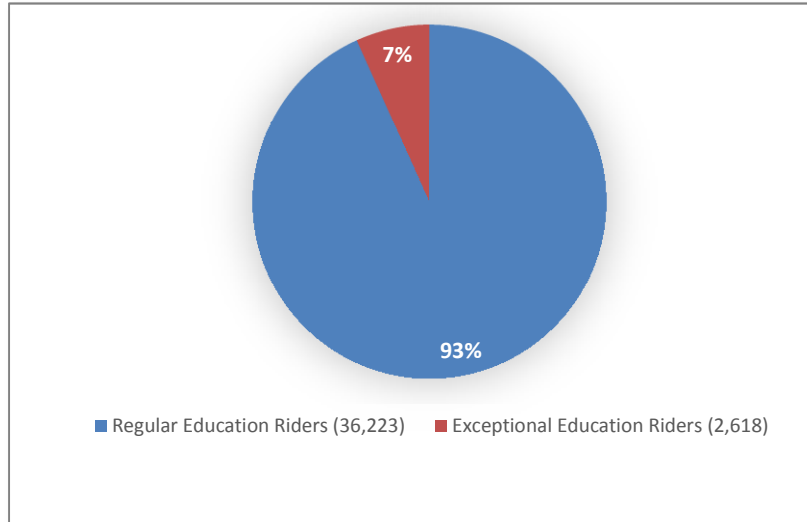
**OBSERVATION 8-K**

**The cost to provide exceptional education transportation is well above the national average on a per student basis.**

Due to additional accommodations and, at times, unique requirements for exceptional education students, the cost of providing transportation of students with special needs is always more expensive than the regular education delivery model. However, in the case of the School System, this cost is dramatically higher than the national average. A major operations budget line item associated with exceptional education students is bus monitor salaries and benefits. While monitors are required as part of the adherence to the Lopez Decree, it is an expensive requirement.

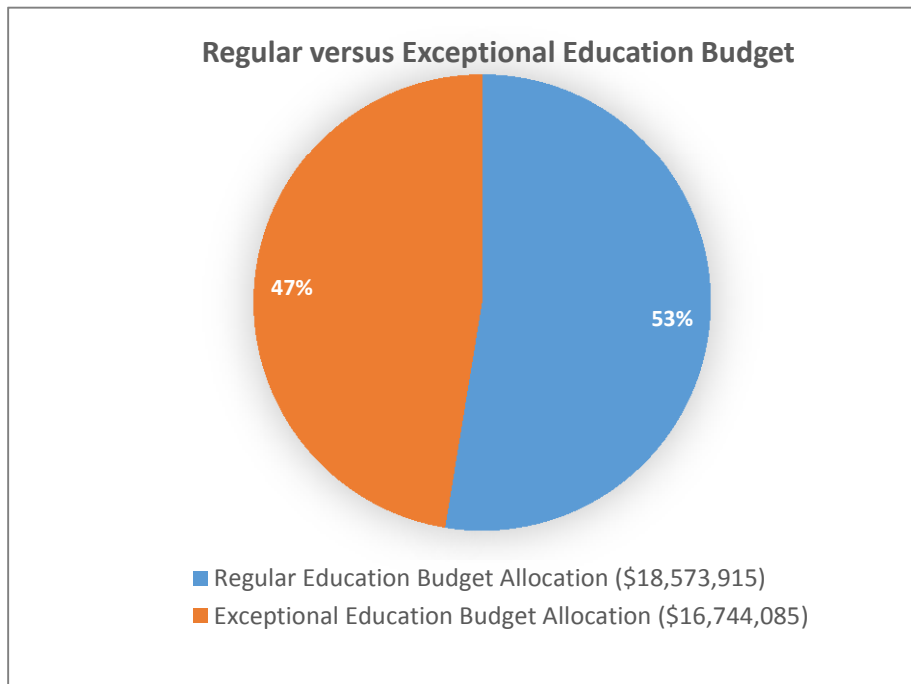
Exhibits 8-12 and 8-13 contrast regular and exceptional education ridership and the related budgets.

**Exhibit 8-12**  
**Regular Education Ridership versus Exceptional Education Ridership**



Source: School Bus Consultants, LLC Cost Allocation of School System Transportation Budget.

**Exhibit 8-13**  
**Regular Education Budget versus Exceptional Education Budget**



Source: School Bus Consultants, LLC Cost Allocation of School System Transportation Budget.

**RECOMMENDATION 8-K.1**

**Assign monitors to buses per Individualized Education Program requirements upon release from the Lopez decree.**

While it is not ideal to immediately cut back a service that has been provided for all students with special needs for several years, significant savings in the operating budget can be realized by reducing bus monitor salary costs by reducing the number of required monitors. Upon expiration of the Lopez Decree, bus monitors should be assigned to bus routes as directed by a student's Individualized Education Program and behavioral concerns rather than providing blanket coverage with monitors on all buses transporting students with special needs. There is no savings to the School System unless the employees become a function of a reduction in force. Should that decision be made by the School System, potential cost savings exist, as noted below.

**FISCAL IMPACT**

**Exhibit 8-14** displays the cost per student key performance indicators associated with exceptional education student transportation. The cost per exceptional education student is well above the national average as is the ratio of monitors per exceptional education bus.

