2019

Internal Audit of the Transportation Function

for the Fort Bend Independent School District

PREPARED AND SUBMITTED BY:

GIBSON

AN EDUCATION CONSULTING & RESEARCH GROUP

Contents

Chapter 1 – Executive Summary

Gibson Consulting Group, Inc. (Gibson) was engaged to conduct an internal audit of the Transportation function of the Fort Bend Independent School District (Fort Bend ISD/FBISD/the District). The primary goal of every school district's transportation department is to transport eligible students to and from school and approved extracurricular activities in a timely, safe, and efficient manner. This objective can be seen in the Transportation Department's (Transportation/the Department) mission statement which is "…to provide safe, efficient, and reliable transportation services to the students of Fort Bend ISD, so that they may access the educational and cultural opportunities provided by the district and become productive community members."[1]

Fort Bend ISD's Transportation Department is responsible for home-to-school transportation for regular program students and special program students. Transportation is also responsible for student transportation for summer programs, school activities, educational field trips, and extracurricular activity trips for all schools. Additionally, Transportation is responsible for maintaining the District's school buses and general service vehicles (white fleet) assigned to the Department.

Audit Objectives and Approach

The primary objective of this audit is to improve the efficiency and effectiveness of transportation services provided to students, while determining compliance with local, State, and Federal laws. The scope of the audit focused on answering the following questions:

- Has the District established comprehensive policies and procedures for transportation services, including those for eligible ridership? Is the district in compliance with those policies?
- Is Fort Bend ISD in compliance with all applicable administrative regulations?
- Do the employees responsible for transporting students meet all standards and qualifications set by the Texas Department of Public Safety? Do they have the necessary credentials required to perform their duties?
- Are vehicles accounted for and safeguarded?
- Are vehicles maintained and replaced according to Fort Bend ISD guidelines?
- Are reports, inspections, and maintenance data complete, accurate, and submitted in a timely manner?
- Are equipment and supplies inventories monitored and accurately recorded?
- Are fleet management services provided efficiently?
- Is fuel usage effectively controlled?

[1] https://www.fortbendisd.com/Domain/68

- Are bus routes and supplemental transportation scheduled efficiently?
- Are hazardous routes updated at least annually?
- Is the information submitted to the Texas Education Agency (TEA) regarding, routes, riders, and operational costs complete and accurate?
- Does Transportation operate within budgetary constraints?
- Is Transportation provided adequate resources to fulfill its goals?

In order to answer these questions, the audit team analyzed data provided by the Department and reports provided to the Texas Education Agency, conducted interviews and focus group sessions with staff and Transportation customers, and conducted site observations at the two FBISD bus operations and maintenance facilities. This information was triangulated to support the development of commendations, findings, and recommendations made in this report.

The following audit activities were conducted during this audit:

- Conducted a project kick-off meeting to orient the Transportation Department staff on the project objectives, scope, key activities, and timeline.
- Collected and analyzed data provided by FBISD, as well as publicly available data from the TEA's website.
- Conducted 38 individual and group interviews with Department administrators and staff and focus group sessions with Transportation customers (see interview roster in Appendix A).
- Conducted site observations at both the Lake Olympia and Hodges Bend facilities.
- Conducted audit testing of personnel files and fuel usage.
- Synthesized findings and recommendations into report deliverables.

This audit began in December 2018 and was completed in June 2019.

Audit Summary

The audit identified commendable practices for the Transportation Department and provides recommendations for potential improvement. Overall, principals were complimentary of the Transportation Department – particularly the professionalism of supervisors and drivers. Principals are a key stakeholder group and customer of a transportation department. The District has also been assertive in obtaining grants to support the expansion of the Compressed Natural Gas (CNG) fleet. This has relieved the General Fund of much of the investment in alternative fuels for school buses. Fort Bend ISD is also in the process of implementing a universal student identification card system, which will provide benefits to many district functions, including student transportation.

There are, however, several important issues that need to be addressed by the Transportation Department. Following are the most significant findings and themes made during this audit:

- **Driver shortage** – Like many school systems, FBISD struggles to fill driver positions, requiring other Transportation administrative and maintenance staff to operate routes. This interferes with the job duties of those positions. Further, the part-time driver pool is not currently a reliable source for substitute drivers.

- **Data integrity** – The Transportation Department has several data integrity issues that need immediate attention. Expenditure data reported to the state has been inaccurate the past two years and was $4 million off (out of $25 million in total expenditures) in 2017-18. A history of bus accident statistics shows extremely wide variations in the number and type (preventable, non-preventable, unknown) of accidents reported, causing doubts regarding the accuracy of the data. Fleet management (vehicle mileage) data are also missing or incorrectly recorded in the District's fleet management system.

- **Performance measurement and accountability** – The Transportation Department does not measure performance for its own operations or for monitoring its transportation contractors. Efforts to date have included employee-level recording of operating statistics, but not departmental measures that can be compared to long-term targets for efficiency and effectiveness.

- **Long-term planning** – Fort Bend ISD does not have adequate long-term plans in place for school bus replacement or for its CNG fleet.

This audit report contains 23 recommendations to improve the efficiency, effectiveness, and compliance of the District's Transportation Department, as shown in Table 1. The audit team assigned a priority level to each recommendation based on perceived risk and/or impact to the organization. Recommendations are not listed in order of priority but rather the order in which they appear in the report.

Table 1. Recommendation Summary

Priority	No.	Recommendation
Medium	1	Ensure job descriptions exist and are accurate for all Transportation positions.
Low	2	Create lead mechanic positions at the LOT and the HBT.
High	3	Reorganize the responsibilities for Special Transportation.
High	4	Implement data validation controls over financial data submitted in the TEA *Operations Report*.
Medium	5	Establish specific performance measures and targets for Transportation.
Low	6	Conduct surveys to obtain customer feedback.
High	7	Maintain an employee requirements annual checklist, complete with dates and approvals of when requirements are met.
High	8	Implement a performance monitoring system for contracted transportation services.

Priority	No.	Recommendation
Medium	9	Move oversight of the assignment of McKinney-Vento students and trips to FBISD Transportation.
Low	10	Pursue opportunities through developers and local and county agencies to create additional pedestrian infrastructure.
High	11	Implement procedures to improve recruitment and retention of bus drivers.
Medium	12	Improve management practices over the part-time substitute driving pool.
High	13	Eliminate the practice of requiring master mechanics to drive daily school bus routes.
Medium	14	Implement new work order reporting procedures.
Medium	15	Implement controls to improve security and monitoring of the parts inventory.
High	16	Develop a master plan for fueling and maintaining CNG buses.
High	17	Implement a training program for the Hodges Bend Terminal shop manager, mechanics, and servicemen who are responsible for the CNG bus fleet.
Low	18	Review fuel usage by facility for reasonableness monthly.
Medium	19	Adopt a policy for annual bus purchases and develop a 10-year plan for bus replacement and expansion.
High	20	Overhaul accident analysis and reporting procedures to ensure data integrity.
High	21	Enhance the new-hire training program.
High	22	Reorganize the FBISD Transportation Department training group.
High	23	Centrally track training history and requirements for each employee.

The remainder of this report discusses audit findings and recommendations in greater depth and is organized into the following chapters:

- Chapter 2 – Profile of Fort Bend ISD Transportation
- Chapter 3 – Organization and Management
- Chapter 4 – Transportation Operations
- Chapter 5 – Fleet Management
- Chapter 6 – Safety and Training

Chapter 2 – Profile of Fort Bend ISD Transportation

Fort Bend ISD is the largest school district in Fort Bend County and located southwest of Houston, TX on the northeastern border of Fort Bend County. The District covers 169.89 square miles[2] and serves 76,160 students across 79 campuses, as of December 2018[3]. Fort Bend ISD is comprised of a mix of rural, suburban, and urban areas, with much of its southeastern area still under development. FBISD student enrollment by school type is shown in Table 2. Forty-three percent of FBISD students are classified as economically disadvantaged, and 8.8 percent of students are classified as receiving special education services[4].

Table 2. FBISD Schools and Enrollment, December 2018

School Type	Number of Campuses	Student Enrollment
Elementary School	51	34,023
Middle School	15	17,808
High School	11	24,202
Specialty School	2	127
Total	**79**	**76,160**

Source: RN 37 Campus Enrollment_120418.xlsx, FBISD Transportation Department

Student enrollment growth is anticipated to continue on pace with historical trends (8.2% from 2012-13 to 2017-18). The December 2018 student count included in Table 2 is expected to increase by 5,842 (7.7 percent) by the 2023-24 school year and by 11,111 (14.6 percent) by the 2028-29 school year[5].

The FBISD Transportation Department transported 30,462 daily student riders between home and school in the 2017-18 school year[6], representing approximately 40 percent of students enrolled[7]. In 2017-18, the Transportation Department managed a fleet of 528 school buses[8] and operated 5,358,794 total annual

[2] TEA Public Open Data Site. *School District Approximate Area csv.* Accessed April 23, 2019 from http://tea-texas.maps.arcgis.com/sharing/rest/content/items/47a8009b308c4d5fa54ebf03dd9e1d3d/data.
[3] RN 37 Campus Enrollment_120418.xlsx, FBISD Transportation Department.
[4] TEA PEIMS Standard Reports, 2018-19
[5] RN 48 PASA Demographic Update – Fort Bend ISD – Feb 2019.pdf, FBISD.
[6] TEA Foundation School Program. *FBISD Route Services Report 2017-2018.* Includes regular and special education home-to-school / school-to-home transportation and transportation to and from approved career and technology classes not taught at the student's attendance campus.
[7] TEA Student Enrollment Report (2017-18) https://rptsvr1.tea.texas.gov/adhocrpt/adste.html.
[8] TEA Foundation School Program. *FBISD Operation Report 2017-2018.*

miles[9] to provide student transportation between home and school, for extracurricular trips, and other related miles[10].

In 2015, the District awarded a contract to Student Transportation Inc., operating as GoldStar Transit, Inc., (GoldStar) to operate 50 FBISD bus routes for specific campuses to be designated by District Transportation and the requested field trips for the campuses associated with the assigned routes. The contract could be extended for up to four additional one-year periods (through the 2019-20 school year) by mutual agreement. An amendment to the agreement for the 2016-17 school year increased the scope to a maximum of 70 bus routes, as designated by FBISD Transportation.

In August 2014, FBISD entered into a contract with American Logistics Company, LLC (ALC) to provide transportation for students under the McKinney-Vento Act's Education for Homeless Children and Youth program. This contract is performed on a service order basis, and ALC operates smaller vehicles appropriate to the type of service. The term of the current contract extends through July 2019.

Additional information about the contracts with GoldStar and ALC is provided in *Chapter 3 – Organization and Management.*

Transportation Facilities

Transportation operates out of two bus operations and maintenance facilities:

Lake Olympia Terminal (LOT)
3130 Lake Olympia Pkwy,
Missouri City, TX 77459

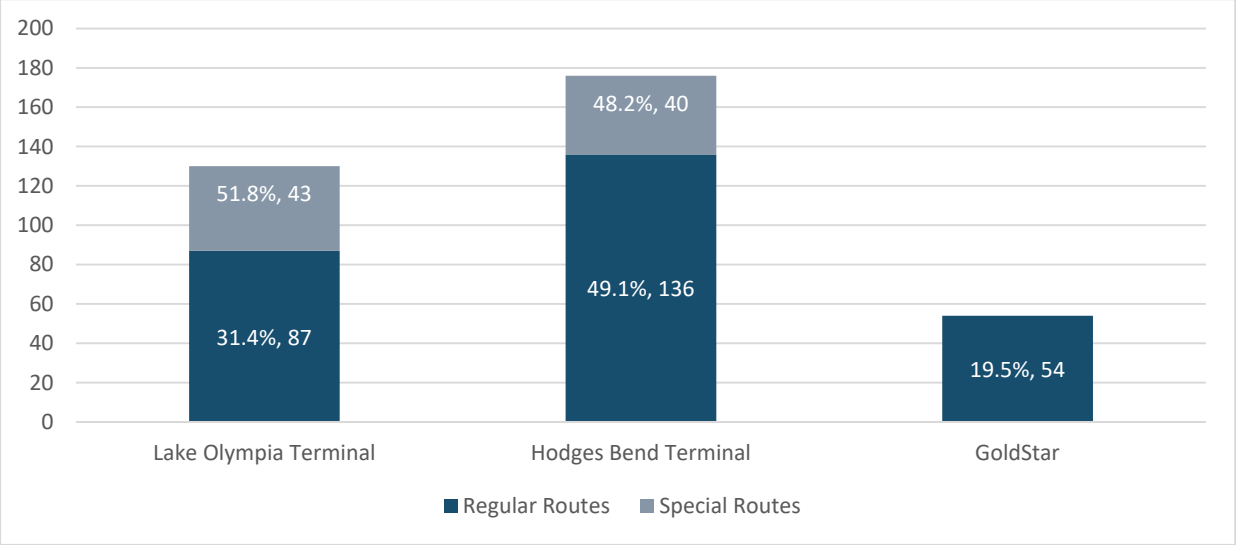
Hodges Bend Terminal (HBT)
16707 Bissonnet
Houston, TX 77083

GoldStar operates out of the LOT using a dedicated area of the parking lot and two maintenance bays in the maintenance building. GoldStar operations and training are managed out of a separate building located onsite at the LOT. ALC drivers and vehicles operate independently of FBISD. Detailed information about operations at these two facilities is included in *Chapter 5 – Fleet Management.*

Figure 1 provides the number of routes operated by each facility and GoldStar, separated by regular route and special program route. The percentages included on the figure represent the total percentage share each facility or GoldStar has of either the regular routes or special program routes. The split between LOT operated routes, including GoldStar routes, and HBT operated routes is nearly even, with the LOT operating three more special program routes than HBT.

[9] TEA Foundation School Program. *FBISD Operation Report 2017-2018.*
[10] The fleet of school buses and annual miles included transportation directly operated by the FBISD Transportation Department and transportation operated by a private contractor.

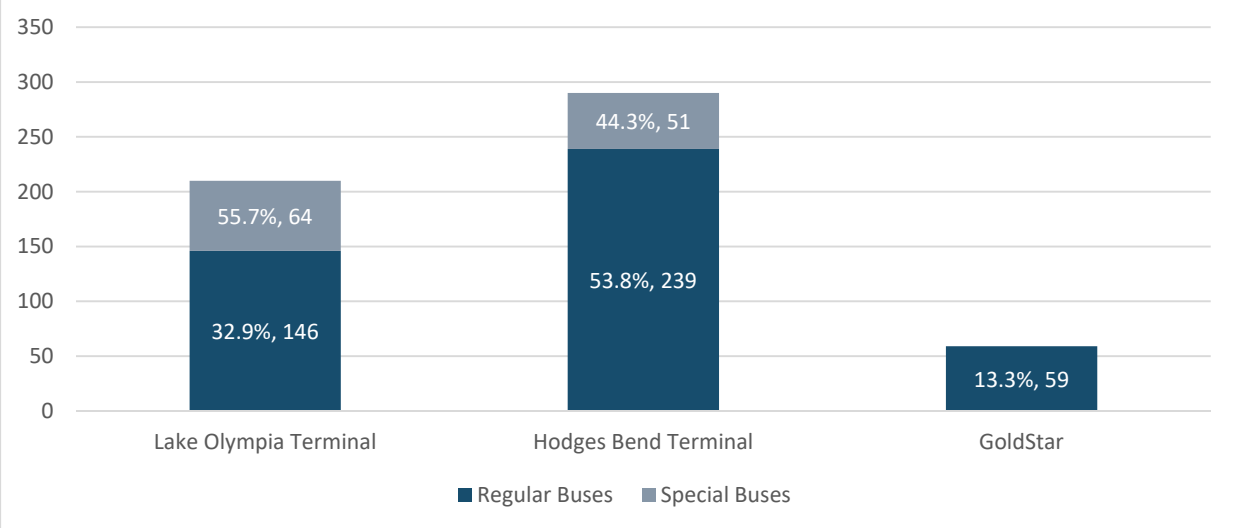
Figure 1. Regular Program and Special Program *Routes* by Facility, December 2018



Source: FBISD Transportation Department, RN 1 Organization Chart_120418.xlsx.

Figure 2 presents the distribution of buses assigned to each facility and is structured in a similar manner as Figure 1 above. The HBT accounts for nearly 54 percent of regular buses, and the LOT accounts for 46 percent of the buses, including buses provided by GoldStar. The Lake Olympia Terminal is assigned nearly 56 percent of the special program bus fleet.

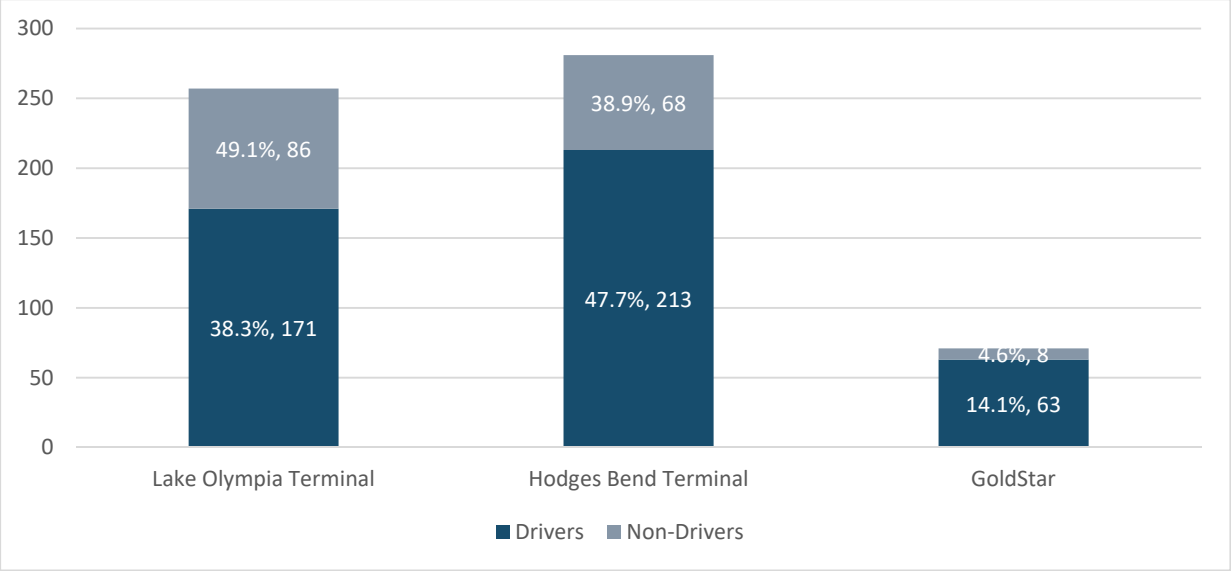
Figure 2. Regular Program and Special Program *Buses* by Facility, December 2018



Source: Source: FBISD Transportation Department, RN 79 School Bus Fleet Data and RN 102 FBISD Routes-Spares, FBISD.

Figure 3 shows Transportation employee assignment by facility, disaggregated by driver or non-driver positions by facility assignment. The percentage of drivers assigned to each facility closely matches with the percentage of routes, as discussed earlier in Figure 1.

Figure 3. Drivers and Non-Drivers by Facility, December 2018

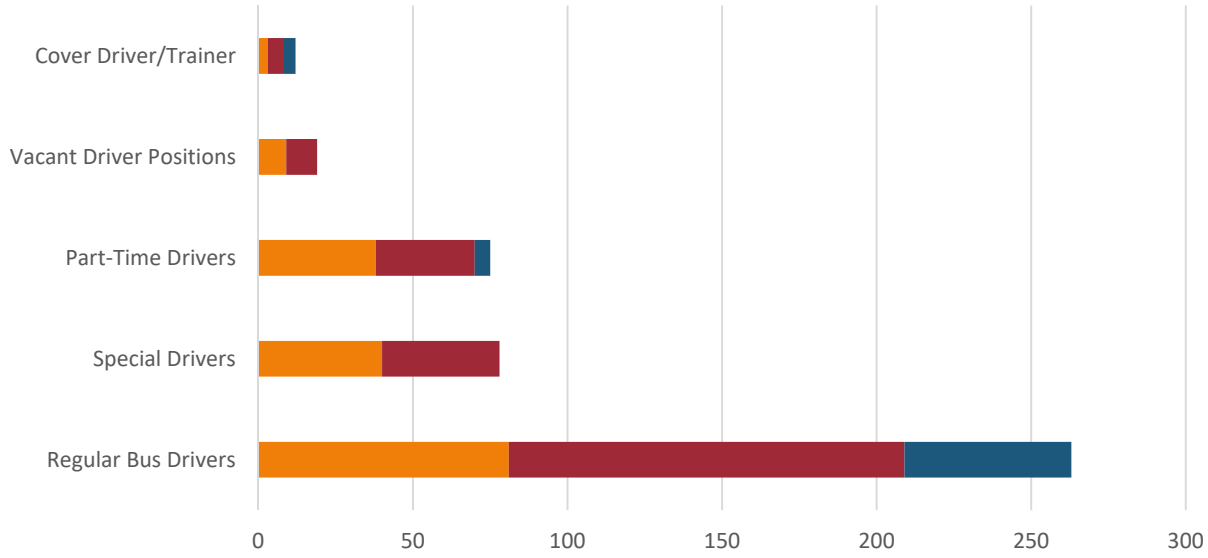


Source: FBISD Transportation Department, RN 1 Organization Chart_120418.xlsx and RN 101 Gold Star Staffing.docx

Figure 4 presents the number of drivers by driver category and by facility. Regular bus drivers account for 263 employees (58.8%) out of 447 employees included in the total driver pool. There are 135 regular bus drivers, including GoldStar employees, assigned to the LOT, representing 51.3 percent of the total regular driver pool. The remaining 128 regular bus drivers are assigned to the HBT. Special bus drivers, those employees responsible for operating special education routes and buses, are assigned evenly between both locations. There are 75 part-time drivers, 43 of which, including GoldStar part-time drivers, are assigned to the LOT.