**Exhibit 8-14  
Cost Per Exceptional Student Key Performance Indicators**

	National Average	Metropolitan Nashville Public Schools
<b>Transportation – Percent of Total Budget</b>	<b>4%-6%</b>	<b>4.8%</b>
<b>Cost per Student</b>	<b>\$650-\$850</b>	<b>\$909</b>
Regular Education	\$520-\$546	\$515
Exceptional Education	\$4,160-\$5,460	\$6,396
<b>Annual Cost per Bus</b>	<b>\$45,000-\$66,500</b>	<b>\$51,786</b>
Regular Education		\$38,696
Exceptional Education		\$82,892
<b>Exceptional Education Routes with Aides</b>	<b>55%</b>	<b>100%</b>

*Source: National Association for Pupil Transportation, School System Data.*

While the School System is required to have one monitor per bus, assigning them only as required by an individualized education program would yield savings. The national average for aides assigned to exceptional education routes is 55 percent. The fiscal year 2012 budget, the most recent that included transportation line items, indicates that aides salaries and benefits amounted to \$5,294,800 for 220 full-time equivalents. This amount equates to an average salary of \$24,067. With 202 exceptional education buses, 55 percent of monitors for these routes would cost an estimated \$2,671,437 ( $202 * .55 = 111 * \$24,067$ ).

When the Lopez Decree is no longer in effect, the annual savings would be \$730,032 (45 percent of aides no longer required =  $91 \text{ aides} * \$24,067 = \$2,190,097 / 3$ ) per year. This savings would reduce the cost per exceptional education student to \$5,559, which is very close to the upper end of the national average ( $\$16,744,085 \text{ budget less } \$2,190,097 \text{ savings} = \$14,553,988 / 2,618 \text{ special education students}$ ).

## **ROUTING EFFICIENCY ANALYSIS**

There are two primary steps to maximizing efficiency in a student transportation system. The first is to fill as many seats as possible on each bus run, known as “capacity utilization.” The second is to link as many bus runs to each bus as possible, a process called “pairing.” When both steps are effectively combined, the result is a greater efficiency within the routing structure resulting in a lower cost per transported student. **Exhibit 8-15** summarizes the indicators used to measure efficiency.

**Exhibit 8-15  
Routing Efficiency Indicators**

<b>Indicator</b>	<b>Purpose</b>	<b>Council of Great City Schools Guideline</b>	<b>School System’s Value</b>
Buses Used per 100 Students	This value provides an indication of the ability of the routing scheme to effectively utilize seating capacity and the ability of the bell time structure to support a multi-tier routing scheme.	1.0 to 1.3	1.2
Routes per Bus	This value provides an indication of how effectively the route development process is able to reassign buses to support multiple trips in a given day.	5 to 6 in a three tier system	5.5
Seating Capacity Use	This is an indication of how many available seats are scheduled to be filled through the route planning process. The greater the seats to be filled the more efficient the routing scheme.	50% to 60%	70%
Student Ride Time	Average student ride time provides an indication of service quality and an indication of available capacity with the time structure.	Dependent on bell schedule	51 minutes

*Source: Council of Great City Schools, Edulog™ Routing Software, School Bus Consultants, LLC Routing Analysis.*

The School System’s value of 1.2 buses used per 100 students indicates that it is effectively filling regular education buses. Moreover, capacity usage at 70 percent is above the performance guideline of 50 to 60 percent. It must be noted that these values were determined using actual load counts provided by transportation personnel from a semi-annual actual load count conducted each year. This is noteworthy because the number of eligible riders in the Edulog™ routing system was over 50,000 total riders. This figure placed the capacity usage at over 90 percent.

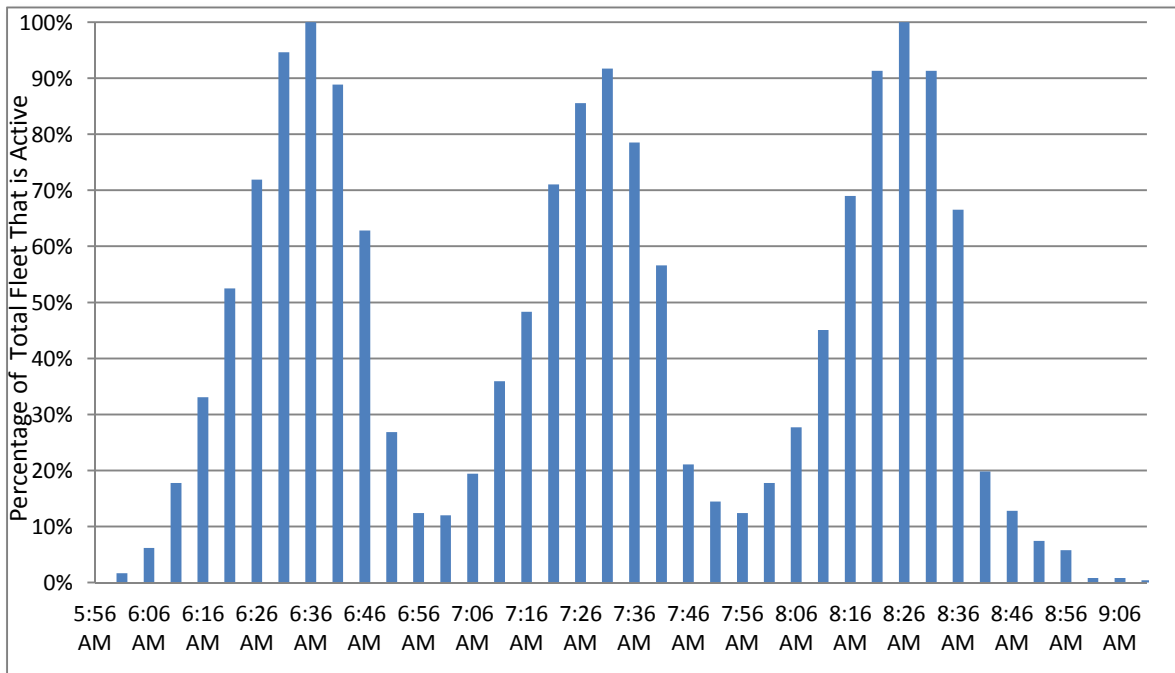
However, **Exhibit 8-18** in **OBSERVATION 8-I.2** shows there are buses that are overloaded which would skew the results. As the actual load counts were available, those values were used in these analyses. It is common practice in routing to overload buses where routing personnel know only a certain number of students are going to actually ride the bus. This is particularly true at the secondary level as 11th and 12th graders often drive or find alternative methods to reach school.

The School System's routes per bus per day value of 5.5, is in the mid-range of the guideline of five to six routes per bus per day. The average ride time value of 51 minutes is high considering that School System has a 55 minute routing window. Analysis of the Edulog™ route data indicates a low ride time of 14 minutes and high ride time of 2 hours and 19 minutes. This is one possible indication of the issues of late buses that have reportedly plagued the School System.

As discussed earlier in this category, one of the criteria for running an efficient system is to reuse the bus as many times as possible during the course of the day. The School System operates on a well-defined three tiered routing structure that has allowed for its performance measure in the reuse of buses to be 5.5, or in the middle of the guideline.

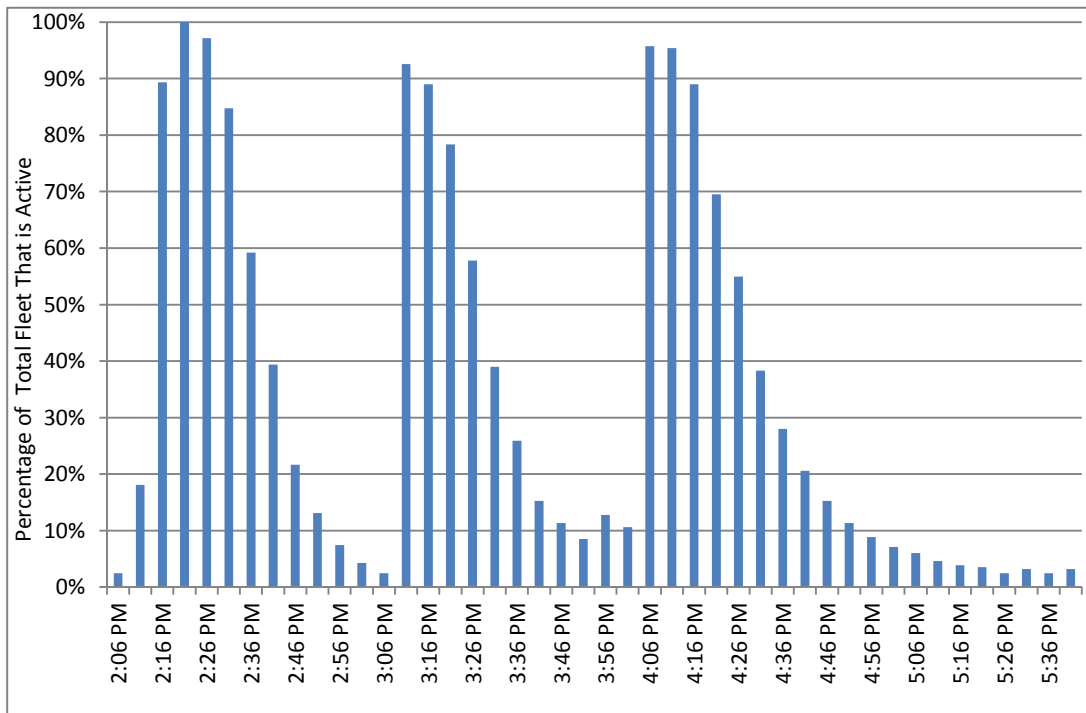
**Exhibit 8-16** and **8-17** illustrate the three tiered system in both morning and afternoon deployment of buses. The exhibits clearly illustrate the three, well-defined tiers that promote efficiency in the routing structure as it provides the opportunity to use fewer buses.

**Exhibit 8-16  
Morning Deployment of Buses**



Source: School Bus Consultants, LLC Routing Analysis Tier Model.

**Exhibit 8-17  
Afternoon Deployment of Buses**



Source: School Bus Consultants, LLC Routing Analysis Tier Model.