There are 12 full-time cover driver/trainer positions, 7 at the LOT including GoldStar positions, and 5 at the HBT. GoldStar cover drivers are full-time drivers called "sub drivers." A sub driver's sole responsibility is to be present daily and to fill in for open routes. At the time of this audit, there were 19 total driver vacancies, 10 at the LOT and 9 at the HBT. Each driver category discussed above is discussed in greater detail in *Chapter 4 – Transportation Operations* of this report.

Figure 4. Drivers by Category and Facility, December 2018

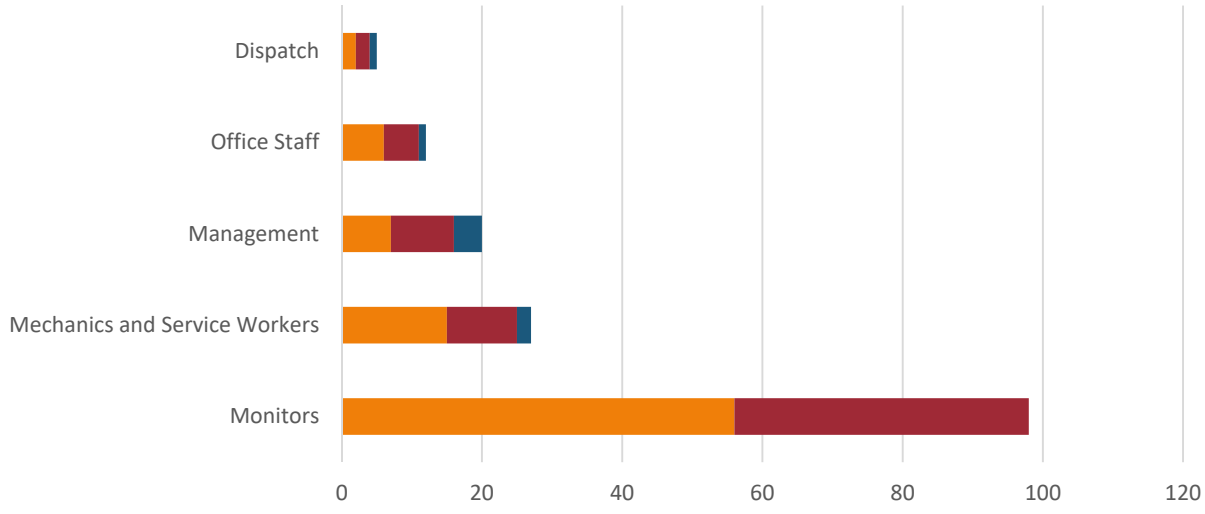


	Regular Bus Drivers	Special Drivers	Part-Time Drivers	Vacant Driver Positions	Cover Driver/Trainer
Lake Olympia Terminal	81	40	38	9	3
Hodges Bend Terminal	128	38	32	10	5
GoldStar	54	0	5	0	4

Source: FBISD Transportation Department, RN 1 Organization Chart_120418.xlsx and RN 101 Gold Star Staffing.docx

Figure 5 includes the number of non-driver employees by role and terminal assignment. There are 168 total employees in non-driver roles. This employee count includes six FBISD staff who report to the Central Transportation location, including the Executive Director, Routing Supervisor, two Routing Specialists, and two Field Trip Supervisors. These six individuals are not included in either Figure 4 above or Figure 5 below.

Figure 5. Non-Drivers by Role and Terminal Assignment[1], December 2018



	Monitors	Mechanics and Service Workers	Management	Office Staff	Dispatch
Lake Olympia Terminal	56	15	7	6	2
Hodges Bend Terminal	42	10	9	5	2
GoldStar	0	2	4	1	1

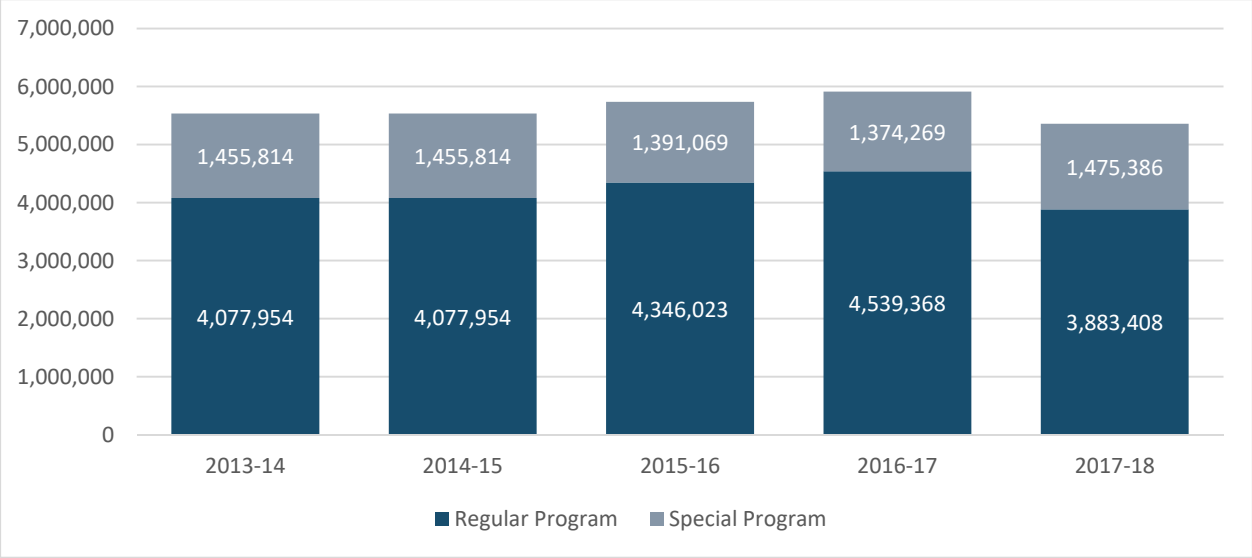
Source: FBISD Transportation Department, RN 1 Organization Chart_120418.xlsx and RN 101 Gold Star Staffing.docx

Note: Staff assigned to the Central Transportation facility are not included in the figure. Additional maintenance staff not included in this figure are 2 A/V technicians and 1 additional serviceman at the HBT.

Transportation Operating Statistics and Expenditures

Figure 6 provides a five-year analysis of odometer miles for the regular program and special program transportation. Notably, regular program odometer miles decreased in 2017-18 to the lowest level in five years. The reason for this reduction in miles is uncertain and could be caused by reporting errors or by an actual reduction in miles from buses driving less. Special program miles decreased between 2014-15 and 2016-17 by 81,545 miles, or 8.1 percent. In 2017-18, special program miles increased by 101,117, or 7.4 percent.

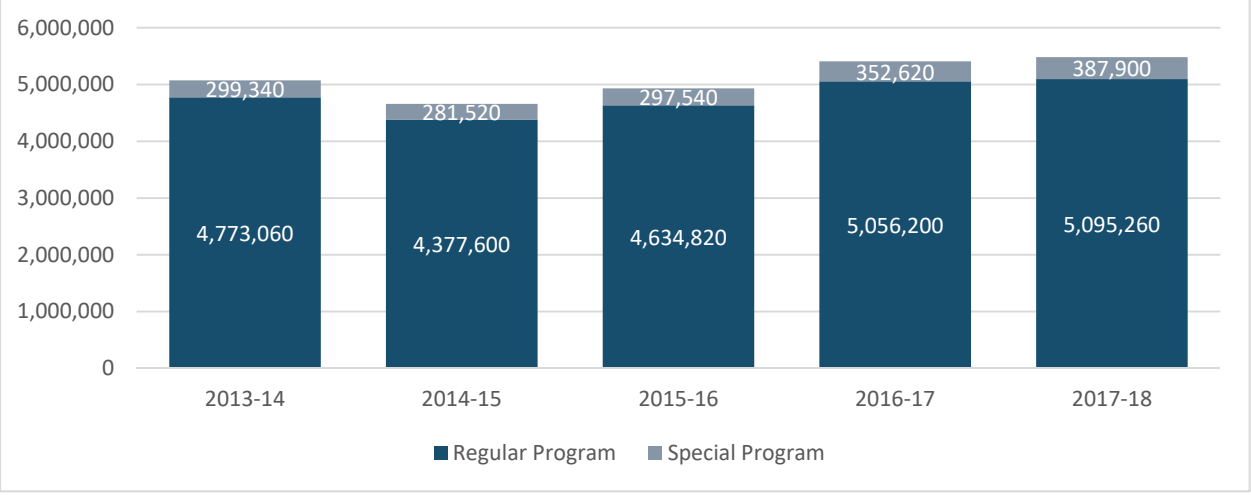
Figure 6. Odometer Miles by Program, 2013-14 to 2017-18



Source: TEA, Foundation School Program, Transportation Operation Reports, 2013-14 through 2017-18.

Figure 7 provides the number of annual student riders by program over the past five years. The number of annual student riders was calculated by multiplying the average daily riders by 180 school days, according to TEA procedures. Riders in the regular program have increased regularly from year-to-year (except in the 2014-15 school year). Since 2014-15, both regular and special program transportation have increased, but to different degrees. Special program ridership has increased 30 percent since 2015-16. Since 2015-16, regular program ridership has increased 10 percent, substantially higher than the growth in non-special education enrollment growth during this period (2 percent).[11]

Figure 7. Annual Student Ridership by Program, 2013-14 to 2017-18



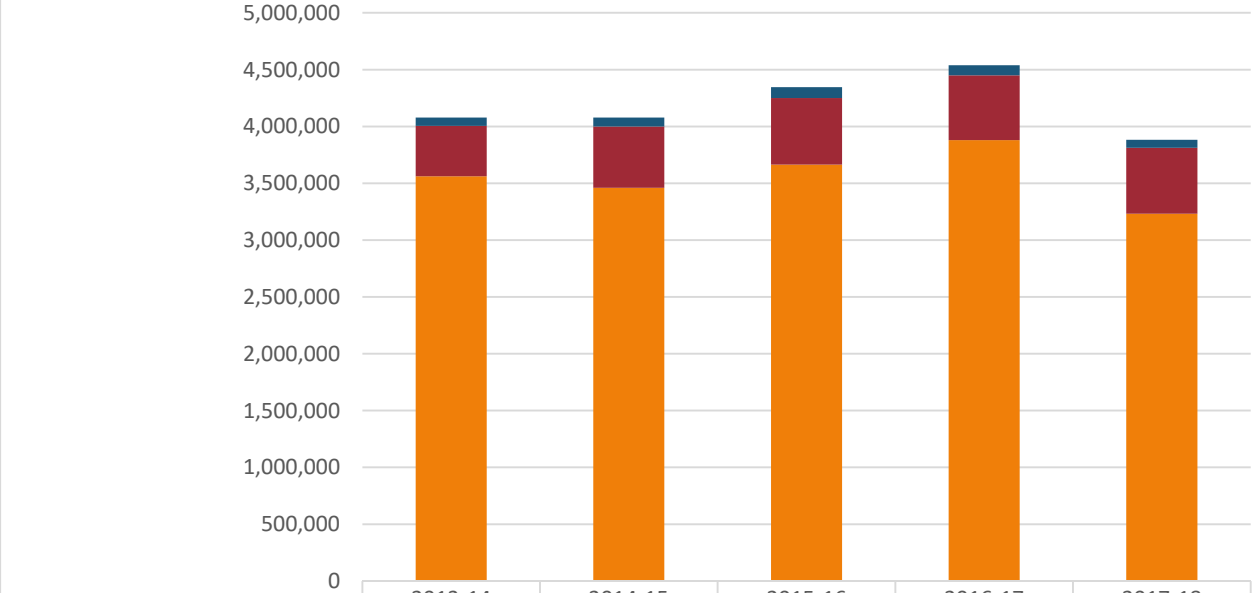
Source: TEA, Foundation School Program, Transportation Operation Reports, 2013-14 through 2017-18.

[11] Source: Texas Education Agency (TEA), PEIMS Standard Reports (Enrollment by Population Reports).

Figure 8 displays the regular education mileage by transportation type – route service, extracurricular, and other – for 2013-14 to 2017-18. Route miles for each program refers to all miles driven to deliver scheduled home-to-school and school-to-home routes and transportation to and from approved career and technology classes not taught at the student's attendance campus. Mileage amounts include "deadhead" mileage, which refers to miles driven between a bus terminal to the start of a route, driven between the end of one route to the start of another route, and driven from the end of a route back to a bus terminal. "Other" miles include transportation for non-school organizations and other uses, such as miles for driver training and miles required for maintenance.

The data shows that variability has occurred across all mileage types since 2013-14. Route miles peaked in 2016-17 before decreasing by 647,552 miles, or 16.7 percent, in 2017-18. Extracurricular miles generally have increased regularly from year to year and were up by 31 percent in 2017-18 compared to 2013-14. Other miles increased between 2013-14 and 2015-16 by 23,777 miles, or 32.7 percent the subsequently decreased each year, closely approximating the mileage in 2013-14.

Figure 8. FBISD Regular Transportation Mileage by Transportation Type, 2013-14 to 2017-18

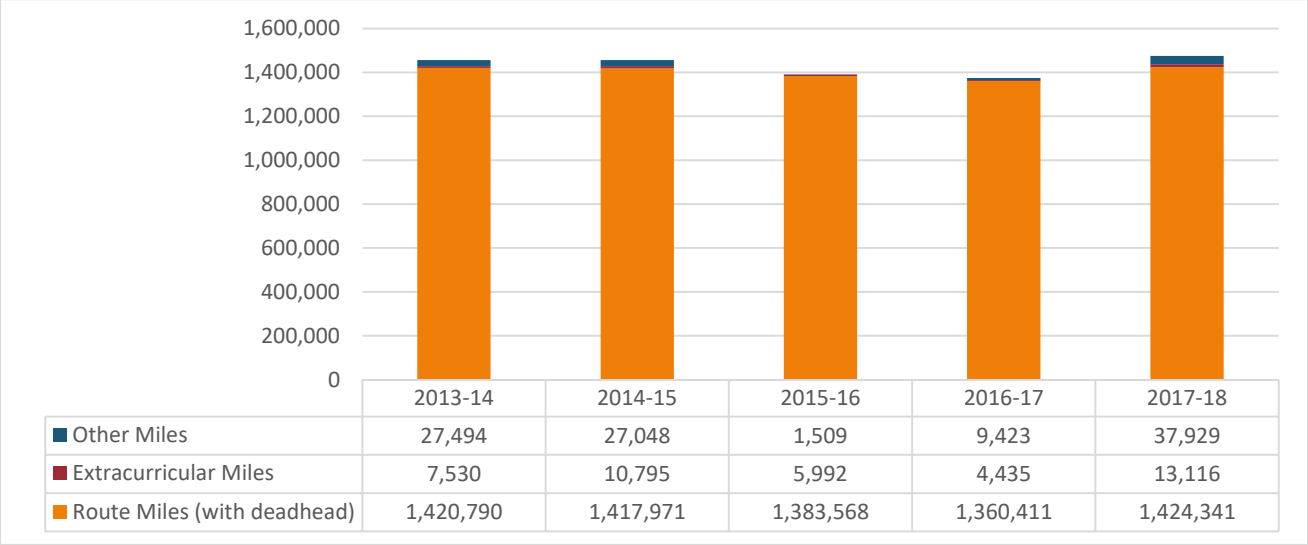


	2013-14	2014-15	2015-16	2016-17	2017-18
Other Miles	72,700	77,916	96,477	89,754	71,231
Extracurricular Miles	442,931	539,858	585,438	570,293	580,408
Route Miles (with deadhead)	3,562,323	3,460,180	3,664,108	3,879,321	3,231,769

Sources: TEA, Foundation School Program, Transportation Operation Reports and Route Services Reports 2013-14 through 2017-18.

Special program mileage is presented in Figure 9. Route miles decreased annually between 2013-14 and 2016-17 and increased by 63,930, or 4.7 percent, in 2017-18. "Other" special program miles varied between 2013-14 and 2017-18.

Figure 9. FBISD Special Program Transportation Mileage by Transportation Type, 2013-14 to 2017-18

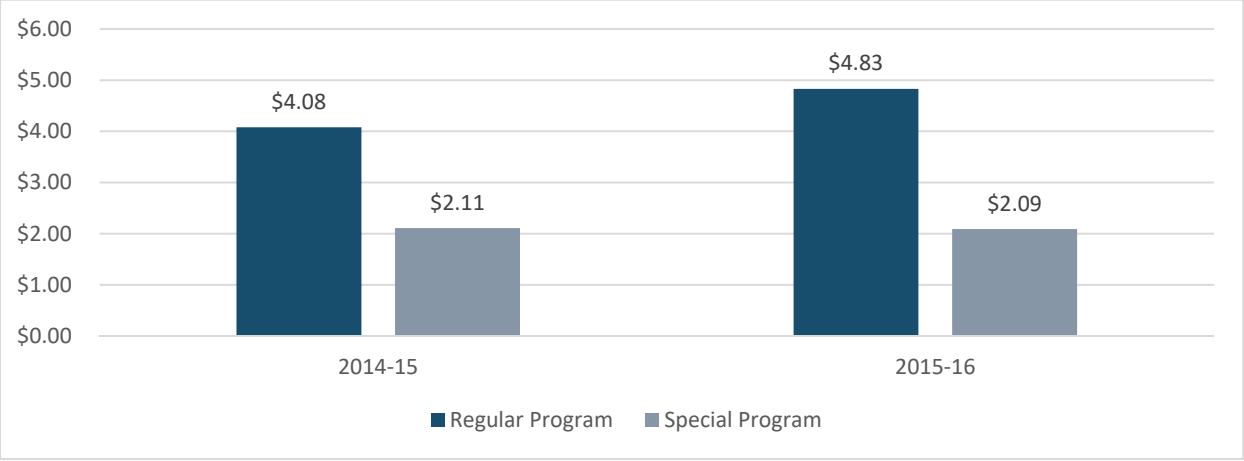


	2013-14	2014-15	2015-16	2016-17	2017-18
Other Miles	27,494	27,048	1,509	9,423	37,929
Extracurricular Miles	7,530	10,795	5,992	4,435	13,116
Route Miles (with deadhead)	1,420,790	1,417,971	1,383,568	1,360,411	1,424,341

Sources: TEA, Foundation School Program, Transportation Operation Reports and Route Services Reports 2013-14 through 2017-18.

Efficiency metrics were calculated using the above data and expenditure data for 2014-15 and 2015-16 only, due to data integrity issues with subsequent financial information (discussed separately under Finding 4 in *Chapter 3 – Organization and Management*). Figure 10 includes a two-year history of the operating cost per mile by program. Regular program operating cost per mile increased by $0.75 per mile, or 18.4 percent, during this time period. The special program operating cost per mile decreased by $0.02 per mile, or 1.0 percent.

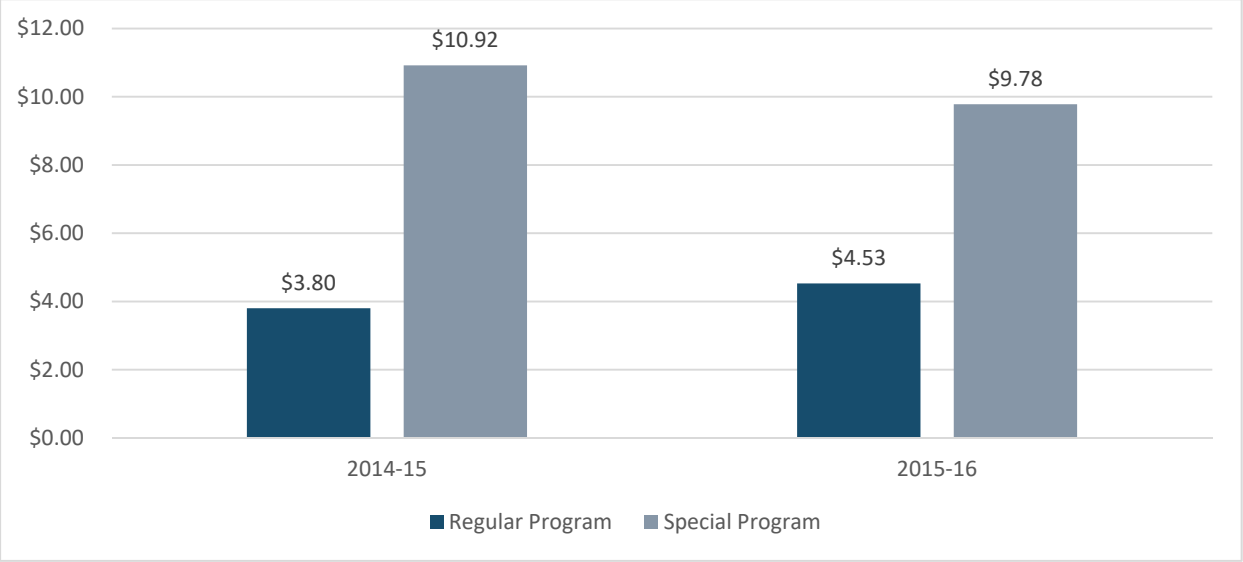
Figure 10. Operating Cost per Mile by Program, 2014-15 to 2015-16



Source: TEA, Foundation School Program, Transportation Operation Reports, 2014-15 to 2015-16.

Operating cost per rider for 2014-15 to 2015-16 is presented in Figure 11. The regular program operating cost per rider increased by $0.73, or 19.2 percent, between 2014-15 and 2015-16. Between 2014-15 and 2015-16, the operating cost per special program rider decreased, reducing by $1.14 per rider, or 10.4 percent.

Figure 11. Operating Cost per Rider, 2014-15 to 2015-16



Source: TEA, Foundation School Program, Transportation Operation Reports, 2014-15 to 2015-16.

Peer Comparisons

Selected metrics of FBISD Transportation were compared to peer districts. The initial set of peer districts were identified using TEA's Snapshot Peer Search tool[12]. Peer selection criteria involved the following process:

- Identified similar school districts based on type (major suburban) and size (more than 50,000 students). This search resulted in 9 possible peers.
- Compared these 9 districts to FBISD on seven characteristics:
  - Number of schools
  - Percentage of economically disadvantaged students
  - Percentage of total enrolled students in special education programs
  - Square miles
  - Square miles per school
  - Students per square mile
  - Growth rate

The peer selection process resulted in the set of five peers displayed in Table 3.