#### **OBSERVATION 8-L**

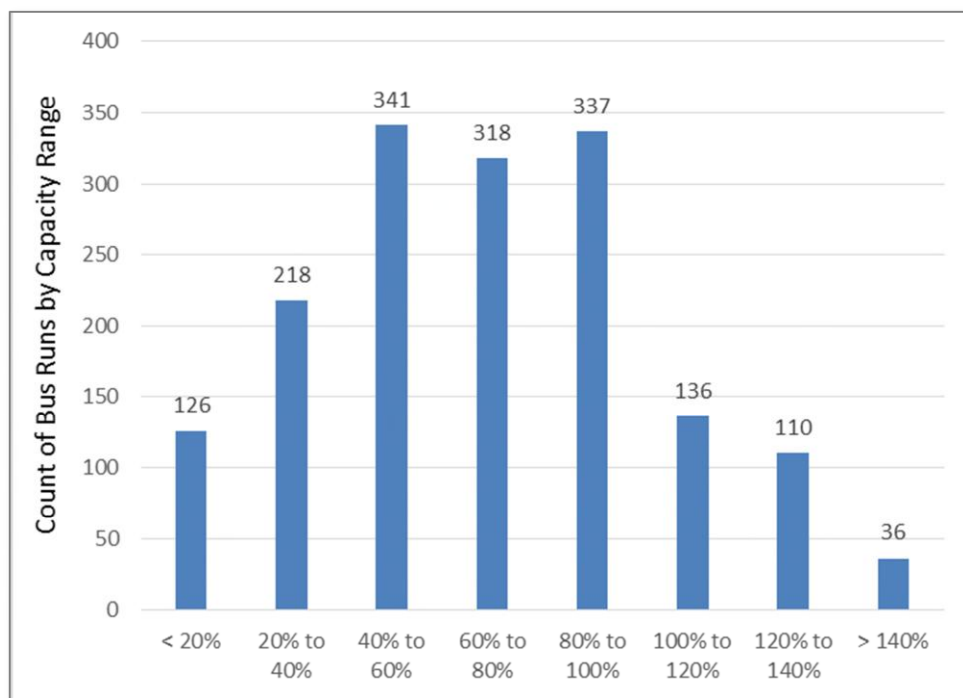
##### **Discrepancies exist between regular education planned ridership versus actual ridership.**

The School System uses routing software to plan daily bus routes for students. Using the Edulog™ software, 93 percent of available seats are filled in theory. In reality, through rider surveys performed by drivers bi-annually, it has been determined that the actual number is closer to 70 percent. Additionally, many buses have more students assigned than their rated capacity allows.

**Exhibit 8-18** is a summary of bus capacities in the School System’s planned environment. As shown, there are 282 routes that are planned for loads of greater than 100 percent of bus capacity, which represents 17 percent of total routes.



**Exhibit 8-18**  
**Percentage of Utilized Seating Capacity – Count of Total Runs**



Source: School Bus Consultants, LLC Routing Analysis.

### RECOMMENDATION 8-L.1

#### Analyze routes to include actual bus counts submitted by drivers.

When drivers perform audits of their route ridership, routers should use this information and reflect it in route planning. Route planning should be based on known capacities rather than on eligibility. This provides potential for routers to correct overcrowded buses, double routes, and reduce ride times, where required, that cause service delays. It also will result in more accurate bus lists. In case of emergencies, a potentially “missing” student will not be labeled as such because his or her status as a bus rider would be known.

An example of this audit process is the state of Florida, which requires school district and contracted drivers to audit their routes every day for one week. If a student does not ride the bus at all during the entire week of audits, they are removed from the bus assignment. The actual number of riders becomes the ridership number used for state reporting. More importantly, it provides an improved dataset of students who are actual riders. Therefore, routers can plan for actual riders versus planned riders. This provides an opportunity to reduce the number of buses required in the fleet.

#### FISCAL IMPACT

Establishing a process to reconcile planned riders versus actual riders can be completed with current resources and will not result in any additional costs. After this process has been established, it may be

possible to reduce the numbers of buses in use as the available supply better matches the demand represented by actual riders. It is not possible to quantify the potential reduction until the process to reconcile planned and actual riders on a route-by-route basis has been fully implemented.

#### **OBSERVATION 8-M**

##### **Methods of recording accurate mileage are labor intensive and outdated.**

The Transportation Department has a significant amount of records that must be maintained for multiple purposes including the number of miles a bus travels by day and by year. The existing method of maintaining this data is not easily accessible as evidenced by the need to submit multiple requests for total miles driven for the 2012-2013 school year for this report. Several attempts by the review team to obtain this data were met with statements that the data is not in one place and time consuming to gather in a report format. The purpose of the request was to determine the School System's accident rate for this report to help determine the safety record of the department. Mileage from the Edulog™ routing program only provides live mileage, or those miles driven with students on board the bus. A report of trip mileage was available but has not been confirmed to be accurate as to the date range of the report.

The amount of miles a bus travels for deadhead miles, or those miles traveled without students on board, was not available. As a majority of the School System's buses are parked at locations other than the central bus depot (park-outs), deadhead mileage results from the following:

- trips to and from the bus depot from the driver's park-out for maintenance;
- trips to and from outlying fueling locations;
- mileage from the park-outs to the first stop on bus runs; and
- mileage from the last school in the morning back to the park-outs and from the last stop in the afternoon back to the park-outs.

The amount of deadhead miles cannot be quantified at this time, but there is reason to believe it is significant. Without this mileage, a safety report would be skewed rendering a result that the School System's safety record may be better, or worse, than using the existing live and trip miles for results.

#### **RECOMMENDATION 8-M.1**

##### **Explore methods of recording all miles that make for easy retrieval of the data for reporting purposes.**

The School System should review the current methods of recordkeeping and explore improved options of data storage. The routing of buses may benefit from this information as well as an opportunity to reduce deadhead miles that can in turn reduce overall mileage and reduce paid driver time resulting in incremental savings to the School System. The amount of savings can only be determined if re-routing of buses were implemented and comparative cost analysis were completed before and after the re-routing.

The recommendation can be completed using existing personnel. Minimally, this information could be maintained in an Excel format or Access database for ease of reporting.

## FISCAL IMPACT

This recommendation can be implemented with existing resources.

## ALTERNATIVE SOURCING AND LEVERAGING OPPORTUNITIES

### **LEVERAGING METROPOLITAN NASHVILLE GOVERNMENT**

The review team explored whether there would be a strategic advantage to leveraging transportation resources provided by Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority.

Within this chapter, analysis conducted by the review team shows that the School System's Transportation Department is understaffed in the maintenance area and it has been recommended that additional mechanic staff be hired to fill this need. As an alternative to the direct employment of staff, the review team explored a shared services arrangement between the School System's Transportation Department and the Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority.

Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority would appear to be a natural partner for the School System given that the types of vehicles in operation are similar. This would appear to be particularly true in the area of fleet maintenance where the types of equipment (heavy truck and vehicle repairs with a more limited light duty fleet) appear similar. However, the similarity of vehicle type masks decidedly dissimilar operating protocols, financing mechanisms, regulatory infrastructure, and peak demand service periods.

Interviews with Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority indicated that the availability of excess resources within Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority to support the School System operations would be limited at best. Of particular note were potential contractual concerns with existing mechanic technician staff that may not allow for the transfer of this type of work. Additionally, Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority indicated no real availability of excess resources to support the School System.

The possibility of sharing infrastructure was also explored, particularly as it relates to fueling infrastructure. Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority indicated that in previous emergency situations, (including a major flood event in 2012), it had shared infrastructure with School System operations. However, the lack of physical space within the existing facilities would prevent a regular sharing of this type of resource without causing disruptions to both operations.

A final consideration was the sharing of technology resources between the two organizations. Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority uses a well-recognized maintenance management program. However, there were concerns expressed about the ability to extend access to the system due to both security and licensing issues.

Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority believes, and the review team concurs, that the functionality sought by the School System in a maintenance application would be more effectively met through the purchase of an application that was designed to support the unique demands of school transportation operations.

The limitations expressed related to availability of excess resources, limitations of size and scope of physical plant, and incompatibilities in technology greatly reduce the viability of shared services strategies between the School System and Metropolitan Nashville Government Office of Fleet Management Division of the Metropolitan Transit Authority.

### **PRIVATIZATION/OUTSOURCING POSSIBILITIES**

The review team also explored possibilities for fully outsourcing the transportation operation to a private outsourcing vendor that would include all buses, drivers, monitors, fuel, and maintenance.

School systems frequently turn to private companies to manage some support system functions such as transportation services in order to save costs or help them turn around deficit operations. Outsource providers generally focus on increasing productivity, lowering labor costs, route optimization and utilization of technology and purchasing power to save money. A national student transportation outsource provider analyzed the School System’s transportation financial statements and staffing composition to determine potential cost per bus route if they were to become the outsourced management company.

The national student transportation outsource provider calculated that the School System’s average annual cost per route is \$78,462 per year. They estimated projected contracted costs at low, mid and high points of \$66,390, \$69,456 and \$72,516 per bus, respectively. The outsource provider projected potential annual savings of between 8 to 15 percent may be achieved by contracting transportation services. These potential savings do not include extra-curricular activities involving transportation such as career fairs, twilight programs and field and athletic programs.

**Exhibit 8-19** shows the potential annual costs savings estimated by the outsource provider, if the School System were to outsource their transportation service program. The actual amount for contracted services will depend on the specific requirements contained in any request for proposal for transportation services to be issued by the School System.

**Exhibit 8-19  
National Student Transportation Outsource Provider  
Potential Annual Cost Savings**

<b>Outsourcing Considerations</b>	<b>Low Range Cost Savings Estimate</b>	<b>Mid-Range Cost Savings Estimate</b>	<b>High Range Cost Savings Estimate</b>
MNPS’ Bus Routes	455	455	455
MNPS’ Cost per Bus	\$78,462	\$78,462	\$78,462
Expected Contracted Cost per Bus	\$72,516	\$69,456	\$66,390
Potential Savings per Bus	\$5,945	\$9,005	\$12,072
Potential Annual Savings – Dollar	\$2,705,000	\$4,097,300	\$5,492,700
Potential Annual Savings – Percent	8%	11%	15%

Source: McConnell Jones Lanier & Murphy LLP Review Team.

It was also noted in outsourced provider’s analysis that the School System has a total school bus fleet of 717 buses to serve 455 routes. This is far in excess of the industry standard of 10 to 15 percent spare buses. Vendor A suggested a total fleet size of 510 buses might be sufficient to handle the transportation needs of the School System.

**Exhibit 8-20** shows what a bus replacement schedule would look like assuming a total fleet size of 510 buses. The exhibit shows that a total of 205 buses would need to be replaced over the next five years. At an average cost per bus of \$90,000, a capital investment of approximately \$18,500,000 will be required. A benefit of outsourcing is that the national student transportation outsource provider will expend the capital to acquire the needed buses and include in the contract costs. It is possible that the student outsource provider can deliver services and make the needed capital investment for buses at a cost to the School System that is approximately equal to or less than is currently being expended without providing for bus replacement.