[12] https://tea.texas.gov/perfreport/snapshot/index.html

Table 3. Summary of FBISD Peers and Peer Selection Criteria

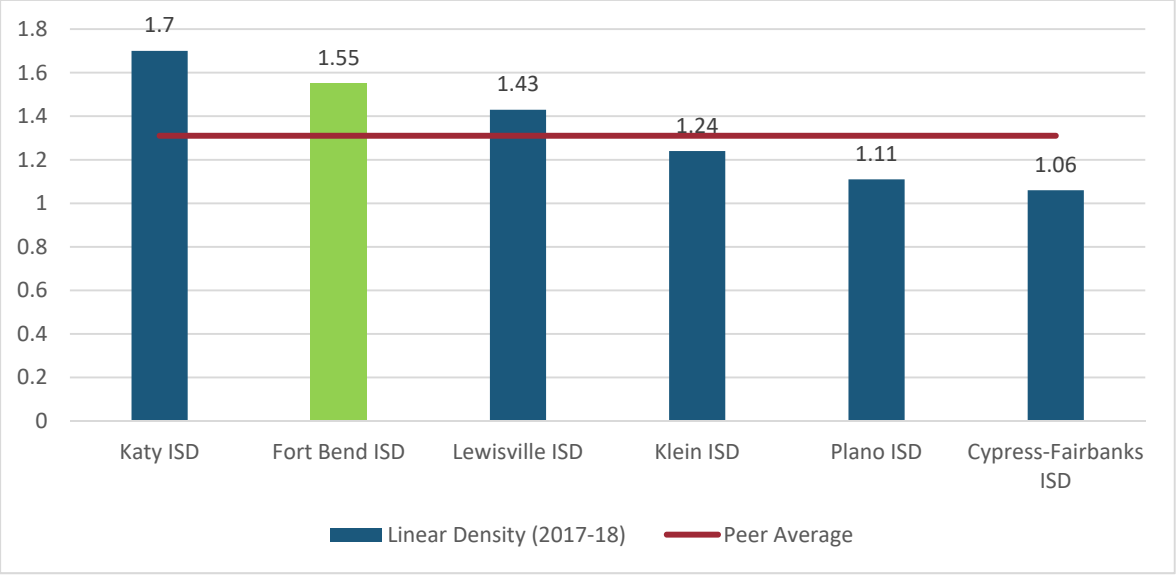
District	Number of Schools	Number of Students*	Percent Economically Disadvantaged	Percent Special Education	Square Miles**	Students per Square Mile	Growth Rate***
Cypress-Fairbanks ISD	84	113,656	48.9%	7.4%	186.0	611.1	2%
Katy ISD	61	72,725	28.3%	8.8%	181.0	401.8	7%
Klein ISD	48	50,394	40.8%	8.2%	87.5	575.9	6%
Lewisville ISD	66	53,396	32.6%	10.1%	127.0	420.4	-2%
Plano ISD	74	54,322	28.7%	10.4%	100.0	543.2	-2%
Fort Bend ISD	**74**	**72,910**	**33.7%**	**6.3%**	**170.0**	**428.9**	**5%**

Sources: TEA Snapshot 2016: School District Profiles (most recent data available at time of analysis); 2018 enrollment data for growth rate calculation are from school district websites.
*Number of students as reported in TEA Snapshot 2016.
**Square miles as reported on each school district website.
***Growth rate is the percentage change in student enrollment reported in TEA Snapshot 2016 and the district reported enrollment in 2018.

These five districts were compared to FBISD across a variety of measures. Overall, FBISD ranks towards the middle of the peer group on most measures.

Figure 12 presents the 2017-18 linear density for FBISD and its peer districts. Linear density is a measure that captures the intensity of transportation service and is one factor used in determining the state allotment for transportation. Linear density is the ratio of the average number of regular program students transported daily on standard routes to the number of route miles traveled daily for those standard routes. FBISD has an above-average linear density (1.55 compared to a peer average of 1.31).

Figure 12. Linear Density, FBISD and Peer Districts, 2017-18



Source: TEA, Foundation School Program, Transportation Operation Report 2017-18.

Table 4 displays peer operating statistics for regular and special programs in the 2017-18 school year. FBISD's riders, odometer miles, and total buses are all within the range of the peer group.

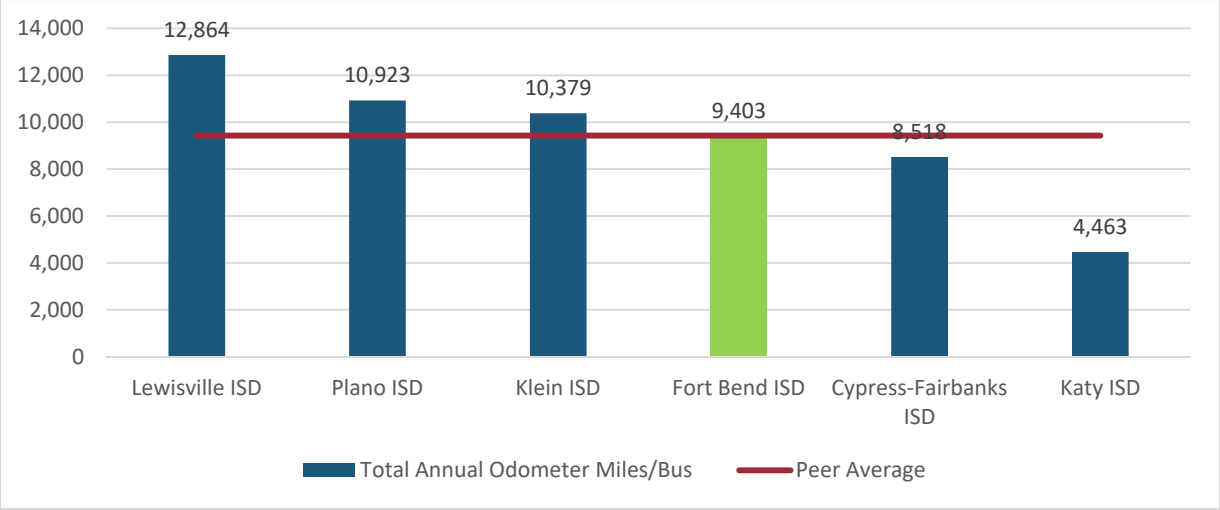
Table 4. Peer District Operating Statistics 2017-18

District	Regular			Special		
	Annual Riders*	Total Odometer Miles	Total Buses	Annual Riders*	Total Odometer Miles	Total Buses
Cypress-Fairbanks ISD	11,182,680	6,874,027	807	941,040	2,232,516	173
Katy ISD	4,598,280	2,615,530	586	1,091,340	1,723,041	265
Klein ISD	3,855,060	2,407,854	232	236,880	806,671	76
Lewisville ISD	2,505,960	2,379,923	185	210,240	884,385	90
Plano ISD	2,494,620	2,075,382	190	194,040	1,082,136	101
Peer Average	*4,927,320*	*3,270,543*	*400*	*534,708*	*1,345,750*	*141*
Fort Bend ISD	**5,095,260**	**3,883,408**	**413**	**387,900**	**1,475,386**	**115**

Source: TEA, Foundation School Program, Transportation *Operations Report* 2017-18.
*Annual riders calculated by multiplying average daily riders by 180 days of school.

Regular program annual odometer miles per bus, measuring bus utilization, is presented in Figure 13. FBISD is nearly equal to the peer average of 9,430 miles per bus.

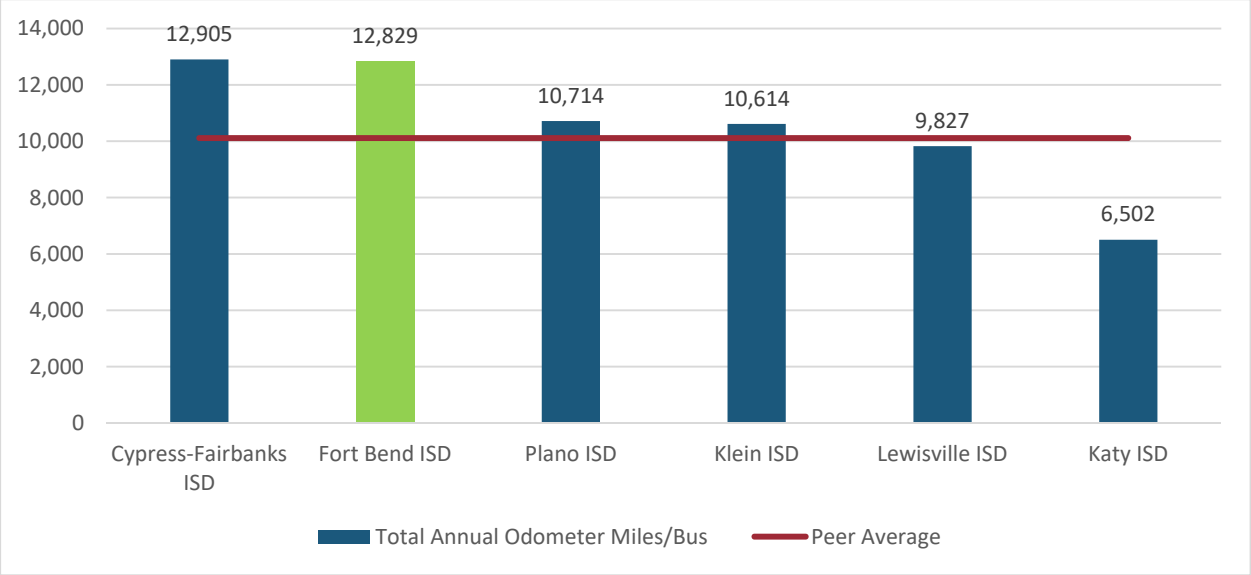
Figure 13. Regular Program Odometer Miles per Bus, FBISD and Peer Districts, 2017-18



Source: TEA, Foundation School Program, Transportation *Operations Report* 2017-18.

Figure 14 provides the special program annual odometer miles per bus. FBISD has the second highest mileage per bus and exceeds the peer average of 10,112 miles per bus.

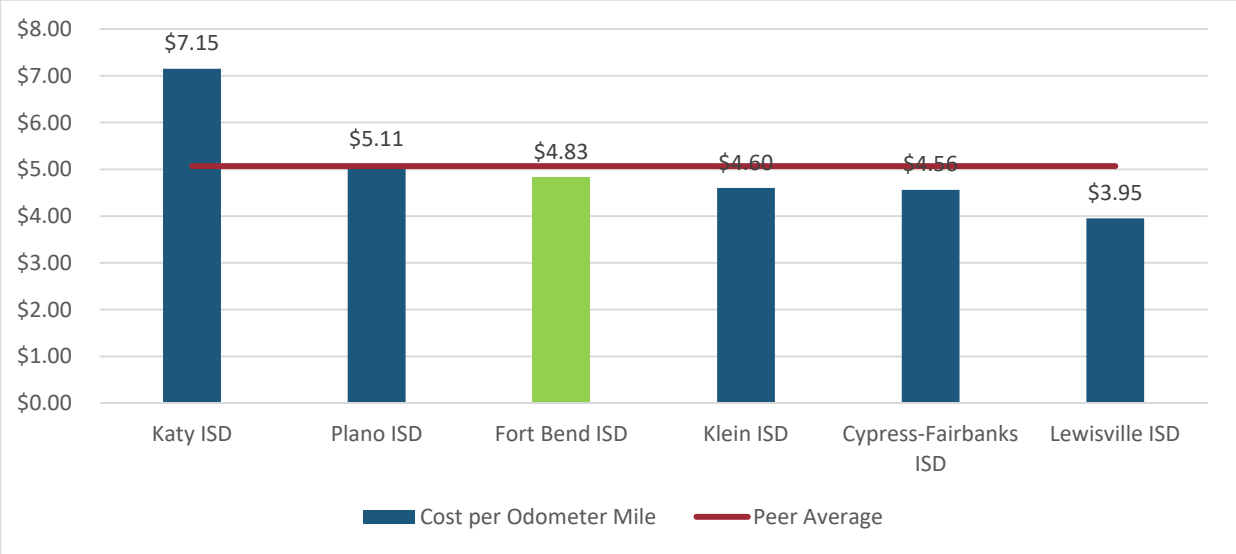
Figure 14. Special Program Odometer Miles per Bus, FBISD and Peer Districts, 2017-18



Source: TEA, Foundation School Program, Transportation Operation Report 2017-18.

Figure 15 provides the regular program operating cost per odometer mile for FBISD and peer districts for 2015-16, the most recent year a valid comparison could be made.[13] FBISD had the third highest operating cost per mile among the peer group, but was below the peer average of $5.07 per mile.

Figure 15. Regular Program Operating Cost per Odometer Mile, FBISD and Peer Districts, 2015-16

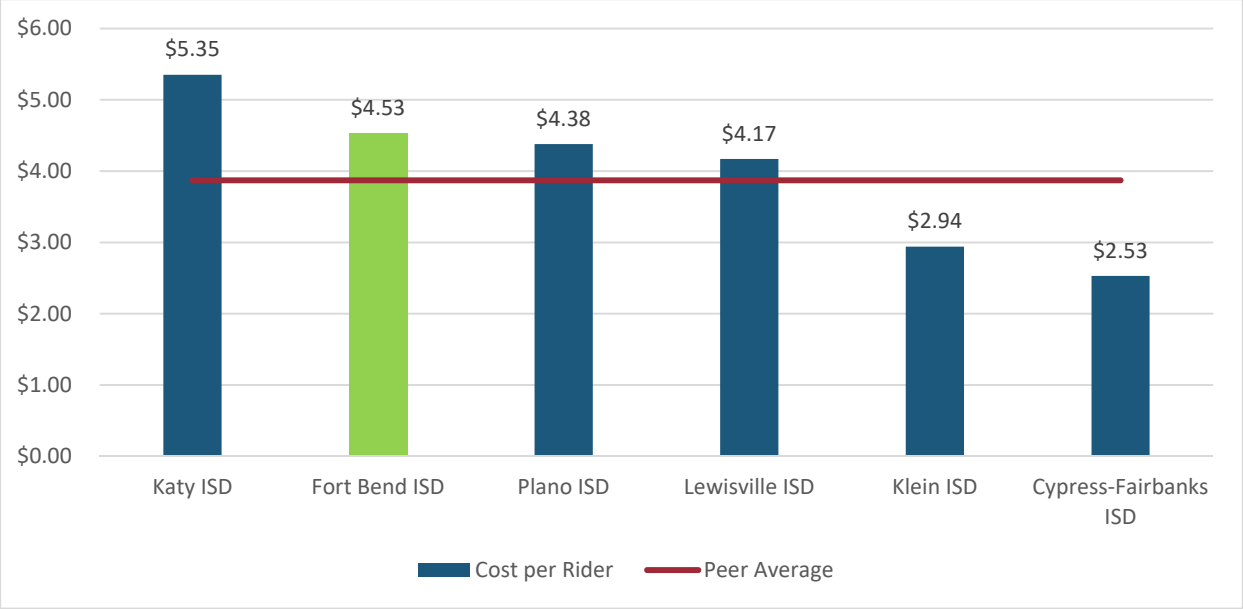


Source: TEA, Foundation School Program, Transportation Operation Report 2015-16.

The regular program operating cost per student rider is included in Figure 16. FBISD has a higher operating cost per rider than all peers except Katy ISD, also exceeding the peer average of $3.87 per rider.

[13] See related discussion of data integrity under Finding 4 in *Chapter 3 – Organization and Management*.

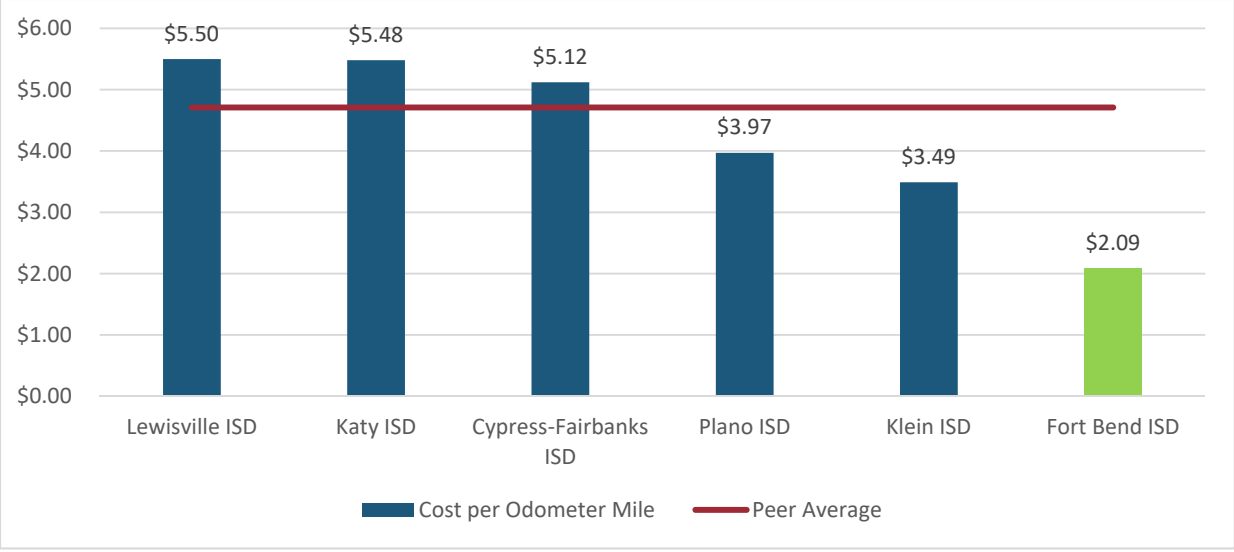
Figure 16. Regular Program Operating Cost per Student Rider, FBISD and Peer Districts, 2015-16



Source: TEA, Foundation School Program, Transportation Operations Report 2015-16.

The special program operating cost per odometer mile for FBISD and peer districts is included in Figure 17. FBISD has the lowest operating cost per odometer mile among the peer group and is below the peer average of $4.71 per mile.

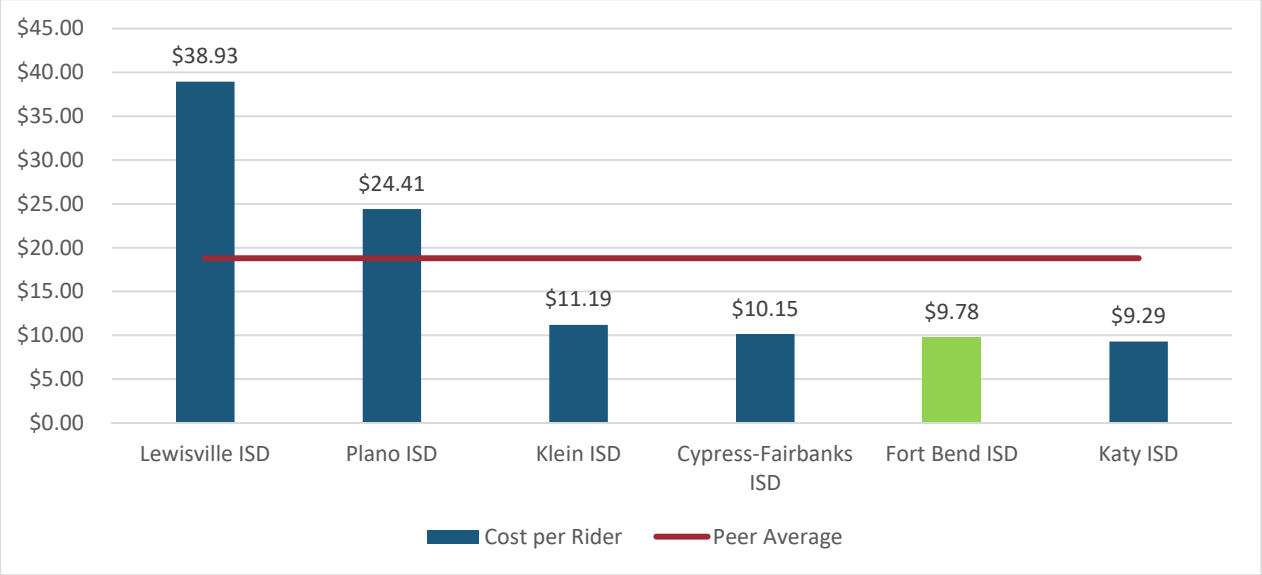
Figures 17. Special Program Operating Cost per Odometer Mile, FBISD and Peer Districts, 2015-16



Source: TEA, Foundation School Program, Transportation Operation Report 2015-16.

Similar to the special program operating cost per odometer mile, the FBISD special program operating cost per student rider is low among the peer districts and below the peer average of $18.79 per rider (see Figure 18).

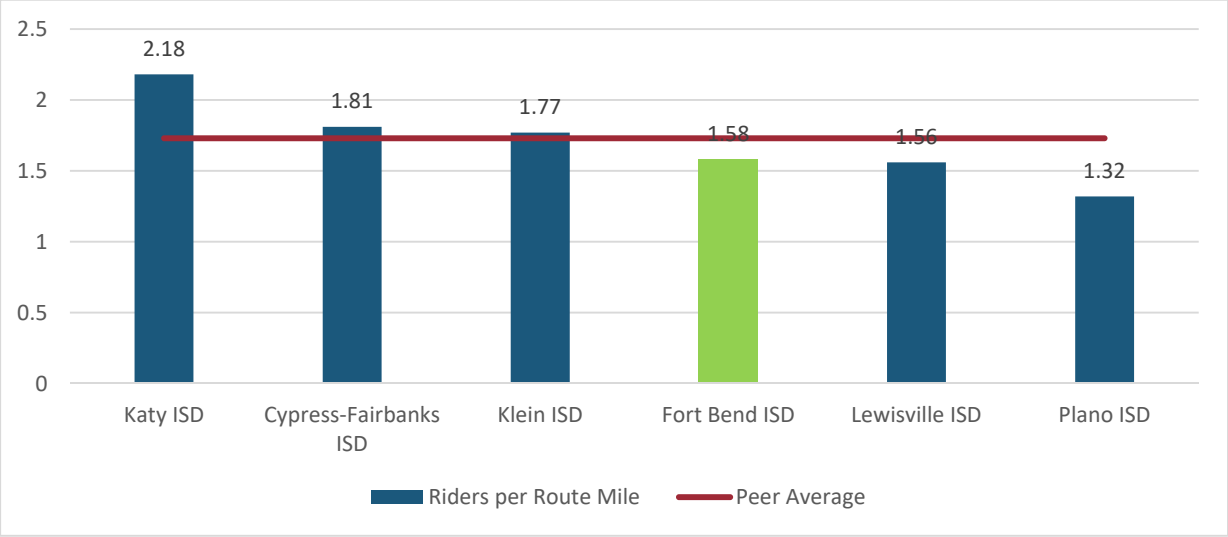
Figure 18. Special Program Operating Cost per Student Rider, FBISD and Peer Districts, 2015-16



Source: TEA, Foundation School Program, Transportation Operation Report 2015-16.

Peer comparisons were also made for service effectiveness. Figure 19 presents the regular program riders per route mile for FBISD and peer districts. Fort Bend ISD has a lower measure than three peers and is below the peer average of 1.73 student riders per route mile.

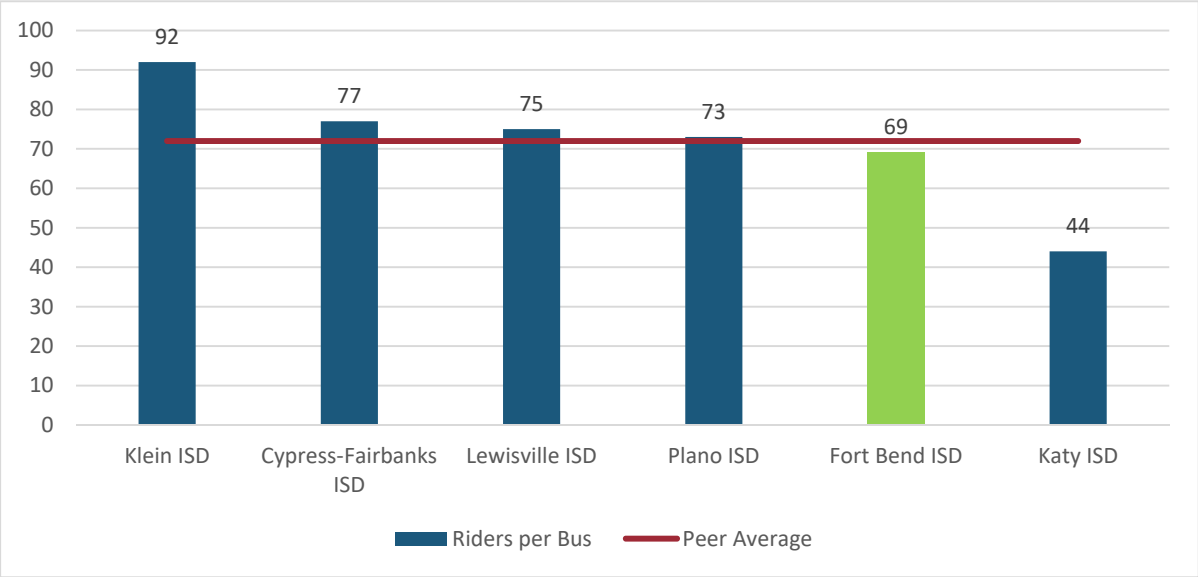
Figure 19. Regular Program Riders per Route Mile, FBISD and Peer Districts, 2017-18



Source: TEA, Foundation School Program, Transportation Operation Report 2017-18.

Figure 20 presents regular program riders per bus, another measure of service effectiveness. At 69 student riders per bus, FBISD has fewer regular program students per bus than four peer districts and is below the peer average of 72 student riders per bus.

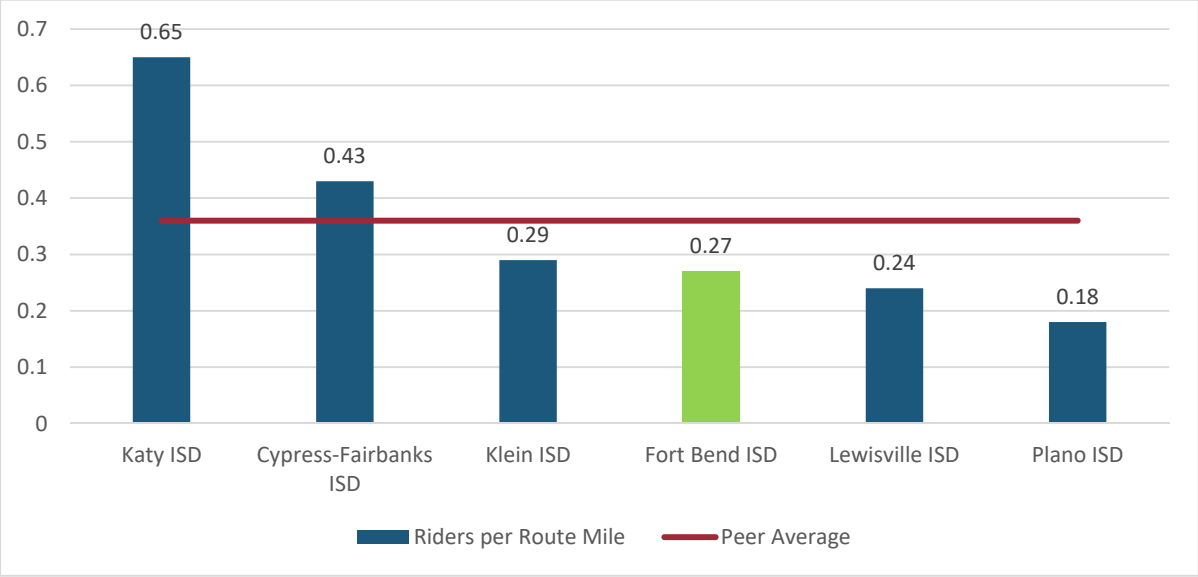
Figure 20. Regular Program Student Riders per Bus, FBISD and Peer Districts, 2017-18



Source: TEA, Foundation School Program, Transportation Operation Report 2017-18.

The special program riders per route mile is presented in Figure 21. FBISD has a lower measure (0.27 student riders per special program route mile) than three peers and is below the peer average of 0.36 student riders per route mile.

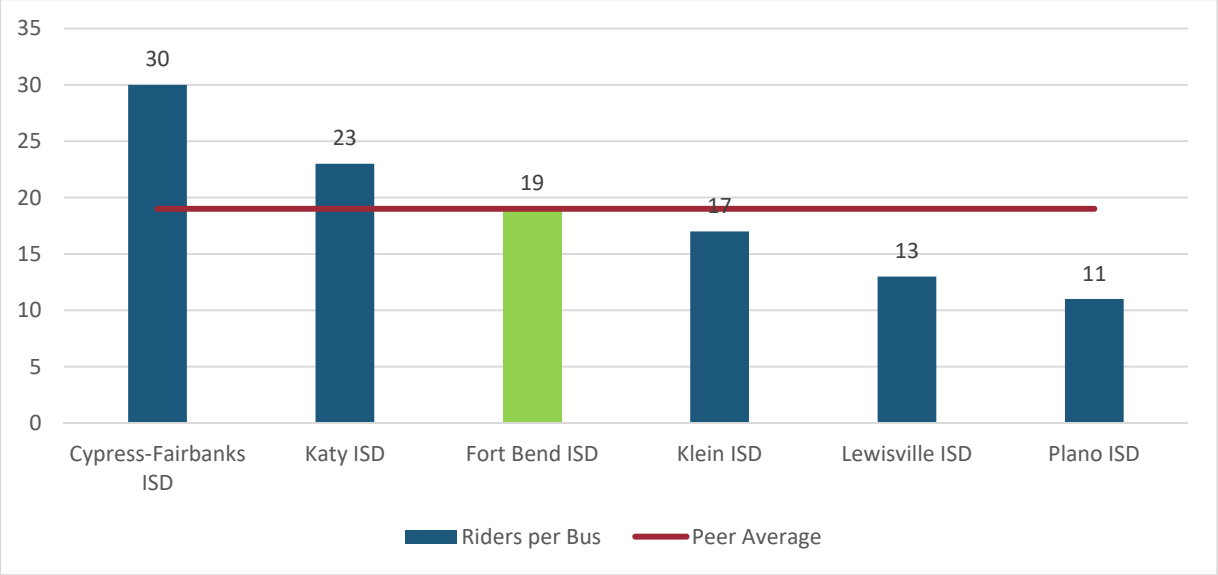
Figure 21. Special Program Student Riders per Route Mile, FBISD and Peer Districts, 2017-18



Source: TEA, Foundation School Program, Transportation Operation Report 2017-18.

The special program riders per bus is presented in Figure 22. On average, FBISD has more special program student riders per bus than three peer districts and equals the peer average of 19 students per bus.

Figure 22. Special Program Student Riders per Bus, FBISD and Peer Districts, 2017-18



Source: TEA, Foundation School Program, Transportation Operation Report 2017-18.

Chapter 3 – Organization and Management

This chapter presents the legal framework for school district student transportation functions and the management of this function by the FBISD Transportation Department. Also included in this chapter is FBISD's management and oversight of its two major contractors for bus service which provide significant additional capacity for student transportation services.

Student Transportation Legal and Policy Framework

The Texas Education Code (TEC) authorizes, but does not require, Texas school districts to provide transportation for students in the general population between home and school, from school to career and technology training locations, and for extracurricular activities. The federal Individuals with Disabilities Education Act (IDEA) requires a school district to provide transportation for students with disabilities if the district also provides transportation for students in the general population, or if students with disabilities require transportation to receive special education services. Under the federal McKinney-Vento Act, a local school district is required to assist the parents of homeless children and youths to access transportation to attend school. Transportation from temporary housing to the assigned school of origin is required, if it is in the student's best interest to remain in that school. Transportation must be provided to the end of the academic year or when a student obtains permanent housing.

Texas state law entitles a school district to reimbursement for transporting regular program, special program, and career and technology education (CTE) program students. The Texas Legislature sets transportation funding rules, and the Texas Education Agency administers the transportation allotment program. TEA's *School Transportation Allotment Handbook* (September 2017) is the current guidance on the state transportation allotment. A school district must use local funds to pay for transportation costs that the state reimbursement does not cover.

TEA requires each school district eligible for state reimbursement to provide two annual school transportation reports – the Route Services Report and the *Operations Report*. The Route Services Report documents reimbursable miles traveled and the number of riders by the regular, special, and CTE transportation programs. The *Operations Report* documents transportation operations costs, school bus vehicle inventory, and odometer miles for regular and special transportation programs.

Regular Program Transportation

State funding for regular program transportation is limited to transportation for students living two or more miles from the school they attend. Districts may report transportation of regular-program students during the school day between the students' campus of attendance and another instructional site within the district for the students to attend required courses, if that course is not available at the students' campus of attendance. Regular program route services do not include transportation for extra- or co-curricular activity trips, field trips, athletics practice, sporting events, school club meetings, band or cheer competitions, animal shows or competitions, or between-campus transportation for meals.

The state will reimburse districts for transporting students living within two miles of the school provided the student faces hazardous walking conditions or has another extenuating circumstance specifically recognized by TEA policy. Other extenuating circumstances may include living at a grandparent's home, travel to a state-recognized child-care facility, or the student is identified as homeless and is being transported back to the school of origin. TEA's *School Transportation Allotment Handbook* details the specific requirements for determining when each extenuating circumstance makes transporting a student eligible for state reimbursement through the transportation allotment for regular program.

Each year Fort Bend ISD receives a transportation allotment for regular route service miles beyond two miles of the school. Reimbursement for regular program route services is calculated by multiplying total eligible regular-route-service miles by the allotment per mile for the effective linear density for the previous year. Effective linear density is the ratio of the average number of regular program students transported daily on standard routes to the number of route miles traveled daily for those standard routes. Standard miles and riders do not include miles or riders for alternative, bilingual, desegregation, magnet, parenting, or year-round transportation programs or hazardous area service. TEA uses this ratio to assign each school district to one of seven linear density groups. Each group is eligible to receive a maximum per-mile allotment ranging from $0.68 to $1.43 per mile.

Special Program Transportation

A special-program student is a student with a disability who requires specialized transportation to access his or her academic program and meets certain requirements identified in TEA's *School Transportation Allotment Handbook*. Special route services are:

- Transportation of special-program students to school at the beginning of the school day and from school at the end of the school day.
- Transportation of special-program students to attend:
    - Prescribed services during the regular school year and school day, or
    - Extended school year (ESY) services required by the students' individualized education program (IEP).

Reimbursement for special route services is calculated by multiplying total eligible special-route-service miles by the lesser of $1.08 or the district's cost per mile for special route services for the preceding year.

Career and Technology Education Program Transportation

CTE route services are transportation of regular- or special-program students during the school day (not at the beginning or end of the day) to attend a TEA-approved CTE course that is not available at the students' campus of attendance.

Board Policies

There are 17 major FBISD board policies related to transportation services. "Legal" policies contain compilations of federal law, state law, and court decisions as statutory context in which all other policies are to be read. "Local" policies reflect policies adopted by the Board specific to FBISD.

- Policy CBB (Legal) – documents the authority of FBISD to receive federal funding to support district activities; establishes the grant management requirements necessary for using federal funds.
- Policy CJA (Legal) – describes the requirements that owners of business entities with contracts with FBISD must notify FBISD of being convicted of a felony and that contractor employees must undergo a national criminal history check.
- Policy CNA (Legal) – documents state reimbursement through the TEA transportation allotment program, defines student transportation eligibility, defines hazardous traffic conditions and high risk of violence areas, discusses career and technology program transportation, summarizes transportation of homeless students (McKinney-Vento), and describes requirements for outsourcing transportation.
- Policy CNA (Local) – establishes the annual review and board resolution process to update the locations of hazardous routes.
- Policy CNB (Legal) – establishes requirements for purchasing or leasing buses, vehicle registration, bus maintenance, advertising on buses, and the sale or disposal of buses.
- Policy CNB (Local) – establishes acceptable uses of transportation vehicles, for example, non-school and personal use is prohibited, and non-school emergency use is permitted; also authorizes the Superintendent to develop administrative regulations regarding the use of district vehicles.
- Policy CNC (Legal) – establishes safety standards, requirements for school bus emergency evacuation training, rules prohibiting the use of wireless communications devices, and procedures for accident reporting; documents the requirement for seat belts to be installed on all 2018 or newer buses and for students to wear seat belts, if available.

- Policy DBA (Legal) – describes the requirements to be eligible for employment as a bus driver, requirements for annual evaluation, and the conditions for disqualification to transport students.
- Policy DHE (Legal) – establishes requirements and legal authority for conducting alcohol and drug testing, including pre-employment, post-accident, random, reasonable suspicion, return to duty, and follow-up testing.
- Policy EHBA (Legal) – documents the standards for providing special education programs and transportation services to students with disabilities.
- Policy EHBG (Legal) – establishes the requirement to provide free prekindergarten classes and documents that transportation is optional.
- Policy FC (Local) – documents the district's approach to establishing and modifying school attendance zones.
- Policy FDC (Local) – establishes the district's procedures for education of homeless students, including providing transportation.
- Policy FMG (Local) – documents the requirement that students who participate in school-sponsored trips must ride in school-provided transportation (unless requested otherwise by the student's parent or guardian).
- Policy FO (Local) – documents the Student Code of Conduct and provides general discipline guidelines and appropriate uses for physical restraint.
- Policy FP (Legal) – authorizes the charging of a fee for transportation for a student who lives within two miles of his or her school but not within an identified hazardous route area.
- Policy GRB (Legal) – authorizes establishing contracts with another local government using interlocal agreements, including providing public school transportation outside of the district.

All policies are in the online Board Policy Manual on the District's website[14].

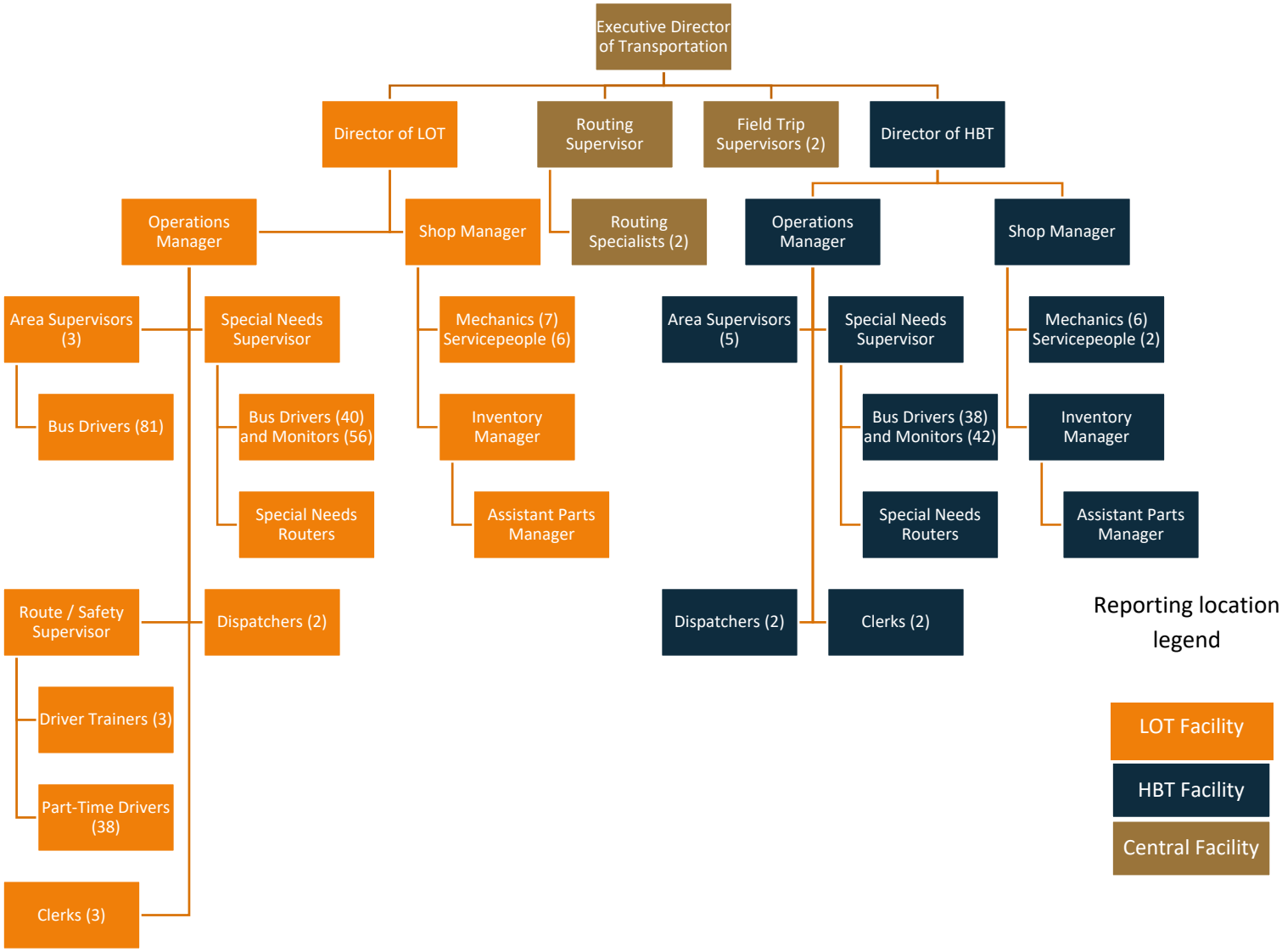
[14] https://pol.tasb.org/Home/Index/483

Transportation Department Organization

The FBISD Transportation Department consists of approximately 538 positions (including vacancies) across two facilities. Some Transportation Department staff report to one of the two facilities and others (e.g., Routing Supervisors, Routing Specialists, and Field Trip Supervisors) report to a third location – the Central Transportation Center located at 555 Julie Rivers Dr. in Sugar Land, TX.

The Transportation Department's organizational structure is shown in Figure 23.

Figure 23. FBISD Transportation Organizational Chart



Source: Adapted from FBISD Transportation RN 1 Organizational Chart_120418.xls

Following are the primary responsibilities for key FBISD Transportation positions, as documented in job descriptions and reviewed with FBISD Transportation staff.

Key Central Office Positions

- The **Executive Director of Transportation** reports to the FBISD Chief Operations Officer and provides overall leadership to the Transportation Department by planning, administering, directing, and coordinating the transit operation for the safe and on-time delivery of the students of the school district.

- The **Routing Supervisor** oversees the Routing Specialists and continually evaluates Transportation Department routes and systems used for supporting day-to-day operations. The Routing Supervisor develops bus routes and schedules, creates new 2-mile and hazardous boundaries, maintains communication with Transportation Department personnel, school administrators, and the public.

- **Field Trip Supervisors** work at the Central Transportation facility and process field trip and transportation requests from schools, arts programs, school sports teams, and other extracurricular activities. Field Trip Supervisors plan special transportation by matching trip requests with available resources (drivers and buses), ensuring equitable distribution of trips to available and interested drivers. Field Trip Supervisors also verify that trip costs are billed to and paid by requesting entities[15].

Key Bus Facility Positions

- There are two positions titled **Director of Transportation** – one for each facility. The core function of the position is to administer and direct the operations and activities of the transportation at each facility. Responsibilities include planning and directing transportation of students, oversight and management of bus maintenance, and ensuring safe and efficient operations.

- Each facility has an **Operations Manager** who is responsible for directing and managing operations functions, including: supervising and coordinating bus assignments, dispatcher operations, and driver functions.

- The **Shop Manager** – one at each facility – oversees the operations of bus repair and maintenance. The shop managers schedule repair and maintenance jobs, assign work to mechanics and servicemen, provide technical guidance, and oversee the requisition and distribution of parts.