**Exhibit 8-20  
Bus Fleet Replacement Schedule – After “Right Sizing”**

	Regular Vehicles	Percent of Total	SPED Vehicles	Percent of Total	Total Vehicles	Percent of Total
Total Initial Fleet Size	446	100.0%	227	100.0%	673	100.0%
Excluded due to right sizing	118	26.5%	45	19.8%	163	24.2%
New Fleet Size	328	100.0%	182	100.0%	510	100.0%
Replace at end of '14-15	0	0.0%	0	0.0%	0	0.0%
Replace at end of '15-16	16	4.9%	24	13.2%	40	7.8%
Replace at end of '16-17	36	11.0%	17	9.3%	53	10.4%
Replace at end of '17-18	98	29.9%	0	0.0%	98	19.2%
Replace at end of '18-19	14	4.3%	0	0.0%	14	2.8%
	<b>164</b>	<b>50.0%</b>	<b>41</b>	<b>22.5%</b>	<b>205</b>	<b>40.2%</b>

Source: McConnell Jones Lanier & Murphy LLP Review Team.

The review team believes that Transportation Department management and staff are capable of implementing the recommendations to improve internal operations contained in this report.

The review team also believes that the national transportation outsourced provider utilized a reasonable and appropriate methodology and rate structure to perform its assessment of the School System’s operation. Based on the assumptions included in the analysis, the review team believes the results are valid and useful for the School System’s assessment. If the School System were to undertake an effort to release a competitive solicitation for transportation services, it would be imperative that a full and complete definition of service expectations be provided. This is noted in the assessment when it is identified that actual savings could only be determined when the specific scope of services is released.

Any release of a competitive solicitation document must consider a variety of elements to ensure both competitive pricing and reasonable comparability to current services. These items include the following:

- **Management of stakeholder expectations** – outsourcing of publicly provided services can be a contentious and disruptive event if there is strong opposition to the transference of these services from the public to private sectors. Additionally, the development of a comprehensive response to competitive solicitation is a time consuming and expensive effort for vendor’s to undertake. Therefore, the School System must be prepared to define how it will determine the evaluation criteria that will determine whether outsourcing of services is in the best interest of stakeholders. Clarity of expectations will ensure that the process proceeds in a manner that maximizes support for the ultimate decision and offers vendors a clarity of expectation that can maximize pricing and service efficiency in response to the solicitation.
  
- **Definition of service expectations** – the degree of clarity and specificity related to service expectations that is included in a competitive solicitation is directly related to any risk premium that a vendor must incorporate into their pricing model. Therefore, it will be necessary to ensure that any solicitation defines parameters such as:
  - The maximum and average age of the fleet desired by the School System.
  - The type of routing scheme the vendor will be expected to support. This should include items such as the number of routes, route length (in time and mileage), depot locations, expectations regarding the availability of fuel, and supplemental service volumes (i.e., field and athletic trips). Vendors will use this information to model their own personnel and asset cost structure in order to provide the most advantageous pricing.
  - Expectations regarding provision of supplemental services including whether drivers and buses are expected wait with teams, whether there will be “drop-and-go” expectations, requirements for scheduling and cancellation, etc.
  - The use of transportation resources for outside services must be evaluated. As was mentioned, the department provides a number of services to the region that are not directly related to home-to-school services (warming centers for example). The desire to continue to make those services available and how to structure a pricing arrangement must be carefully considered.
  - Availability of the School System’s resources to vendors such as the shop and fuel site locations must be defined. In the case of the School System, this will be particularly important given the presence of a substantial portion of the fleet that is not domiciled at a central location. The consideration of how a continued use of this strategy might impact pricing due to the presence of significant deadhead miles must also be considered.
  - While there are a number of other components of an effective specification document, the items mentioned above have the most direct impact on the number of buses required, the parameters associated with the use of those buses, and the likely cost structure of the vendor. When developing the specifications package the School System must be cognizant of the fact that anything that influences the number of buses or the time required will have an influence on total cost.

- **Evaluation framework** – in order to fairly compare the responses received as part of a solicitation to existing operations, an evaluation rubric must be established prior to any review. As was mentioned above, this will ensure that all stakeholders are able to assess the viability of each response received. This must include considerations such as the fleet replacement requirements of current operations and the impact that services above and beyond the defined specifications will be assessed.
  - An important consideration associated with the potential for cost avoidance associated with capital replacement is any decision of financing strategy. The capital avoidance costs identified by the vendor are consistent with the annual totals identified by the project team in its analysis. Assuming the outsourced provider’s \$18,000,000 projected requirement over five years, a total \$3,600,000 per year on average would be required. The project team identified approximately \$3,200,000 per year in requirements. However, it is important to note that in both scenarios there is an assumption of cash financing for all replacements. To the extent that an alternative financing approach, such as leasing, would be pursued, the method used to evaluate projected vendor costs to the School System’s costs would necessarily require a more in-depth assessment.
- **Contractual management and oversight** – the method the School System chooses to oversee the contract will have a substantial influence on the potential savings to be realized in any actual implementation. The presence of a robust organizational structure responsible for the development of the actual bus routes and the evaluation of the vendor’s service should be strongly considered. This structure would ensure that the organization that is compensated for service delivery does not have control over how much service is being purchased. In any future proposal evaluation, the cost associated with this function must be deducted from the current School System’s costs or added to any vendor costs in order to properly compare the net cost savings that may be achieved.

The current departmental management should make significant efforts to implement the recommendations presented in this chapter. This will allow for continued improvement to further strengthen the Transportation Department’s operations.

Given the potential average annual estimated cost savings of \$4,097,300 per year, the School System should move forward with a formal request for proposal process during the 2014-2015 school year to determine if the savings opportunities can in fact be realized.

#### **FISCAL IMPACT**

Using the outsourced provider’s mid-range cost savings estimate, the School System has the opportunity to save \$4,097,300 annually beginning in school year 2015-2016 should they move forward with a formal request for proposal process.