- **Area Supervisors** report to the Operations Manager and manage the day-to-day operations of bus routes, including supervising bus drivers, investigating accidents and incidents, reviewing and approving requests for field trips and special trip transportation, and investigating and resolving

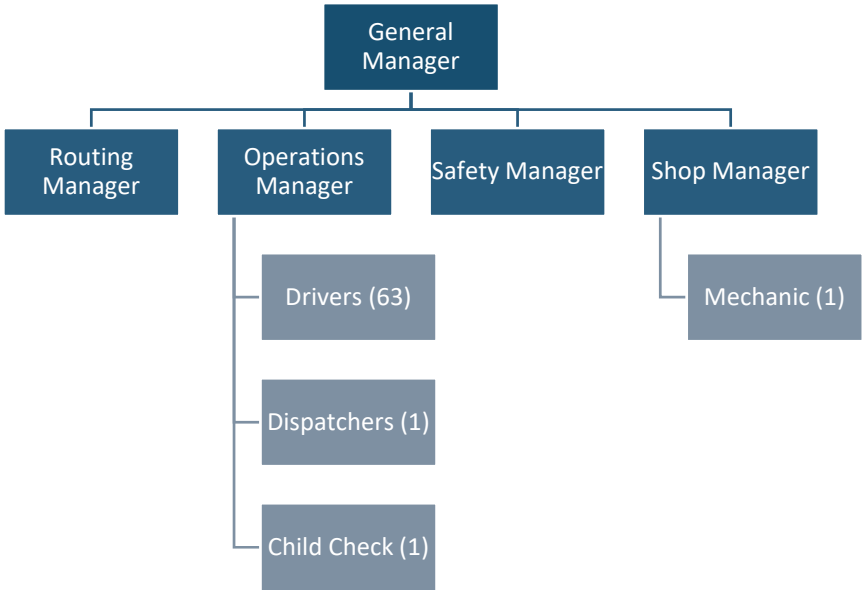
[15] Field Trip Supervisor interviews during site visits; there is no separate job description for Field Trip Supervisors.

bus route issues (e.g., overcrowding, lateness, etc.)[16]. Area supervisors oversee all drivers and routes for assigned high-school feeder patterns.

- There is one **Special Needs Supervisor** at each facility who is responsible for establishing and adjusting special education bus routes, and training special program drivers and monitors.
- There are two **Dispatchers** at each facility that ensure bus routes are covered by drivers, handle day-to-day calls from Bus Drivers, asses Bus Driver requests to determine how to provide assistance, handle calls from school and administrative personnel, and perform other administrative duties to support the day-to-day operations of transportation.

Not shown in the organizational chart are positions associated with GoldStar, FBISD's contractor for selected routes. Figure 24 presents an organizational chart for GoldStar staff onsite at the LOT.

Figure 24. Onsite GoldStar Staffing Organizational Chart



Source: Adapted from FBISD Transportation RN 1 Organizational Chart_120418.xlsx and updated to reflect RN 101 – Gold Star Staffing.docx.

Commendation 1. Several features of the organizational structure *advance the effective management of the Transportation Department.*

The current organizational structure within the FBISD Transportation Department realizes many benefits to the District. The centralization of regular education routing and scheduling provides a uniform approach to route planning and scheduling, facilitating coordination of strategies, policies, and procedures. Additionally, the disaggregation of supervisory responsibilities based on feeder patterns has increased

[16] FBISD Transportation Department. RN 11 - Supervisor Transportation_[0010]_JD Template.pdf.

ownership and familiarity of specific routes and services among supervisors and has reduced the span of control for each supervisor, allowing the supervisor to provide better and more direct oversight over bus drivers.

Finding 1. Some job descriptions are out-of-date and do not reflect current responsibilities and required qualifications.

Through data analysis and interviews, the audit team discovered multiple instances where the job description did not align with duties, responsibilities, and requirements described during interviews. Updated job descriptions are essential for ensuring that both supervisors and staff understand the responsibilities of the position and the knowledge, skills, and abilities needed to fulfill those responsibilities. Job descriptions also include the reporting structure for the position, describing supervisory responsibility. Accurate job descriptions are also necessary for recruiting and hiring, conducting performance evaluations, determining ADA (Americans with Disabilities Act) accommodations, and mitigating employee complaints related to compensation or U.S. Equal Employment Opportunity Commission (EEOC) charges, among other employee management tasks.

The following job descriptions were found to be outdated or misaligned:

- The Dispatcher job description includes position duties that appear to relate to facilities maintenance. For example, "Coordinate emergency response with utility company response as required," and "Process and files activity reports regarding emergency work orders, e.g., HVAC, glass breakage, etc." are listed under *Essential Duties and Qualification*. The job description was last updated in July 2013[17].

- The Route/Safety Supervisor job description includes only a small mention of recruitment and hiring duties, which were reported to the audit team as essential duties[18]. The job description was last updated in Feb. 2011[19].

- The Shop Manager job description does not mention the requirement to use computerized systems for supporting and monitoring maintenance workflows, reviewing overall shop performance, or maintaining and analyzing maintenance data for historical or performance reporting purposes. The job description was last updated July 2013[20].

The audit team also discovered that other positions in the Transportation Department do not have a job description. The Field Trip Supervisor, the Special Needs Supervisor, and the Trainer positions do not have an associated job description. Training responsibilities and skill requirements are not defined in the Cover Driver/Trainer job description.

[17] FBISD Transportation Department. RN 11 - Dispatcher Transportation_[0005]_JD Template.pdf.
[18] Interviews with the Route / Safety Supervisor during site visits.
[19] FBISD Transportation Department. RN 11 - Supervisor Route and Safety_[0012]_JD Template.pdf.
[20] FBISD Transportation Department. RN 11 - Manager Shop (Transportation)_[0013]_JD Template.pdf.

Recommendation 1. Ensure job descriptions exist and are accurate for all Transportation positions.

FBISD should establish a plan to review and revise job descriptions at least every three years, and as needed when working conditions change. When updating job descriptions, responsibilities, skill requirements, and technology usage should be considered.

Job descriptions should also be created for specialized jobs that do not currently have job descriptions.

Once this exercise is completed by the Transportation Department and finalized by the Human Resources Department, the updated job descriptions should be compared to individuals in the positions to identify any gaps that need to be addressed through education, training, or additional certification.

Management Response: *Department Leadership agrees with this recommendation. Job descriptions have been updated and have been submitted to Human Resources for review and final approval. Estimated timeline is December 2019.*

Finding 2. There is inadequate supervision over bus maintenance due to other requirements of the Shop Manager position.

The Shop Manager is presently responsible for overall shop performance and efficiency, as well as transactional duties such as parts ordering. These roles prevent the Shop Manager from providing "on-the-floor" leadership to individual mechanics. Currently, there are no lead mechanic or other supervisory roles for mechanics. This lack of leadership can negatively impact employee morale and reduce shop efficiency.

Recommendation 2. Create lead mechanic positions at the LOT and the HBT.

The Shop Manager at both the LOT and the HBT would benefit from having a formal supervisor on the shop floor. A Lead Mechanic position can provide this additional leadership and also serve as a technical expert for the shop. The Lead Mechanic's work schedule could provide coverage (e.g., early morning) when the Shop Manager is not on duty. A Lead Mechanic would provide the Shop Manager with more time to focus on maintenance performance and strategies to continually improve shop operations. A current mechanic position at each shop could be reclassified to the Lead Mechanic position or the Department could create a new position.

Management Response: *Department Leadership agrees with this recommendation. Staff agrees that these positions will improve the shop performance while developing our employees. Staff will work with the leadership team for implementation approach and budgeting. Estimated timeline is December 2019 and full implementation for the 2020-2021 school year.*

Finding 3. The scope of responsibility of Special Needs Supervisors at the LOT and the HBT is too broad.

There are two Special Needs Supervisors, one at each facility, who handle the special transportation program routes. Each Special Needs Supervisor manages 80 or more drivers and monitors. In addition,

the Supervisors handle special transportation route changes, which happen frequently as students enter and exit different special education programs. The Special Needs Supervisors do not have dedicated special transportation routers; instead, Cover Drivers are assigned to help with routing. Special Needs Supervisors are also expected to train new special transportation drivers and monitors on the aspects of special needs transportation that are not covered during regular transportation training, such as wheelchair securement and sensitivity to special education students' needs. This wide breadth of responsibility reduces the Special Needs Supervisors' abilities to provide effective and efficient oversight.

Recommendation 3. Reorganize the responsibilities for Special Transportation.

To better utilize the Special Needs Supervisor position, certain responsibilities should be delegated to other positions:

- A Special Needs Routing Specialist position should be created to be responsible for routing and scheduling special transportation. These positions (one at each facility) should report to the Routing and Scheduling group.

- Responsibility for providing necessary training to special education drivers and monitors should be assigned to the Training and Safety group, with the support and guidance of the Special Needs Supervisors. The Special Needs Supervisors will retain responsibility for overseeing daily operations of special transportation and managing drivers and monitors.

These changes would allow more time for Special Needs Supervisors to interface with the FBISD Special Education Department, improving communication about students' needs and strengthening the relationship between special education programming decisions and transportation.

Management Response: *Department Leadership agrees with this recommendation. Staff will work with the executive leadership team to develop the method of implementation. Estimated timeline is December 2019 and full implementation for the 2020-2021 school year.*

Performance and Compliance Management

Performance management includes the development and analysis of efficiency and effectiveness measures to ensure that performance goals are reached. Compliance management relates to procedures and controls that are necessary to ensure compliance with Board legal and local policies, other state and federal regulations, as well as the accurate reporting of information to TEA.

Finding 4. There is a lack of data integrity controls over FBISD's transportation reporting to the TEA.

In *Chapter 2 – Profile of Fort Bend ISD Transportation*, the audit team included financial trend information for a time period covering 2014-15 to 2015-16 and used 2015-16 as the comparison year for peer districts. Typically, the audit team uses a five-year period for trend analysis and the most recent year of data for peer comparisons. However, data integrity issues in 2013-14, 2016-17, and 2017-18 necessitated the use of a truncated trend period and a dated comparison. Figure 25 presents a comparison between the TEA

Operations Report financial data and financial information reported in PEIMS (Public Education Information Management System). The audit team discovered variances between both data sets (highlighted in yellow).

Figure 25. Reconciliation of Differences between PEIMS Submittal Data and TEA Transportation *Operations Report* Data, 2013-14 to 2017-18

PEIMS Data for the Transportation Department					
Local Funds by Object	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
6100 Payroll Cost	$13,603,136	$14,203,847	$14,564,690	$15,844,868	$16,379,125
6200 Professional & Contracted Services	$533,403	$805,377	$4,677,818	$5,759,678	$4,033,028
6300 Supplies and Materials	$3,253,248	$2,585,250	$2,417,018	$2,834,029	$2,909,008
6400 Other Operating Costs	$88,944	$124,950	$39,145	$177,300	$140,651
Total Cost	**$17,478,731**	**$17,719,424**	**$21,698,671**	**$24,615,875**	**$23,461,812**
Percent Change		**1%**	**22%**	**13%**	**-5%**
TEA Transportation Operation Report					
Object	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**
Salaries & Benefits	$14,355,102	$14,203,845	$14,564,687	$15,844,870	$14,491,406
Purchased Services	$533,402	$805,376	$4,677,818	$5,759,678	$3,908,795
Supplies and Material	$4,293,042	$2,585,249	$2,417,017	$2,834,029	$2,909,008
Other Expenses	$1,950,085	$2,116,515	$2,226,742	$177,298	$140,649
Total Cost	$21,131,631	$19,710,985	$23,886,264	$24,615,875	$21,449,858
Percent Change		**-7%**	**21%**	**3%**	**-13%**
Differences highlighted					
TEA Operation More (Less) than PEIMS	**$3,652,900**	**$1,991,561**	**$2,187,593**	**$0**	**($2,011,954)**

Net Differences (Included or Excluded)					
Field Trips Expenditures	$ 1,791,759				
Excluded Amt -6400			(39,145)		
* Excluded Amt -6100-Bus Monitors -will be amended					(2,011,952)
Trans. Depreciation Expense -Per Transportation Handbook-TEA Instructions for Oper Report	1,861,141	1,991,563	2,226,742		
Rounding		(2)	(4)		(2)
Total Variance	**$ 3,652,900**	**$ 1,991,561**	**$ 2,187,593**		**$ (2,011,954)**

Source: PEIMS, Local Funds, 283 Transportation; TEA Transportation Operation Reports; FBISD management

Variances between the TEA *Operations Report* and PEIMS data are expected, as depreciation expenditures are excluded from Transportation in PEIMS but should be included in the TEA *Operations Report*. However, additional differences occurred in 2013-14, 2016-17, and 2017-18. In 2016-17 and 2017-18, depreciation was incorrectly *excluded* from the TEA *Operations Report*. Further, in 2017-18 expenditures associated with bus monitors were incorrectly *excluded* from the TEA *Operations Report*. The variance occurring in 2015-16 was small and did not significantly impact the comparability of the data.

The errors discussed above were disclosed by management after identification of variances by the audit team. Management was previously unaware of these differences, indicating a lack of data review controls. Management now intends to re-file the state TEA reports.

Reviewing state reported data to ensure that expenditures are calculated according to TEA dictated requirements is necessary for reducing risk of potential action by TEA and helps ensure data accuracy for internal purposes. The data reported to TEA directly affects the District's state funding for student transportation. Further, inaccurate and inconsistent data adversely affects management's ability to analyze trend data, peer data, and related performance metrics and ultimately make decisions based on this data.

Recommendation 4. Implement data validation controls over financial data submitted in the TEA *Operations Report*.

Validation controls are necessary for ensuring data accuracy. The Transportation and Business and Finance Departments should collaborate to implement periodic financial review controls. The review should focus on reconciling reported expenditure information to requirements promulgated by TEA. Additionally, the review should include a reasonableness check, comparing the amount of expenditures to previous year expenditures and changes in ridership or miles. The review control should be formalized, requiring preparer sign off and evidence of reviewer approval by both the Transportation and Business and Finance Departments.

Management Response: *Department Leadership agrees with this recommendation. Transportation staff will communicate and collaborate with the Business and Finance Department to ensure the Transportation Department receives the correct data for submission to TEA. Estimated timeline is December 2019.*

Finding 5. FBISD Transportation does not have a formal performance monitoring system and established targets for performance.

In the 2017-18 school year, the FBISD Transportation Department began the process of implementing Key Performance Indicators (KPI) and related reports. In this process, dispatchers, supervisors, and managers record daily operating data into a collection of Excel workbooks – one for each employee. Each workbook contains a set of operating statistics applicable to the employee's responsibilities that must be reported every day. For example, each Area Supervisor[21] fills out his or her workbook that contains the measures shown in Figure 26.

Figure 26. Example KPI Worksheet for October 2018, Area 5

Area Supervisors	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Number of Open Routes	1	1	1	1	1			1	1	1	1	1			1	1	1	1
Number of Absences	1	2	2	0	1			3	2	2	2	2			0	0	0	0
Number of Late Buses	0	0	0	0	0			0	0	0	0	0			0	0	0	0
Idling buses addressed	0	0	0	0	0			0	0	0	0	0			0	0	0	0
Number of MV students	4	4	4	4	4			4	4	4	4	4			4	4	5	5

Source: FBISD Transportation Department. RN 25 – Key Performance Indicators-Area 5.xlsx.

The audit team reviewed 23 KPI workbooks to better understand the scope of current data collection and identify any opportunities for performance reporting improvements. The collection of KPI workbooks is an important step toward becoming more performance and data-driven and creating a culture of continuous improvement. However, although the workbooks contain multiple data points, no transportation performance measures are calculated, and the KPIs currently included are not suitable for

[21] An Area Supervisor manages a collection of routes that are associated with a specific high-school feeder pattern.

ongoing performance monitoring and improvement of a school transportation department. For example, the daily number of road calls is not a performance measure by itself; as mileage increases, road calls are likely also to increase without any performance issues in the shop. A performance measure for vehicle reliability would be the average miles between road calls, defined as the number of road calls in a period of time divided by the mileage driven within the same period of time.

Additionally, reporting frequency appears to be inconsistent among employees, with some months missing from the workbooks or having blank data elements. In some workbooks, reported data elements change over time. Data elements might be added, removed, and then added again in a subsequent month. In other cases, the same measure is reported by two different individuals, and each individual reports a different number.

Recommendation 5. Establish specific performance measures and targets for Transportation.

The FBISD Transportation Department should develop KPIs to monitor and manage performance. Following are examples of student transportation performance measures. Where applicable, the measures should be developed for general transportation, special education transportation, and all transportation activities combined:

Global Department Measures

- Operating cost per mile
- Operating cost per rider
- Maintenance cost per mile
- Maintenance cost per bus
- Average age of fleet
- Ridership as a percentage of enrollment
- Average number of tiers per bus
- Average riders per route
- Average miles per route
- Linear density
- On-time performance (bus arrival at the school in the morning and departure from the school in the afternoon)
- Average student ride time per route
- Maximum student ride time
- Bus spares ratio
- Accidents per 100,000 miles
- Average daily bus driver absenteeism
- Driver vacancy rate
- Driver turnover rate
- Average hours worked per driver per day, week, and month

As reliable and consistent data are needed for each measure, the Department should create a standard operating procedure that includes the following attributes for each measure:

- A clear definition of the measure
- Identification of the data points required for each measure

- The data source(s) and information system(s) used to generate each data point
- The frequency of data collection and reporting
- The responsibility for generating data
- Data validation procedures

After performance measures are defined and a baseline is developed, performance targets for each measure should be created, along with action plans to guide management response if a KPI does not meet the target.

For data collected at the employee level, employee-level metrics, data standards, and reporting standards should be established to ensure consistency and accuracy of reporting.

Collectively, these efforts will help the Transportation Department improve efficiency and effectiveness, and will provide FBISD leadership the ability to hold the Transportation Department accountable for performance.

Management Response: *Department Leadership agrees with the recommendation. The department will build on key performance indicators that were established and implemented during the 2018-2019 school year and develop specific targets, goals, and metrics to measure performance. Estimated timeline is December 2019.*

Finding 6. The FBISD Transportation Department lacks quantitative data to assess the level of customer satisfaction with transportation services.

Although principals were generally positive about the professionalism and responsiveness of Transportation Department staff, the Transportation Department does not regularly assess the satisfaction of its customers (i.e., students, parents, principals, and school staff). Regular quantitative assessments of FBISD Transportation Department customers can help provide important insights into customers' perceptions of transportation services that otherwise would be lost by relying solely on service efficiency and effectiveness measures. Further, the lack of a regular survey program isolates management from knowing what occurs "on the ground". This can lead to dissatisfaction among customers and employees.

Recommendation 6. Conduct surveys to obtain customer feedback.

A common method for gathering customer satisfaction data is through a customer service survey. A survey can provide important information regarding the current state of customer service in the Department. However, survey data is most powerful when used over time. Survey topics should be developed to identify the major areas of input sought, then questions should be developed for each topic.

Customer service surveys should be administered annually, using the same or a similar survey instrument each year to allow for trend analysis. This analysis could allow management to isolate the impact of

customer service improvement efforts, equipping them with data to make informed decisions on what training practices, police, or procedures need updating.

Management Response: *Department Leadership agrees with this recommendation. Management will develop two surveys to measure internal and external customer satisfaction (department employees & campus administration). Each group will be surveyed once in the fall and once in the spring. The information collected will be used to measure our strengths and weaknesses within the Transportation Department. Estimated timeline is December 2020.*

Finding 7. Controls over Transportation Department personnel file contents are insufficient.

The audit team conducted an audit test of Transportation Department personnel file. The objective of this test was to ensure that all employees who drive buses completed all requirements and certifications before being hired. The audit team obtained a listing of all Fort Bend ISD transportation employees in fiscal year (FY) 2019. This listing was then filtered to include Bus Drivers, Mechanics, and Administration. Forty (40) employees were judgmentally selected and corresponding checklists were requested to verify completion of all requirements. These requirements include: Commercial Driver's License (CDL) with "P" and "S" endorsements, motor vehicle record (MVR) report from the Department of Public Safety, criminal background check, TEA school bus driver certification, annual physical, and alcohol and drug clearance.

The following observations and exceptions were made during testing:

- All employees had valid CDLs and Texas School Bus Driver Certifications.
- One supervisor did not have evidence of a current physical – the audit team confirmed with management that the supervisor has not driven a bus and is never expected to drive a bus.
- Checklists noting dates when requirements were met are not kept in employee files to verify employee requirements.
- The Transportation Department only maintains positive drug test results and does not track when drug tests were administered.
- Criminal background checks are conducted by the District's Central Administration Office.

Recommendation 7. Maintain an employee requirements annual checklist, complete with dates and approvals of when requirements are met.

The FBISD Transportation Department should implement checklists to ensure that all annual requirements are met. During the audit testing of personnel files, comprehensive checklists were not kept in individual files noting when each requirement was met and who granted corresponding approvals. In order to confirm these requirements, Transportation and Human Resources staff members had to sort through sensitive personal information to confirm that all requirements were met for all 40 employees selected for the audit. The District should implement the use of checklists during the hiring process that include

each requirement, the date the requirement was met or performed, and the appropriate approval signatures. Having a checklist would mitigate any potential legal issues that might arise if hiring requirements are not met. Further, if the District wishes to not maintain all drug test results, the individuals responsible for personnel records could indicate on the checklist when the drug test was administered and the result, either positive or negative. The checklists should be maintained during the years of service by an employee to confirm the periodic tests, physical exams, CDL renewals, driver certifications, and MVR records are up-to-date at all times.

Management Response: *Department Leadership agrees with this recommendation. The Transportation Safety and Training Supervisor will assume responsibility for the annual requirements being met. Estimated timeline is December 2019.*

Contractor Management

To help manage student transportation, school districts can outsource, or contract, transportation services. The reasons that school districts consider contracted transportation vary, but often a decision to contract is based on the need to add capital (school buses) or human resources (bus drivers), to address system inefficiencies (scheduling), and/or to add expertise to address particular challenges (training for new technology, for example). The extent of contracted transportation services can vary across school districts, from contracting all transportation services, some transportation services, or no transportation services.

Fort Bend ISD sits in the middle of the spectrum, contracting specific student transportation services to two companies, GoldStar, Inc. and the American Logistics Company, while directly operating 223 regular routes and 83 special routes, as of December 2018.

GoldStar Transit, Inc.

In 2015, FBISD posted a request for proposals (RFP) for a contractor to operate 50 home-to-school regular program routes and field trips for specific campuses, designated by FBISD Transportation. The RFP further specified that the contractor provide school buses and the management, operations, and maintenance services required to operate the routes and field trips assigned by FBISD Transportation. The FBISD Board awarded the contract to Student Transportation Inc., doing business as GoldStar Transit, Inc.[22]

At the time of award, the contract could be extended for up to four additional one-year periods through the 2019-20 school year by mutual agreement. The contract has been extended through July 2019[23], and the Transportation Department intends to request FBISD Board approval for the final year of the contract[24]. An amendment to the contract for the 2016-17 school year increased the scope to a maximum of 70 bus routes, as designated by FBISD Transportation[25]. In August 2018, the Transportation Department

[22] RN 54 Contract with GoldStar approved May 2015
[23] RN 54 Email M Brassfield RE_ GST Amendment for 2018-2019
[24] Interviews with FBISD Transportation Executive Director and Director for LOT
[25] RN 54 GoldStar Amended Agreement Fully Executed 8-25-16

assigned 53 routes to GoldStar and increased the number of routes to 54 in January 2019[26]. GoldStar must supply 54, 77-passenger school buses plus 10 percent spare buses[27].

The contract with GoldStar provides FBISD the following benefits and flexibility:

- A full complement of trained bus drivers for the routes assigned to GoldStar. The private company can offer wages and benefits to keep all driver positions filled.
- Experienced management staff including a general manager, operations supervisor, safety coordinator, and route coordinator.
- Supervisors to monitor home/school routes and field trips.
- New 77-passenger school buses as of 2015 (five years in service at end of contract), including 10 percent spare buses. All vehicles are equipped with a radio, three-camera surveillance system, global positioning system (GPS), safety crossing arms and other safety devices.
- Master mechanics to maintain the school buses for vehicle reliability and safety.
- The flexibility to assign up to 70 routes if required by FBISD.
- Resources (vehicles, drivers, supervision) to operate field trips and extracurricular service for the schools assigned.

Initially, GoldStar operated from a separate terminal, leased by the company. An amendment to the contract for the 2018-19 school year provided that GoldStar would operate from the FBISD Lake Olympia Terminal and credit FBISD an amount equal to $120,000 over nine months (September 2018 through May 2019)[28]. GoldStar placed a temporary building on the LOT property, parks its school buses in a designated parking area at the LOT, and uses resources in the LOT maintenance facility (two maintenance bays and office space in the parts inventory area). Under terms of the original request for proposals, FBISD supplies the diesel fuel for the GoldStar school buses[29].

The Transportation Department assigns bus routes to GoldStar by school campus. For assigned bus routes, FBISD pays GoldStar according to a pricing schedule. FBISD assigned 53 routes to GoldStar for the months August through December 2018. The Transportation routing and scheduling team determines the routes, schedules, and calculates the route miles using the *Transfinder* automated routing system. The daily route miles for the 53 routes assigned to GoldStar was 3,163.4 route miles during this time period. The audit team reviewed the invoices to the District from GoldStar for August through December 2018 and

[26] RN 103 - 2017_08 August Invoice and RN 103 - 2018_01 January Invoice
[27] RN 53 GoldStar Proposal Executive Summary April 2015
[28] RN 54 Email M Brassfield RE_ GST Amendment for 2018-2019
[29] Interview with FBISD Transportation Director for LOT

calculated the cost per route mile. The GoldStar cost per route mile includes the capital cost of the school bus, as shown in Table 5.

Table 5. GoldStar Cost per Route Mile, August 2018 through December 2018

Average GoldStar route cost per route mile, August through December 2018 for 53	$6.55
Value of the capital cost per bus per route mile	$0.84
Cost per route mile for management, operations, and fleet maintenance (excluding fuel)	$5.71

Source: FBISD Transportation Department. RN 103 Invoices August 2018 through December 2018. RN 35 - MDB Route Ledger 18-19 updated 01.08.19

GoldStar's equivalent operating cost per route mile for August through December 2018 is $5.71, or 18 percent higher than FBISD's regular program operating cost per odometer mile of $4.83 as reported to TEA for 2015-16, the most recent year that TEA data could be verified. For the higher cost, FBISD is guaranteed a full complement of trained bus drivers and school buses less than five years' service life. The buses, drivers, and supervisors are also available for field trips and extracurricular service, reducing the burden on the FBISD Transportation Department at times when field trips and extracurricular trips overlap school bus routes.

American Logistics Company, LLC

In August 2014, FBISD entered into a contract with ALC to provide transportation for students under the McKinney-Vento Act's Education for Homeless Children and Youth program[30]. FBISD made the selection of ALC from the qualified vendors identified by the Region 4 Education Service Center (ESC), Cooperative Purchasing Network for alternative student transportation services[31]. The agreement was extended twice. In August 2015, the agreement was extended to August 2016 with an automatic renewal for two consecutive 12 months periods, until August 2018. In August 2018, a second amendment extended the agreement to August 2019. The contract is performed on a service order basis; ALC operates smaller gasoline-powered vehicles appropriate to the type of service. ALC drivers and vehicles operate independently of FBISD.

Transportation for McKinney-Vento students is eligible for federal funding under the Elementary and Secondary Education Act (Title 1). The expenditures for ALC are not reported in the TEA *Operations Report* as a local transportation expense. The students transported and the vehicles and miles operated by ALC are not reported in the TEA Route Services Report and the TEA *Operations Report*.

McKinney-Vento trips are often long distance (some from locations in other counties in the region) for a limited number of students per trip. The trips are difficult and inefficient to assign to a FBISD route. By assigning the trips to ALC, the FBISD Transportation Department benefits in the following ways:

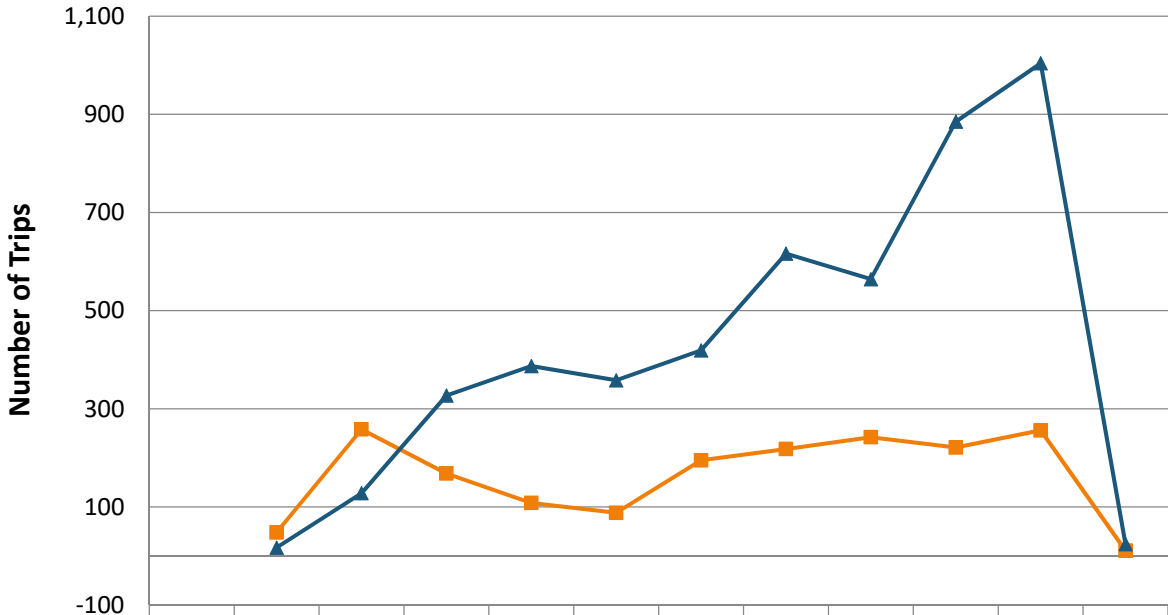
[30] RN 54 ALC_LLC_-_Contract_14-15_Signed
[31] RN 54 20190125_102557 ALC Appendix A pg 15 9-14

- The Transportation Department can focus on providing effective route transportation by school bus for many student riders.
- McKinney-Vento students receive transportation from temporary housing directly to and from school.
- The students and/or trips assigned to ALC can be revised with a 24-hour notice.

The Transportation Department arranges with ALC to provide transportation services for students eligible under the McKinney-Vento Act, and transportation for special needs students as required.

The McKinney-Vento definition of homelessness includes children and youth who lack a fixed, regular, and adequate nighttime residence. This definition specifically includes children and youth who are: sharing the housing of others due to loss of housing or economic hardship; living in shelters, transitional housing, or cars; and staying in motels or campgrounds due to lack of adequate alternative accommodations[32]. Figure 27 provides the number of one-way trips assigned to ALC during 2016-17 and 2017-18. When comparing year-over-year, significantly more trips occurred in 2017-18. This is largely due to impact of Hurricane Harvey in August and September 2017, which increased the number of homeless children and youth attending FBISD schools.

Figure 27. One-Way Trips Provided by ALC per Month in 2016-2017 and 2017-2018



	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
2016-17		48	258	168	108	88	195	218	242	221	256	11
2017-18		17	128	327	387	358	419	616	564	885	1,004	24

Source: RN 53 - Fort Bend Billing – ALC

[32] https://www.schoolhouseconnection.org/wp-content/uploads/2018/07/MVtwopagesFINALAugust2018.pdf

Finding 8. The FBISD contracts with third-party transportation providers do not include performance standards or performance reporting.

Through reviewing the vendor contracts and interviewing management, the audit team discovered that there are no contractual provisions defining performance standards or monitoring against those standards. FBISD should have performance data to critically assess the ongoing cost-benefit relationship of outsourcing certain aspects of transportation. More simply, performance monitoring ensures that agreed upon quality is being met and that other contractual provisions are not violated. The current contracts between FBISD and GoldStar and FBISD and ALC do not define a performance reporting framework.

Recommendation 8. Implement a performance monitoring system for contracted transportation services.

To ensure the quality of contracted transportation service for home/school routes, FBISD should identify specific operational goals, measurable objectives, and performance standards to monitor contractor performance. Appendix B provides performance indicators that target key values for school transportation for both contracted routes (GoldStar) and contracted service per trip (ALC). Performance data should be reported per calendar month and monitored by an FBISD supervisor. FBISD should include financial penalties in the next contract if the performance goals are not met each month. Additionally, FBISD should include the performance monitoring framework in future procurements of transportation services.

FBISD should seek to include these provisions in the next procurements for contracted transportation services for both contracted routes and contracted service per trip.

Management Response: *Department Leadership agrees with this recommendation. Staff will develop monthly key performance indicators for contracted transportation service. Estimated timeline is December 2019.*

Finding 9. FBISD Transportation does not have appropriate oversight over the assignment of students to ALC.

Currently, a FBISD employee is not involved in assigning students and trips to ALC. An employee of GoldStar controls the process, deciding which student riders will be assigned to ALC. Then, the employee works with ALC to determine the actual miles per trip using the ALC proprietary school dispatch software. The mileage is based on the pickup farthest from the destination school(s) to the next pickup. ALC is responsible for plotting the routes using the ALC software. All trip legs are totaled and rounded to the nearest whole mile for purpose of determining the mileage of each trip[33].

[33] Interviews with FBISD Executive Director, Director of the Lake Olympia Terminal, and the General Manger for GoldStar

On behalf of FBISD, the GoldStar employee authorizes the trip and corresponding mileage and confirms the corresponding expense per trip. This results in FBISD having little visibility into ALC operations within the District. Coupled with the lack of performance monitoring discussed in Finding 5, FBISD is solely relying on the GoldStar employee and ALC to ensure efficiency and efficacy of operations for homeless or displaced students.

Recommendation 9. Move oversight of the assignment of McKinney-Vento students and trips to FBISD Transportation.

An FBISD area supervisor should authorize the trips and corresponding mileage to confirm the expense per trip. The decisions about which students and trips are assigned to ALC and the calculations for mileage charges is a responsibility of FBISD. FBISD should not delegate decisions about this significant expense to another third-party contractor.

The FBISD area supervisor should review ALC invoices and be accountable for tracking and evaluating the efficiency of the ALC service. When trips can be moved to an FBISD route effectively and efficiently, the ALC service for those trips should be terminated. The responsibilities discussed above should be added to existing job descriptions, in concert with Recommendation 1.

Management Response: *Department Leadership agrees with this recommendation. All authority with regards to McKinney-Vento students will be handled by FBISD Transportation Administration. Estimated timeline is December 2019.*

Chapter 4 – Transportation Operations

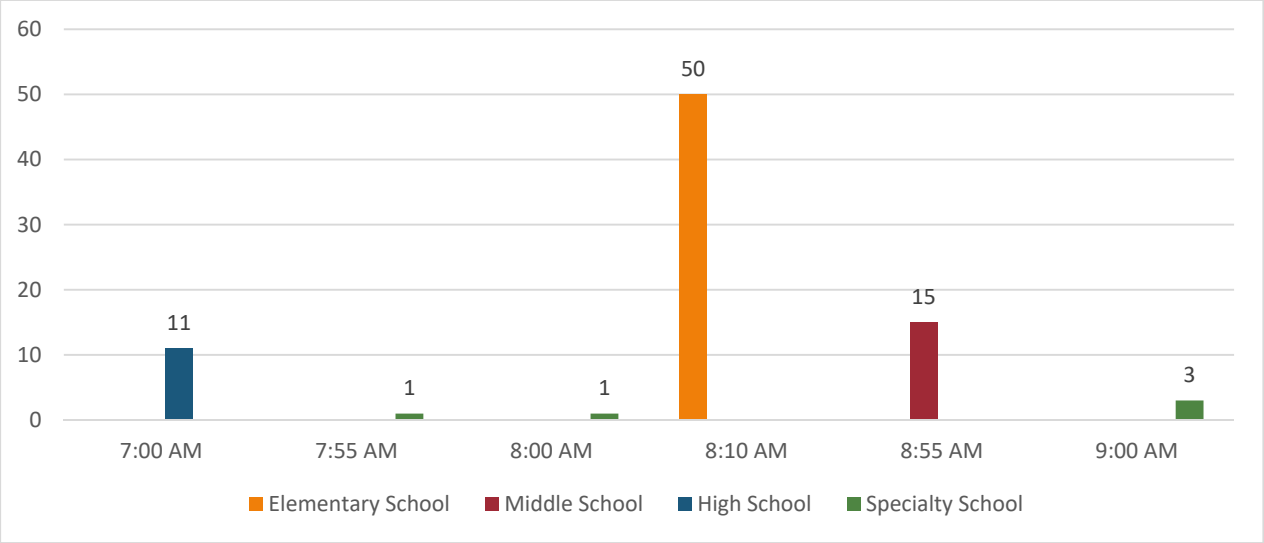
Routing and Scheduling

Routing and scheduling seeks to achieve two main objectives: 1) establish bus routes and stops to serve student riders; and 2) plan the times that those routes will serve students and their schools. Performing routing and scheduling is a detail-oriented process, where decisions and actions impact nearly every other area of Transportation operations. Routing and scheduling governs the minimum number of buses and drivers required to serve a district's needs and influences overall miles and hours driven – affecting maintenance and operating costs. This section examines FBISD's bell times (an important determining factor in routing and scheduling) and the Transportation Department's scheduling practices, including scheduling regular education routes and special education routes, policies for courtesy transportation, and establishing hazardous routes.

Bell Times

FBISD uses staggered bell times with high schools starting first in the day at approximately 7:30am, then elementary schools at 8:10am, and middle schools at 8:55am. Specialty school start times vary from 7:55am to 9:00am. Figure 28 presents the number and type of schools by start time.

Figure 28. School Start Times, 2017-18



Source: FBISD Transportation Department, RN 29 School Bell Schedules.xlsx.

In the afternoon, high schools dismiss at 2:45pm, most elementary schools at 3:25pm, and all middle schools at 4:10pm. The use of staggered bell times supports the re-use of buses in the morning and afternoon, increasing the number of tiers, or staggered route segments, and the overall efficiency of the transportation operations.

FBISD has been evaluating options to even further improve bell schedules, both to improve student health and transportation efficiency. The District conducted a bell time study in 2018 that estimated the cost savings of changing bell times, most significantly by moving elementary schools to be the earliest bell time instead of high schools[34]. According to the study, different bell time options could save the District from $900,000 to $1.5 million annually. However, no bell time changes were implemented as a result of the study.

Regular Education Routing and Scheduling

The Routing Supervisor and two Routing Specialists are responsible for FBISD regular route planning, design, and scheduling. There is also one GoldStar Routing Specialist who plans, designs, and schedules routes assigned to GoldStar. The routing personnel all use *Transfinder* for automated routing and scheduling.

Based on data provided[35], FBISD operates 274 AM and 274 PM regular routes, or bus driver assignments, consisting of 754 and 760 tiered, or staggered, route segments each morning and afternoon, respectively. FBISD does not mix student age groups, and each route assignment can make a maximum of three tiers each AM and PM. Not every route assignment can operate three tiers due to the distance traveled and time required. The Transportation Department is actively involved in the FBISD process to establish school bell times each year and contributes suggestions to optimize times for transportation scheduling.

Table 6 displays a summary of FBISD regular routes per period (AM or PM) and facility. Overall, regular routes are efficient, averaging 2.8 tiers and 2.5 hours per bus driver assignment. All facilities appear to be equally efficient.

[34] FBISD Transportation Department, RN 31 School Start Times Exploration.ppt.
[35] FBISD Transportation Department, RN 35 - MDB Route Ledger 18-19 updated 01.08.19.xlsx.

Table 6. FBISD Regular Routes Summary

Period and Facility	Assignments	Number of Tiers	Assigned Students	Average Tiers per Assignment	Average Distance per Assignment (miles)	Average Duration per Assignment (hrs)	Average Duration per Tier (mins)	Average Assigned Students per Tier
AM	**274**	**754**	**47,674**	**2.75**	**31.0**	**2.2**	**49**	**63**
LOT	88	237	15,737	2.69	32.5	2.3	51	66
HBT	133	365	22,514	2.74	31.2	2.3	49	62
GoldStar	53	152	9,423	2.87	28.0	2.1	44	62
PM	**274**	**760**	**48,272**	**2.77**	**32.0**	**2.7**	**59**	**64**
LOT	88	241	16,118	2.74	33.6	2.6	58	67
HBT	133	366	22,608	2.75	31.3	2.8	60	62
GoldStar	53	153	9,546	2.89	31.3	2.7	56	62
Grand Total	**548**	**1514**	**95,946**	**2.76**	**31.5**	**2.5**	**54**	**63**

Source: FBISD Transportation Department, RN 35 – MDB Route Ledger 18-19 updated 01.08.19.xlsx.

The audit team also collected student ridership data for FBISD Transportation's regular program home-to-school and school-to-home routes to assess the route-level service effectiveness in terms of students per route hour and route mile for the 2018-19 school year. The student ridership data FBISD provided[36] had 167 regular program routes without average daily ridership information available (61% of 274 routes). Table 7 displays the summary of routes without entered ridership data. Table 8 displays the service effectiveness per facility based on routes with entered ridership data.

Table 7. FBISD Transportation Department Regular Program Routes without Average Daily Student Ridership Data

Facility	Total Number of Routes	Number of Routes without Student Ridership	Percentage of Routes without Student Ridership
LOT	88	32	36%
HBT	133	82	62%
GoldStar	53	53	100%
Total	**274**	**167**	**61%**

Source: FBISD Transportation Department, RN 35 – FBISD State Reports 18-19.xlsx.

[36] FBISD Transportation Department, RN 35 - FBISD State Reports 18-19.xlsx.

Table 8. FBISD Transportation Department Regular Program Routes Service Effectiveness

Facility	Average Daily Student Ridership	Total Daily Route Miles[1]	Daily Route Hours[2]
HBT	5110	3666.5	278.6
LOT	5318	3527.2	275.0

Source: FBISD Transportation Department, RN 35 – MDB Route Ledger 18-19 updated 01.08.19.xlsx and RN 35 – FBISD State Reports 18-19.xlsx.
Note: Results are based on 56 LOT routes and 51 HBT routes for which average daily student ridership data were provided.
[1] Route miles based on data in RN 35 – MDB Route Ledger 18-19 updated 01.08.19.xlsx, which appears to include all route miles (deadhead and in-service).
[2] Route hours based on data in RN 35 – MDB Route Ledger 18-19 updated 01.08.19.xlsx, which appears to include all route hours (deadhead and in-service).

Because the 2018-19 route-level student ridership data provided was not yet entered for 61 percent of FBISD's regular program routes, drawing conclusions about service effectiveness is difficult. However, the daily students per mile appears reasonable when compared to FBISD's 2017-18 service effectiveness (1.58 total annual riders per route mile).

Special Program Routing and Scheduling

The audit team requested a special program route listing from FBISD Transportation with data necessary to perform a route efficiency analysis. However, the Transportation Department was unable to provide these data.

Courtesy Transportation

FBISD has adopted a policy to provide home-to-school and school-to-home "pay" transportation for students living less than two miles from school and not on a designated hazardous route[37]. Service is dependent upon route availability and available space on the bus and is first-come, first-served. The Transportation Department charges the fees listed in Table 9 for this transportation.

Table 9. FBISD Pay Transportation Fees

Time Frame	Fee per Student	Fee per Free/Reduced Lunch Student
August – December	$200.00	$140.00
January – End of School Year	$250.00	$175.00
Entire School Year	$450.00	$315.00

Source: FIBSD Transportation Department, RN 42- Pay Trans Form.pdf

The District implemented a policy to charge for courtesy home-to-school and school-to-home transportation and has procedures in place to evaluate pay transportation requests to ensure requests to

[37] FBISD Transportation Department, RN 42- Pay Trans Form.pdf.

do not add additional costs to regular route transportation. For example, pay transportation students must walk to an existing bus stop outside of the walk zone for the school to be picked up.