**FISCAL IMPACT SUMMARY**

RECOMMENDATION		2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL 5-YEAR (COSTS) OR SAVINGS	ONE TIME (COSTS) OR SAVINGS
<b>CHAPTER 8: TRANSPORTATION</b>								
<b>8-A.1</b>	Reimburse the Transportation Department budget for expenses related to field trip expenditures.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-B.1</b>	Fill the vacant exceptional needs route planner position, and hire one route planner for regular education and one route planner for exceptional education.	(\$83,100)	(\$83,100)	(\$83,100)	(\$83,100)	(\$83,100)	(\$415,500)	\$0
<b>8-C.1</b>	Invest in a fleet maintenance management system with a robust inventory management module, which is critical to repair parts cost control and inventory management.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-C.2</b>	Develop inventory management procedures to guide the decision making process relative to stock and non-stock parts and operational practices.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-C.3</b>	Assess current stocking levels and establish and maintain bids and formal contracts for all parts procurement.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-C.4</b>	Acquire and implement an effective fleet management information system and develop a parts contracting process.	(\$5,000)	\$0	\$0	\$0	\$0	(\$5,000)	(\$5,000)



**FISCAL IMPACT SUMMARY (Cont'd)**

RECOMMENDATION		2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL 5-YEAR (COSTS) OR SAVINGS	ONE TIME (COSTS) OR SAVINGS
<b>CHAPTER 8: TRANSPORTATION</b>								
<b>8-D.1</b>	Provide additional staffing resources to the maintenance operation.	\$0	(\$123,000)	(\$246,000)	(\$369,000)	(\$415,000)	(\$1,153,000)	\$0
<b>8-E.1</b>	Expand the scope of the preventive maintenance program.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-F.1</b>	Revise fuel management procedures to improve data available for maintenance services and analysis.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-G.1</b>	Review existing onsite fueling services to determine whether a modernized fuel management system is warranted.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-H.1</b>	Remove bus assignment procedures from the 2011-2012 Driver's Manual and assign as a management responsibility.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-I.1</b>	Develop a long-term capital replacement schedule and financing plan to support both school bus and white fleet replacement.	(\$3,000,000)	(\$3,000,000)	(\$3,000,000)	(\$3,000,000)	(\$3,000,000)	(\$15,000,000)	\$0
<b>8-J.1</b>	Continue efforts to acquire, implement, and integrate a fully functional fleet management information system as soon as feasibly possible.	(\$100,000)	(\$15,000)	(\$15,000)	(\$15,000)	(\$15,000)	(\$160,000)	\$(100,000)

**FISCAL IMPACT SUMMARY (Cont'd)**

RECOMMENDATION		2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	TOTAL 5-YEAR (COSTS) OR SAVINGS	ONE TIME (COSTS) OR SAVINGS
<b>CHAPTER 8: TRANSPORTATION</b>								
<b>8-K.1</b>	Assign monitors to buses per Individualized Education Program requirements upon release from the Lopez decree.	\$0	\$0	\$730,032	\$730,032	\$730,032	\$2,190,096	\$0
<b>8-L.1</b>	Analyze routes to include actual bus counts submitted by drivers.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>8-M.1</b>	Explore methods of recording all miles that make for easy retrieval of the data for reporting purposes.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>TOTALS—CHAPTER 8 WITH IMPLEMENTATION OF REVIEW TEAM RECOMMENDATIONS</b>		<b>(\$3,188,100)</b>	<b>(\$3,221,100)</b>	<b>(\$2,614,068)</b>	<b>(\$2,737,068)</b>	<b>(\$2,783,068)</b>	<b>(\$14,543,404)</b>	<b>(\$105,000)</b>
<b>TOTALS—CHAPTER 8 WITH OUTSOURCING IN YEAR TWO* – Move forward with a competitive request for proposal to determine if the savings opportunities to outsource transportation can in fact be realized.</b>		<b>\$0</b>	<b>\$4,097,300</b>	<b>\$4,097,300</b>	<b>\$4,097,300</b>	<b>\$4,097,300</b>	<b>\$16,389,200</b>	<b>\$0</b>

## Management Response

TRANSPORTATION

	Recommendation	Concurrence and Corrective Action Plan	Proposed Completion Date
Management of Metropolitan Nashville Public Schools should:			
8-A.1	Reimburse the Transportation Department budget for expenses related to field trip expenditures.	<b>Partially Accept</b> This is a decision that must be made in context of the overall financial operations of MNPS. This will be studied and discussed during the 2015-2016 budget planning process; however, it is important to note that if implemented it will not impact the overall district budget since MNPS funds the transportation budget as part of its district operating budget.	July 2015
8-B.1	Fill the vacant exceptional needs route planner position, and hire one route planner for regular education and one route planner for exceptional education.	<b>Accept</b> Because of the current and ongoing implementation of a new school transportation software package, there will be necessary restructuring of the route planning and field trip planning functions of the department. The department has engaged the services of a transportation consultant to advise and support the restructuring and implementation of the new operating procedures, functions, and operations.	August 2015
8-C.1	Invest in a fleet maintenance management system with a robust inventory management module, which is critical to repair parts cost control and inventory management.	<b>Accept</b> New fleet maintenance software will be implemented in January 2015. This software includes a comprehensive inventory control system that is fully integrated with preventative maintenance and generates reports of the life cycle of every part in inventory. The fleet management application will have automated inventory controls using universal bar codes and other state-of-the-art inventory functionality.	January 2015
8-C.2	Develop inventory management procedures to guide the decision making process relative to stock and non-stock parts and operational practices.	<b>Accept</b> Fleet maintenance software will be implemented in January 2015. See response in 8-C.1.	January 2015
8-C.3	Assess current stocking levels and establish and maintain bids and formal contracts for all parts procurement.	<b>Accept</b> This process has been expanded and formalized with the functionality of the new transportation software and assistance from the MNPS Purchasing Department.	August 2014