Commendation 2. FBISD effectively limits courtesy transportation.

Having a policy in place and charging a fee for courtesy transportation helps to control the number of requests and reduce the potential for increased costs for service that is not eligible for state reimbursement. Based on route data provided by the District[38], there are only two routes that have a pay transportation student: route 3006 and GoldStar route 43.

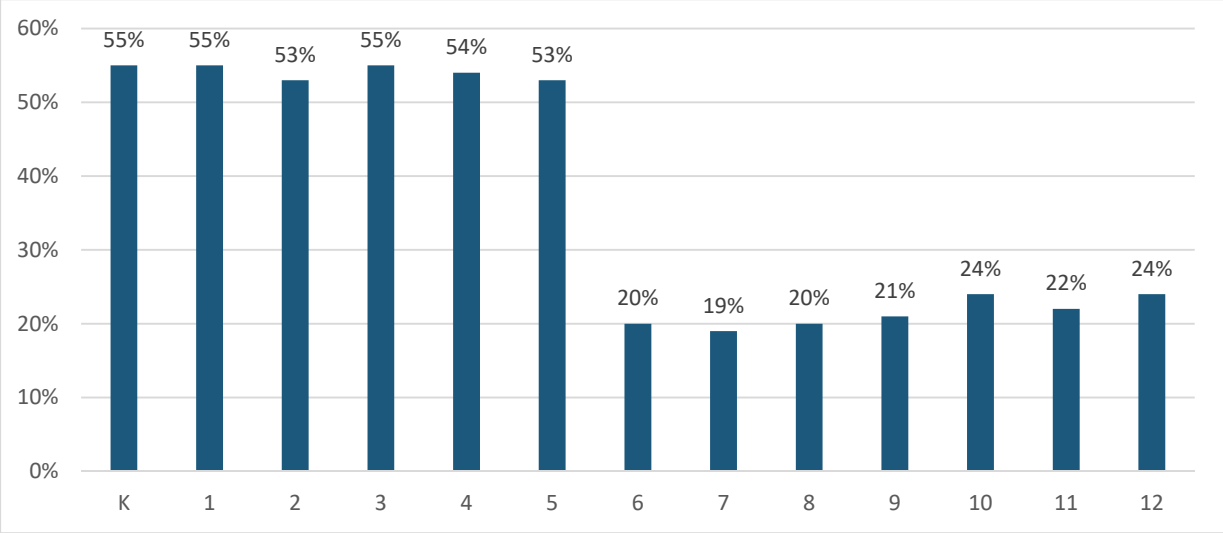
Hazardous Routes

The FBISD board has a policy[39] to annually adopt a resolution identifying hazardous conditions within two miles of school campuses. The resolution describes the specific hazardous areas in which students reside who would otherwise be ineligible for transportation, but for whom the District provides transportation because of the hazardous conditions in those areas. The FBISD Transportation Department performs an annual assessment of all established hazardous areas and assesses the conditions around new schools. Based on this assessment, the Transportation Department, through the Chief Operating Officer and Superintendent, make a recommendation to the FBISD board to revise the official *Designated Hazardous Traffic Conditions* list[40]. The Transportation Department also reviews requests for hazardous area designation that may come from parents or guardians[41] using a standard form to evaluate the area[42].

Because of the hazardous areas, a large number of students eligible for transportation reside within two miles of their schools. Figure 29 displays the percentage of eligible riders, per grade, who live within two miles of their schools[43]. Elementary students (K-5) have the highest percentages, which is expected given the ages of the students. Overall, 32 percent of students eligible for transportation are within two miles of their school campus.

[38] FBISD Transportation Department, RN 35 - MDB Route Ledger 18-19 updated 01.08.19.pdf.
[39] FBISD Transportation Department, RN 41 - CNA(LOCAL).docx
[40] FBISD Transportation Department, RN 41 - CNA(LOCAL).docx, RN 41 - COO_Hazardous Traffic Conditions_04_16_2018.docx, RN 41 - COO_Hazardous Traffic Conditions_List_04_16_2018.docx, RN 41 - COO_Hazardous Traffic Conditions_Resolution_04_16_2018.docx, RN 41 - COO_Memo_Hazardous Traffic Conditions_04_16_2018.docx.
[41] FBISD Transportation Department, RN 41 - Review 18-19 ineligible bus services.docx.
[42] FBISD Transportation Department, RN 41 Evaluation of Hazardous Areas Form 05-13.pdf.
[43] Only students in designated hazardous areas and pay transportation students would be eligible for transportation within the two-miles of a school.

Figure 29. FBISD Eligible Riders per Grade Living within 2 Miles from their School



Source: FBISD Transportation Department, RN 40 - Campus Eligibility_011519.xlsx.

Finding 10. FBISD Transportation Department Hazardous Route Mileage Consistently Exceeds the TEA Limit for Reimbursable Hazardous Mileage.

Over the last five years, FBISD's hazardous route mileage has exceeded 10 percent of regular route mileage for service two-or-more miles from school and actual hazardous area student riders, as a percent of total riders, has varied between 28 and 32 percent.

Having a large amount of hazardous route mileage and riders is not uncommon for school districts in FBISD's peer group. Table 10 displays the hazardous route miles and riders relative to 2-or-more-mile service for the selected peer school districts. FBISD is slightly below the peer average hazardous miles as a percent of 2-or-more-mile service (the peer average is 22 percent and FBISD is 16 percent).

Table 10. Peer Hazardous Route Service Statistics 2017-18

District	2-or-More-Mile Route Miles	Hazardous Route Miles	Hazardous Miles as % of 2-or-More-Mile	2-or-More-Mile Riders	Hazardous Route Riders	Hazardous Route Riders as % of Total
Cypress-Fairbanks ISD	4,569,667	1,413,104	31%	10,869,660	5,610,780	34%
Katy ISD	2,047,230	204,516	10%	4,395,420	917,100	17%
Klein ISD	1,725,557	525,096	30%	3,854,340	1,700,820	31%
Lewisville ISD	1,223,866	234,632	19%	2,331,000	447,660	16%
Plano ISD	1,534,950	98,478	6%	2,494,620	797,040	24%
Peer Average	*2,220,254*	*495,165*	*22%*	*4,789,008*	*1,894,680*	*28%*
Fort Bend ISD	**2,616,526**	**409,612**	**16%**	**5,087,160**	**1,621,980**	**24%**

Source: TEA, Foundation Schools Program, Route Services Reports, 2017-18.

The Texas Education Code limits state reimbursement for hazardous mileage to 10 percent of the reimbursable route service mileage, or service two or more miles from school.

Recommendation 10. Pursue opportunities through developers and local and county agencies to create additional pedestrian infrastructure.

Although FBISD must continue to prioritize student safety, FBISD should continually pursue strategies with developers and local jurisdictions to improve pedestrian infrastructure and safety measures to reduce the number of hazardous routes within two miles of school campuses. The Transportation Department could participate in ongoing local and regional transportation planning and programming discussions and work to educate local jurisdictions and developers on the importance of providing safe walking routes to schools. By interfacing with developers and local jurisdictions to improve pedestrian infrastructure and safety, the FBISD Transportation Department will not only improve student safety but will also help reduce the costs associated with transporting students less than two miles from school and not lose out on TEA reimbursement by exceeding the 10 percent hazardous mileage cap.

Management Response: *Department Leadership agrees with this recommendation. Staff will utilize the Hazardous Review Form to identify potential safe walk areas to campuses. Staff will work with Design & Construction, the City of Sugarland, and Fort Bend County to identify future projects and funding sources. Estimated timeline is December 2023.*

Bus Driver Staffing

Bus drivers are the most critical human resource for the Transportation Department. They are responsible for safely transporting students, handling incidents while in the field, managing student behavior, and representing the Transportation Department to students, their parents and guardians, school principals and staff, and the community. As discussed in *Chapter 2 – Profile of Fort Bend ISD Transportation*, the Transportation Department has 447 driver positions, of which 263 (58.8%) are regular bus drivers, and 78 (17.4%) special bus drivers, with the remainder of driver employees working as either cover driver/trainers or part-time drivers.

Finding 11. The Transportation Department has a consistent shortage of drivers.

Like many school systems in Texas and across the nation, FBISD battles a constant shortage of bus drivers. The shortage is influenced by several factors, including the bus driver work schedule, pay levels, and job satisfaction.

Most bus drivers do not work a full 8-hour shift, and their schedule demands morning hours and after noon hours with a gap during the middle of the day. Furthermore, the position is a 9- to 10-month position commensurate with the demands of the school year. This work schedule makes it difficult when most other jobs are full-year, full-time and work a regular schedule.

Bus driver wages at FBISD start at $15.18 per hour, and the mid-point of the bus driver salary range is $18.52. Table 11 summarizes bus driver counts, tenure, and wages as of February 2019. The Hodges Bend Terminal has more bus drivers than Lake Olympia Terminal, which as lesser tenure on average. This accounts for the lower average hourly wage at HBT. The Bus Driver position will be due for a compensation review in advance of the 2020-21 school year[44].

Table 11. Bus Driver Counts[1], Tenure, and Wages

Facility	Number of Employees	Minimum Tenure (years)	Mean Tenure (years)	Maximum Tenure (years)	Starting Hourly Wage	Average Hourly Wage	Highest Hourly Wage
Total Drivers	402	0	9	41	$15.18	$18.25	$23.08
HBT	226	0	8	31	$15.18	$17.99	$22.73
LOT	176	0	12	41	$15.18	$18.58	$23.08

Source: FBISD Transportation Department, RN 3 HBT Base Wage.xlsx and RN 3 LOT - Base Wage.xlsx.
Note: [1] FBISD provided wage rages data *after* org chart data, so there are minor differences in the number of employees.

The FBISD Human Resources Department completed a compensation study three years ago and found that bus driver wages were below market. No action has been taken to date on the pay variance, but the Human Resources Department intends to perform the analysis again in advance of the 2020-21 school year.

Employee morale may also be contributing to the ongoing driver shortage. The audit team identified several concerns during interviews and focus groups that may be influencing driver turnover:

- Drivers reported challenges managing students and frustration with the student disciplinary process. In particular, drivers reported they were often unsure if their disciplinary referral resulted in any action being taken.
- Drivers perceived inequity and unfairness in how rules were applied, particularly disciplinary actions taken regarding absenteeism or other rules for driver behavior, such as enforcing student rosters and not letting a student board a different bus.
- Drivers reported dissatisfaction with the level of communication with FBISD principals and Transportation Department management, supervisors, and maintenance.
- Drivers reported instances in which they did not have accurate information to perform their jobs. Specifically, drivers reported that route sheets and route information available to them was not always up to date. This becomes an issue especially when drivers are filling in on open routes.

The potential impact of the above factors can be seen in bus driver vacancy rates and absenteeism rates. Bus driver vacancies are reflected in the number of "open" routes, or the number of routes less the

[44] FBISD Transportation Department, RN 107 – Results of driver wage benchmarking analysis.docx.

number of available drivers. Table 12 presents the number of routes that are open daily, after accounting for vacancies and typical absenteeism, available part-time drivers, and available cover drivers and trainers. The data shows additional drivers needed (before considering absenteeism) and the vacancy rates for the LOT, the HBT, and the Transportation Department as a whole, excluding GoldStar. The driver vacancy rate is calculated by dividing the number of open routes by the total number of routes. The LOT has a vacancy rate 1.2 percentage points higher than the HBT, as they have one fewer open routes, but 46 fewer total routes.

Table 12. 2018-19 Bus Drivers Vacancy Rates, through December 2018[1]

Statistic	Lake Olympia Terminal	Hodges Bend Terminal	Total FBISD Facilities
Total Routes	**130**	**176**	**306**
Regular Routes	87	136	223
Special Routes	43	40	83
Drivers	**121**	**166**	**384**
Regular Bus Drivers	81	128	209
Special Drivers	40	38	78
Open Routes	9	10	19
Driver Vacancy Rate	6.9%	5.7%	6.2%

Source: FBISD Transportation Department, RN 1 Organization Chart_120418.xlsx; RN 5 - Transportation Absences 2017-2019.xlsx.
Note: [1]Excludes GoldStar

Driver absenteeism also contributes to the driver shortage. On an average school day in fall 2018, 21 drivers were absent[45] (approximately 7% of filled driver positions[46]), with absenteeism slightly higher at the LOT than at the HBT. Table 13 presents the number of driver absences by month at each facility. The absenteeism rate peaked in November 2018.

[45] FBISD Transportation Department, RN 5 - Transportation Absences 2017-2019.xlsx.
[46] The percentage is approximate and uses the number of regular route, special education, and cover drivers from December 2018 as the denominator in the absence rate.

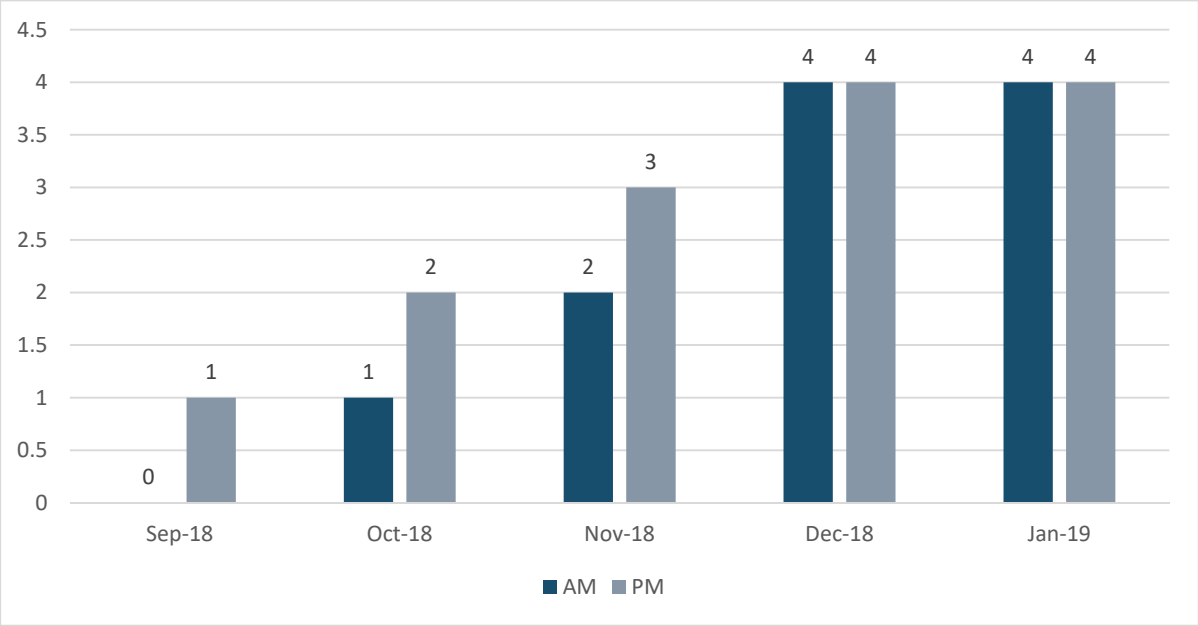
Table 13. FBISD Transportation Driver Absenteeism August 2018 through December 2018

Month	Number of School Days	Total			Lake Olympia Terminal			Hodges Bend Terminal		
		Absences		% of Employees Absent Daily	Absences		% of Employees Absent Daily	Absences		% of Employees Absent Daily
		Number	Average Per Day	Percentage	Number	Average Per Day	Percentage	Number	Average Per Day	Percentage
Aug 2018	18	223	12.4	4.2%	111	6.2	5.0%	112	6.2	3.6%
Sep 2018	18	393	21.8	7.4%	175	9.7	7.8%	218	12.1	7.1%
Oct 2018	21	507	24.1	8.2%	236	11.2	9.1%	271	12.9	7.5%
Nov 2018	17	425	25.0	8.5%	189	11.1	9.0%	236	13.9	8.1%
Dec 2018	15	327	21.8	7.4%	141	9.4	7.6%	186	12.4	7.3%
Total	**89**	**1,875**	**21.1**	**7.1%**	**852**	**9.6**	**7.7%**	**1,023**	**11.5**	**6.7%**

Note: The number of employees used in the denominator to calculate the absenteeism rate is the total regular route, special education, and cover drivers as December 2018 (source RN 1 Organization Chart_120418.xlsx).
Source: FBISD Transportation Department, RN 5 - Transportation Absences 2017-2019.xlsx.

The number of drivers vacant and absent often results in filling open routes with part-time drivers, cover drivers, supervisors, and shop personnel. For example, Figure 30 presents average monthly number of shop personnel used daily to drive routes from September 2018 through January 2019. At the LOT, the number of drivers out has been trending upward, resulting in consistent use of part-time drivers, cover drivers, and shop personnel. At the LOT in December 2018 and January 2019, on average, four shop personnel had to drive routes every day in both the AM and PM periods.

Figure 30. FBISD Transportation LOT Facility Average Daily Shop Personnel Utilized to Operate Routes September 2018 through January 2019



Sources: FBISD Transportation Department, RN 25 - Key Performance Indicators-LOT Dispatch AM.xlsx, RN 25 - Key Performance Indicators-LOT PM Dispatch.xlsx.

The Transportation Department has initiated several activities to address the driver shortage including:

- Participating in the first annual auxiliary staff job fair in June 2018. FBISD Transportation intends to participate in a similar job fair in 2019.
- Using various forms of media to advertise open positions, including radio and television ads, posting openings on the FBISD website, and advertising openings on some school campus marquis signs.
- Participating in a job fair hosted by the Texas Workforce Commission.
- Passing out and posting flyers at churches and community centers, to parents in the student pick-up line, and to FBISD employees.
- Keeping the bus driver posting open and continuous for an entire school year.

These initiatives have likely prevented higher vacancy rates, but the challenges for the Transportation Department remain.

Recommendation 11. Implement procedures to improve recruitment and retention of bus drivers.

Several opportunities exist for improving driver recruitment and retention at FBISD Transportation:

- **Centralize driver recruitment, selection, onboarding, and training** – Centralization of these activities would ensure that processes are consistent across both the HBT and the LOT. This would also allow for more strategic, data-driven decision making. The FBISD Transportation Department is already pursuing centralizing responsibilities for driving recruitment and training.

- **Track and use data to inform decision making** – FBISD Transportation needs to establish measures to assess the effectiveness of hiring practices and recruitment initiatives. For example, the Department should be able to analyze the number of applicants by source (e.g., radio advertisement vs. flyers) and to quantify the number of applicants that make it through each step of the recruitment process. These data would help focus departmental efforts on the most effective recruiting methods.

- **Investigate the feasibility of implementing annual pay for drivers** – According to information learned during focus group sessions conducted by the audit team, an annualized pay structure would be appealing to drivers. Annualized pay spreads pay throughout the year by decreasing the effective hourly pay rate. The FBISD Human Resources Department should further investigate the desire for annualized pay and determine if a change to this structure is feasible.

- **Introduce incentive pay for drivers** – The District should consider adding financial incentives that encourage retention, such as tenure-based pay raises (driving for 6 months, 1 year, etc.) and merit-based pay raises or bonuses (safe driving awards, perfect attendance awards, and referral bonuses). Programming in known and meaningful wage increases and other financial incentives for drivers may help reduce turnover.

These opportunities could help alleviate FBISD bus driver shortage, reduce turnover, and improve the effectiveness of recruiting efforts.

Management Response: *Department Leadership agrees with this recommendation. Staff will continue to collaborate with our Human Resources Department on methods to improve on recruitment and participate in district job fairs. Staff will also request a wage survey to compare starting wages from surrounding school districts to ensure that FBISD has a competitive salary scale. Estimated timeline is December 2020.*

Finding 12. Current FBISD procedures for managing and calling in part-time drivers are ineffective.

Part-time drivers are required to report to work at least three times per month to stay employed as a part-time driver. The management and use of part-time drivers are inconsistent across transportation facilities. Checking whether part-time drivers meet their minimum work requirements and enforcing the work requirement by taking drivers off the eligibility list is reportedly a low priority, and is perceived as counter-productive, because FBISD consistently does not have enough drivers to fill open routes.

Although part-time drivers may be called in advance by dispatchers or other management to help fill open routes, the audit team was informed by LOT management that part-time drivers often arrive on their own accord. These challenges contribute to the shortage of available part-time drivers and cover drivers. On an average day in December 2018, FBISD Transportation had 13 open routes after using available cover drivers/trainers and part-time drivers. This results in FBISD Transportation using other staff (e.g., shop personnel) to cover open routes. On an average day, FBISD Transportation uses 20 part-time drivers; however, FBISD has 70[47] total part-time driver positions.

Recommendation 12. Improve management practices over the part-time substitute driving pool.

The unreliability of the current part-time substitute driving pool should be addressed by several initiatives.

- **Better Planning** – Pre-plan the number of part-time drivers reporting for work each day as a part of preparing for the next day's service. Transportation management and dispatch should prepare a matrix of data to determine the number of part-time drivers needed to report for work using all known types of driver unavailability. The matrix could include: the number of open routes; the average number of daily absences for both AM and PM; known field trip conflicts with AM and PM route service; and the number of drivers out for training, drug testing, or other administrative duties. After determining the number of drivers needed to operate route service, then part-time drivers can be contacted earlier based on their reported availability. Table 14 presents a sample matrix that could be applied.

[47] FBISD Transportation Department, RN 1 Organization Chart_120418.xlsx.

Table 14. Example Driver Availability and Need Matrix

Date: mm/dd/yyyy	Lake Olympia Terminal		Hodges Bend Terminal	
Time Period	AM	PM	AM	PM
Total Routes	**130**	**130**	**176**	**176**
Regular Routes	87	87	136	136
Special Routes	43	43	40	40
Drivers	**121**	**121**	**166**	**166**
Regular Bus Drivers	81	81	128	128
Special Drivers	40	40	38	38
Driver Unavailability	**22**	**24**	**25**	**29**
Open Routes* (vacancies)	9	9	10	10
Average Driver Absences per Day**	10	10	12	12
Route Drivers on Conflicting Field Trips***	1	2	1	3
Route Drivers in Training***	1	2	1	3
Route Drivers at Drug / Alcohol Testing***	1	1	1	1
Fill-In Drivers	**22**	**24**	**25**	**29**
Cover Drivers/Trainers	3	3	5	5
Part-Time Drivers Confirmed***	19	21	20	24
Remaining Open Routes	**0**	**0**	**0**	**0**

Source: Created by Gibson Consulting Group, Inc. using sample data
FBISD Transportation Department, RN 1 Organization Chart_120418.xlsx, RN 5 - Transportation Absences 2017-2019.xls.
Note: * The data in the table are from December 2018, and there are *currently* no vacant driver positions at the HBT.