## Management Response

TRANSPORTATION

	Recommendation	Concurrence and Corrective Action Plan	Proposed Completion Date
8-C.4	Acquire and implement an effective fleet management information system and develop a parts contracting process.	<b>Accept</b> A contracting/bidding process for parts was developed in collaboration with MNPS Purchasing and implemented in August 2014. Fleet maintenance software will be implemented in January 2015.	Parts contracting August 2014 Fleet Management January 2015
8-D.1	Provide additional staffing resources to the maintenance operation.	<b>Accept</b> Pending budget approval for the additional FTEs.	July 2015
8-E.1	Expand the scope of the preventive maintenance program.	<b>Accept</b> Based on the recommendations from consultants, MNPS will implement the recommendation by March 2015.	March 2015
8-F.1	Revise fuel management procedures to improve data available for maintenance services and analysis.	<b>Accept</b> This recommendation will be implemented in February 2015 as part of the implementation of new fleet management software. This software includes a comprehensive fuel management/reporting function that is fully integrated with preventative maintenance and will generate reports for the life cycle of every MNPS vehicle.	February 2015
8-G.1	Review existing onsite fueling services to determine whether a modernized fuel management system is warranted.	<b>Accept</b> A cost/benefit analysis will be performed by MNPS internal audit to determine the feasibility of a fuel management system for the on-site pumps. These pumps are locked and utilized by very few white fleet vehicles with limited availability.	March 2015
8-H.1	Remove bus assignment procedures from the 2011-12 Driver's Manual and assign as a management responsibility.	<b>Accept</b> Route bidding procedures will be deleted from the driver's manual and reasonable cost-effective driver assignment procedures will be established based upon MNPS need and not driver seniority.	Summer 2015
8-I.1	Develop a long-term capital replacement schedule and financing plan to support both school bus and white fleet replacement.	<b>Partially Accept</b> MNPS has a capital funding plan that includes all capital funding requests across the district. There is a 10-year plan and annual requests for capital funding. Allocation of funds is based on Mayor and Council Approval. Funding is available for some years, but not	Already in place

## Management Response

TRANSPORTATION

	Recommendation	Concurrence and Corrective Action Plan	Proposed Completion Date
		in others. This makes it difficult to plan long-term. The transportation department does have a bus replacement schedule that is based upon state law and maintenance history that shows the break point on years of service, mileage, and safety.	
8-J.1	Continue efforts to acquire, implement, and integrate a fully functional fleet management information system as soon as feasibly possible.	<b>Accept</b> MNPS purchased new school transportation software in August 2014. Implementation began October 2014. This is a comprehensive fully integrated fleet management software package that includes many features such as: bus management and maintenance, tools to allow parents and students to look up bus stops and estimated time of arrival, GPS tracking, routing and planning tools, tracking tools for student embarkation and debarkation, field trip scheduling and invoicing.	August 2015
8-K.1	Assign monitors to buses per Individualized Education Program requirements upon release from the Lopez decree.	<b>Accept</b> Release from the Lopez decree will allow for more flexibility and better utilization of existing bus monitors throughout the entire fleet. Metro Legal is currently (October 2014) working to request a release from this legal decree from 2009.	Dependent upon release from Lopez Decree
8-L.1	Analyze routes to include actual bus counts submitted by drivers.	<b>Accept</b> Transportation currently conducts this analysis twice yearly. Beginning with the 2015-16 school year, the transportation department will be conducting counts on a monthly basis.	July 2015
8-M.1	Explore methods of recording all miles that make for easy retrieval of the data for reporting purposes.	<b>Accept</b> Recording all miles traveled is a function of the new transportation management system software. Note that this GPS-based tracking system is also installed on the entire MNPS white fleet, which will also allow for monitoring of all white fleet vehicles.	August 2015
Chapter 8- Alternative Sourcing Recommendation (page 8-47).			

## Management Response

	Recommendation	Concurrence and Corrective Action Plan	Proposed Completion Date
	<p>Given the potential average annual estimated cost savings of \$4,097,300 per year, the School System should move forward with a formal request for proposal process during the 2014-15 school year to determine if the savings opportunities can in fact be realized.</p>	<p><b>Reject</b></p> <p>The assessment by First Student Inc. provided to the auditors was performed four years ago when the Transportation Department’s business model was different and under different management. The figures quoted are not indicative of the current operating model, nor can they be validated with the current audit data provided. In addition, bid estimates created from data in this audit report and offered by private providers does not include ‘in kind services’ (buses provided from the transportation budget for special events).</p> <p>Any RFP for outsourcing transportation services should make an equal comparison to the current management of field trips and other ‘in kind’ services provided by the MNPS transportation department. This means that any RFP for outsourcing transportation services should include the provision that all field trips and all ‘in kind’ transportation (buses provided for special events at no cost to the school) be included in the bid cost of operation as currently exists in the MNPS transportation budget.</p>	N/A