- **Increase minimum number of days –** The Transportation Department should also consider increasing the monthly work requirement for part-time drivers to more than three days. This could increase in the availability of the part-time driver pool to meet daily operational needs.

- **Provide incentives –** The Transportation Department should also look for ways to encourage part-time drivers to increase their availability to drive, either by instituting incentives for more frequent driving, frequently involving part-time drivers in communications with management, or other efforts to help part-time drivers have a greater degree of commitment to FBISD Transportation.

Each of the above implementation strategies should help alleviate the need for FBISD Transportation staff to drive routes.

Management Response: *Department Leadership agrees with the recommendation. Staff will review the amount of hours that substitute drivers are expected to report and will make adjustments. Estimated timeline is December 2019.*

Chapter 5 – Fleet Management

A quality fleet management program helps ensure student transportation service reliability, vehicle operational efficiency throughout their expected economic life (service life) of the school bus fleet, and maintenance of the value of the capital asset. The Transportation Department is responsible for vehicle management for the FBISD school bus fleet and the support vehicles assigned to the Department.

Fleet management includes a range of functions, such as ensuring the fleet is appropriately sized for both regular and special transportation, providing facilities (terminals) for maintenance of the fleet, hiring and retaining skilled mechanics, collecting data to monitor the efficiency and quality of the maintenance performed, managing inventory, and planning for fleet replacement and appropriate growth for increasing student enrollment.

School Bus Fleet Composition

The Transportation Department is responsible for a fleet of 500 buses. The fleet is comprised of 385 large, over 69-passenger capacity buses (77 percent) and 115 smaller, 14- to 53-passenger capacity buses (23 percent)[48]. The large buses are used for regular program student transportation and the smaller buses, some of which are wheelchair-accessible, are used for special program student transportation. FBISD purchased 30 large buses that use CNG fuel. The remainder of the buses in the fleet use diesel fuel[49].

As of January 2019, GoldStar provides 59 diesel-powered, 77-passenger regular school buses (54 routes plus 10 percent spare buses)[50].

Terminal Location

The school bus fleet and support vehicles are assigned to either the LOT or the HBT. GoldStar maintains their school buses at the LOT. Table 15 summarizes the assignment of the fleets to each terminal.

[48] RN 79 School Bus Fleet Data, FBISD.
[49] RN 72 FINAL DRAFT-Compressed Natural Gas PowerPoint (district template), FBISD.
[50] RN 103 GoldStar Invoices 2018-19 and Cost per Route Mile, FBISD.

Table 15. FBISD Terminal Location for Regular and Special Buses and Support Vehicles, 2019

Subfleet	Lake Olympia Terminal	Hodges Bend Terminal	Total Fleet
FBISD Fleet			
Regular Program Diesel	146	209	355
Regular Program CNG	0	30	30
Special Program Diesel	64	51	115
Total FBISD School Bus Fleet	210	290	500
Support Vehicles	14	9	23
GoldStar School Bus Fleet			
Regular Program Diesel	59	None	59

Source: FBISD Transportation Department, RN 79 School Bus Fleet Data and RN 102 FBISD Routes-Spares, RN 101 Goldstar Staffing.docx.

Note: Special Diesel buses are defined as the 14 to 53 passenger capacity buses.

The support fleet includes sport utility vehicles and sedans that are used for extracurricular trips with a small number of students. Other vehicles in the support fleet are supervisor vehicles and utility trucks[51].

Fleet Age

Table 16 shows the school bus fleet by years of service (age), fuel type (diesel or CNG), and by owner (FBISD or GoldStar). The average age of the District's school bus fleet is 8.1 years of service in 2019. Sixty-three percent of regular program diesel buses are six years or older, with 35 percent of regular diesel buses being older than 10 years. On average, CNG and special program diesel buses are newer than regular program diesel buses. The age of the GoldStar fleet is 4 years of service, as new buses were placed into service during 2014-15 when the GoldStar contract began.

Table 16. School Bus Fleet by Years of Service and Type of Fuel for FBISD and GoldStar

Subfleet	0-5 Years	6-10 Years	Over 10 Years	Total
FBISD School Bus Fleet				
Regular Program Diesel	105	111	139	355
Regular Program CNG	30	0	0	30
Special Program Diesel	50	27	38	115
Total FBISD Fleet	*185*	*138*	*177*	*500*
Percent of FBISD Fleet	*37%*	*28%*	*35%*	*100%*
GoldStar School Bus Fleet				
Regular Diesel	59	0	0	59
Total Fleet	**244**	**138**	**177**	**559**

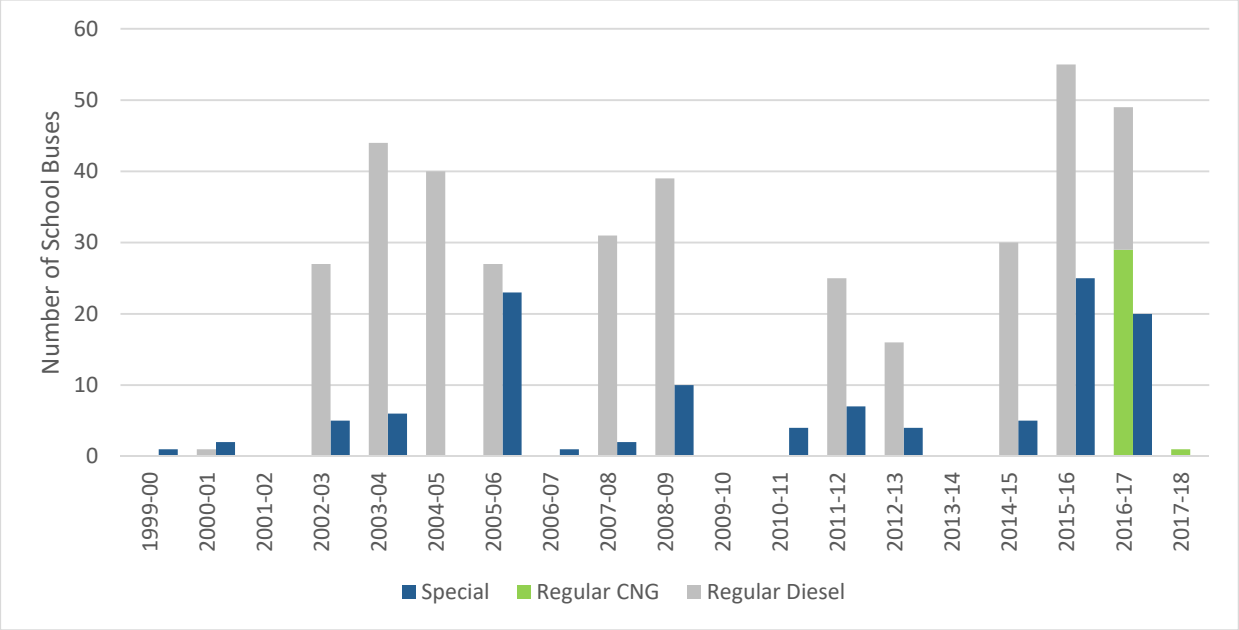
Source: RN 79 School Bus Fleet Data, FBISD.

Figure 31 illustrates the FBISD school bus fleet by year of purchase. The District makes a regular capital investment in the school bus fleet, although the number of buses purchased each year varies. The most

[51] RN 79 School Bus Fleet Data, FBISD.

buses were purchased in 2015-16, 2016-17, while no buses were purchased in 2009-10, 2010-11, 2013-14, nor in 2017-18.

Figure 31. FBISD Fleet by Year of Purchase for Regular and Special Buses



Source: RN 79 School Bus Fleet Data, FBISD.

Spare Ratio

Spare buses are the buses not needed to transport students during peak service times. Spare buses can be available for field trips and extracurricular trips, in case there is a problem with a bus in service, and for preventive maintenance inspections and repair. The spare ratio refers to the percentage of total vehicles that are not needed in peak service. For example, if a school district has 100 buses, of which 80 are needed in peak service to transport students from home to school in the morning, then the remaining buses are spare buses. The spare ratio, in this example, is 20 divided by 80 or 25 percent. School districts have an incentive to operate as low a spare ratio as possible, as each additional school bus means one more bus that has to be purchased, parked, maintained, and insured.

On the other hand, having a spare ratio that is too low may result in some bus routes not being operated because there are no spare vehicles available. Having a lower spares bus ratio also means that the school district may have difficulty scheduling buses for preventive maintenance inspections and repairs, because buses have to be available when mechanics can work on them. The recommended range for spares is included in Table 17. The Federal Transit Administration guidelines for public transit include a maximum spare ratio of 20 percent. School districts have additional requirements for field trips and extracurricular trips that public transit agencies do not have, bringing the spare ratio for a school bus fleet to 27 and 30 percent of the peak service requirement.

Table 17. Recommended Spare Bus Assumptions

Reason	Percent of Peak Bus Requirement
Buses for inspections	5%
Buses available for in-service replacements	1%
Buses in minor repair	6%
Buses in major repair	5%
Buses out for vendor warranty	3%
Subtotal	*20%*
Buses available for field trips during route times	7% - 10%
Total	**27% - 30%**

Source: Gibson Consulting Group, Inc.

Table 18 shows the current FBISD spare ratio for regular and special buses.

Table 18. FBISD Spare Ratio for Regular and Special Buses, 2019

Subfleet	Total Fleet	Activity Buses	Available Fleet	Peak Requirement	Spare Buses	Spare Ratio
Regular Program Buses	385	8	377	223	154	69%
Special Program Buses	115	0	115	83	32	39%

Source: RN 79 School Bus Fleet Data and RN 102 FBISD Routes-Spares, FBISD.

The regular program spare buses include 69 older buses (purchased 2003 through 2006) that must be maintained in service through the 2020-21 school year. FBISD received a Texas Clean Bus Program grant in the fall 2015 to install diesel particulate filters (DPF) in 71 buses, of which 69 remain in service. A DPF is a device designed to remove diesel particulate matter or soot from the exhaust gas of a diesel engine. The Transportation Department completed installation of the DPFs in summer 2016. Based on the terms of the grant, the DPF buses must continue in service until the summer 2021[52]. Because these buses are older (13 to 16 years of service), the buses are used as spares, representing 31 percent (69 divided by 223 peak requirement) spare buses. Excluding the DPF buses, the number of FBISD regular program spare buses is 85 buses, or 38 percent of the regular program peak requirement, similar to the 39 percent spare ratio for special program buses.

Maintenance Facilities

The Transportation Department provides overnight parking, fuels, and maintains the school bus fleet and support vehicles at the two terminals at Lake Olympia and Hodges Bend. The two terminals are described in greater detail below.

[52] Email from FBISD Transportation Department, April 17, 2019.

Lake Olympia Terminal

Although Lake Olympia is surrounded by development (Lake Olympia Middle School immediately to the east, commercial to the north, and the Lake Olympia residential area surrounding), the bus parking area is adequate for the fleet. The bus parking area is surrounded by fencing and the gates are secured after 6:00 p.m. Access afterhours is restricted to FBISD employees with the key fob to a district vehicle. The employee parking area is limited and, when all bus drivers report for duty, the capacity of employee parking is exceeded. Employee parking is permitted in the bus parking area at peak times.

Diesel and unleaded gasoline fueling stations are in the LOT restricted access area. Bus drivers are responsible for filling the school bus with diesel fuel daily or as required. The fuel system uses key fobs, which are assigned to each vehicle owned by the school district. The fob authorizes the bus driver access to the fueling system for the specific vehicle. The bus driver presents the fob at the fueling station, enters the bus odometer miles, and fuels. The *Ward* fueling system records the transactions by date, time, department, employee, and vehicle. Employees from FBISD departments other than Transportation may fuel at the diesel and unleaded gasoline fueling stations using the same fuel system.

The maintenance building has 14 bays, a parts room, and limited office space for the shop manager. The maintenance bays include two bays dedicated to a drive through bus wash, one bay for tire storage and tire changing, one bay for lubricant storage, and a bay with a service pit. The remaining nine bays have flat floors and are available for preventive maintenance inspections and repairs. There is no vehicle lift; mechanics use portable lifts to raise the bus to work under the bus. Two of the nine bays are dedicated to GoldStar, leaving seven bays for FBISD mechanics. This is an adequate work area for vehicle maintenance. The appearance of the work area is clean but untidy. There are many mechanics and servicemen working in a confined space, requiring careful planning of the maintenance assignments.

The parts room houses parts inventory and offices for both FBISD inventory management staff and the GoldStar shop manager. The area is adequate for these dual purposes. See the discussion of inventory management later in this chapter.

Hodges Bend Terminal

The Hodges Bend Terminal has adequate area to park each school bus in a designated space, and FBISD owns additional area for expansion if needed. The bus parking area is surrounded by fencing and the gates are secured after 6:00 p.m. Access afterhours is restricted to FBISD employees with the key fob to a district vehicle. The employee parking area is adequate, even in periods when all bus drivers have reported for duty.

Diesel and unleaded gasoline fueling stations are in the Hodges Bend Terminal restricted access area. Bus drivers are responsible for filling the school bus with diesel fuel daily or as required. The fuel system is the same as the Lake Olympia terminal. Employees from FBISD departments other than Transportation may fuel at the diesel and unleaded gasoline fueling stations using the same fuel system. Overnight parking

and fueling for the 30 CNG buses are in a designated area. Additional discussion of CNG fueling is included later in this chapter.

The maintenance building has 12 bays, a parts room, and office space for the shop manager. The maintenance bays include one bay for tire storage and tire changing, one bay for lubricant storage, and bay with a service pit. The bus wash is in a separate building. The remaining nine bays have flat floors and are available for preventive maintenance inspection and repairs. There is no vehicle lift; mechanics use portable lifts to raise the bus to work under the bus. This is an adequate work area for vehicle maintenance. The appearance of the work area is clean and generally tidy.

The Hodges Bend maintenance building has not been adapted for safe maintenance of CNG buses. The CNG buses are under warranty, and a third-party vendor in Houston provides repair for the bus and inspections of the CNG fueling system.

The two-level parts room at the Hodges Bend is adequate for the inventory. The inventory management staff office in the parts room and sufficient space is available as a break area for mechanics.

Maintenance Staffing

The FBISD staff assigned to the vehicle maintenance shop at each terminal include the shop manager, mechanics, servicemen, an audio-visual (AV) technician, and the parts inventory staff. Table 19 shows the number of personnel in each position at each terminal.

Table 19. FBISD Transportation Staffing Levels in the Shop at Each Terminal

Position	Lake Olympia Terminal	Hodges Bend Terminal	Total Staff
Shop Manager	1	1	2
Master Mechanic	7	6	13
Vehicle Serviceman	6	3	9
AV Technician	1	1	2
Inventory Manager	1	1	2
Assistant Manager Parts	1	1	2
Total Shop Staff	**17**	**13**	**30**

Source: RN 3 FBISD_PUF_DEPT_TRANSPORTATION-531133, FBISD.

The Shop Manager oversees the activities and transactions for vehicle maintenance for school buses and the support vehicles assigned to Transportation. The shop manager at each terminal is responsible for supervising and coordinating the work of shop mechanics and service personnel[53]. Shop managers can also perform repairs if necessary.

[53] RN 11 - Manager Shop (Transportation)_[0013]_JD Template, FBISD.

Master Mechanics are skilled technicians responsible for preventive maintenance inspections and repair of school buses and support vehicles[54]. The Transportation Department currently employs 13 master mechanics, 7 at Lake Olympia and 6 at Hodges Bend.

Vehicle Servicemen (service workers) perform semi-skilled work in the maintenance and servicing of school buses and fleet vehicles. Assignments are confined principally to non-mechanical maintenance and servicing including changing oil and filters, lubricating, and checking fluid levels[55]. The Transportation Department employs 9 service workers, 6 at Lake Olympia and 3 at Hodges Bend.

A recent addition to the shop staff at each terminal is a full-time AV Technician. The AV technician is responsible for installing, inspecting, and repairing audio (radio) and video (cameras) on school buses[56].

An Inventory Manager and Assistant Manager Parts manage the parts room at each terminal. The responsibilities of the inventory manager involve ordering and issuing parts, materials and supplies, establishing inventory levels, establishing and implementing inventory control procedures, and maintaining computerized inventories, records and files[57]. The Assistant Manager Parts provides support in the management and operation of the parts room and assists in the ordering and issuing of parts, materials and supplies and assists in the maintenance of computerized inventory records[58].

Maintenance Labor Required

The Transportation Department's practice is to schedule preventive maintenance inspections for each bus according to different inspection categories[59]. Preventive maintenance and inspections require, on average, 27 hours per year per bus[60]. The fleet management software does not capture data required to calculate the actual maintenance hours needed for unplanned vehicle repair. For an estimate, the audit team assumed (based on industry standards) that 50 percent of inspection hours are required for unplanned vehicle repairs. This assumption is based on the experience of other school districts for the total annual maintenance hours required on average per vehicle.

Table 20 shows the calculations for an estimate of the vehicle maintenance labor hours per bus for inspections and repairs and the total maintenance hours for the bus fleet at the LOT.

[54] RN 11 - Master Mechanic_[0018]_JD Template, FBISD.
[55] RN 11 - Serviceman Vehicles_[0009]_JD Template, FBISD.
[56] RN 11 - Technician, Audio Visual_[0010]_JD Template, FBISD.
[57] RN 11 - Manager Inventory_[0011]_JD Template, FBISD.
[58] RN 11 - Assistant Manager Parts_[0017]_JD Template, FBISD.
[59] RN 79 Vehicle Maintenance various forms incl PMI A and D from Hodges Bend Terminal and interview with Hodges Bend Shop Manager, February 13, 2019.
[60] RN 79 RTA Reports.

Table 20. FBISD Maintenance Hours Needed for the School Bus Fleet at Lake Olympia Terminal

Maintenance Categories	Hours to Complete	Number Per Year	Total Annual Hours
PM A Safety inspection @ 5,000 miles or every 90 days	1.5	4	6
PM B Oil & extractors	2	6	12
PM C Service transmission	2	1	2
PM D Safety inspection	3	1	3
PM J Annual inspection sticker	4	1	4
Total Inspection Hours	**12.5**	**13**	**27**
Unscheduled repairs (percent)	50%		13.5
Total Labor Hours Per Bus			**40.5**
Number of diesel buses at Lake Olympia	210		
Total Maintenance Hours Needed at Lake Olympia	**8,505**		

Source: RN 79 Sample Pages from RTA 1-32-RRV for hours to complete and number per year and Gibson estimate for percent hours for unscheduled repairs.

Because CNG buses are under warranty, and mechanics at the HBT do not work on the fuel system or repair the bus, the number of maintenance hours for CNG buses is limited to safety inspections. Table 21 shows the calculations for an estimate of the vehicle maintenance labor hours per bus for inspections and repairs and the total maintenance hours for the bus fleet at the Hodges Bend Terminal.

Table 21. FBISD Maintenance Hours Needed for the School Bus Fleet at Hodges Bend Terminal

Maintenance Categories	Hours to Complete	Occurrences per Year	Total Annual Hours Diesel Buses	Total Annual Hours CNG Buses
PM A Safety inspection @ 5,000 miles or every 90 days	1.5	4	6	6
PM B Oil & extractors	2	6	12	warranty
PM C Service transmission	2	1	2	warranty
PM D Safety inspection	3	1	3	3
PM J Annual inspection sticker	4	1	4	4
Total Inspection Hours	**12.5**	**13**	**27**	**13**
Unexpected repairs (percent)	50%		13.5	warranty
Total Hours Per Bus			**40.5**	**13**
Number of diesel buses at Hodges Bend	260			
Number of CNG Buses under warranty at Hodges Bend	30			
Total Buses in Fleet	290			
Maintenance hours needed for diesel buses	**10,530**			
Maintenance hours needed for CNG buses	**390**			
Total Maintenance Hours Needed at Hodges Bend	**10,920**			

Source: RN 79 Sample Pages from RTA 1-32-RRV for hours to complete and number per year and Gibson estimate for percent hours for unscheduled repairs.

Each Transportation Department master mechanic is scheduled to work full-time, 12 months per year, or approximately 260 days and 2,080 hours. However, not all paid time is available to actually work on vehicles. Each employee is provided benefits in paid time off. Each shop manager estimated the actual time each mechanic was on paid time off in the past year. The average days a master mechanic was on holiday or paid leave was 25 days in 2017-18, or 200 paid hours (9.6 percent of paid time) based on the following[61]:

- Holidays — 10 days for every mechanic
- Vacation — 7.5 days average actual paid time off per mechanic
- Sick or Personal Leave — 7.5 days average actual paid time off per mechanic
- Total — 25 days paid time off or 200 annual hours at 8 hours/day

In addition, mechanics are paid 30 minutes per day for breaks, 15 minutes per day for clean-up, and on average 15 minutes per day in a safety meeting or performing other duties. Assuming 260 days per year less 25 days paid leave, each mechanic spends about 235 paid hours per year[62] on breaks or duties other than work on vehicles. The estimated available time for vehicle maintenance per mechanic is about 1,645 hours[63] or 79 percent of paid time.

As discussed below, mechanics at the LOT drive bus routes in the AM and/or PM three to four days each week. Driving buses reduces time available for vehicle maintenance, on average 324 hours per year[64]. This reduces the actual time a mechanic at the LOT spends on vehicle maintenance to about 1,321 hours[65]. If a mechanic is required to perform maintenance duties after driving a school bus, and the total hours in a week exceed 40 hours, the work is performed on overtime pay. Table 22 documents how many mechanics are required at the LOT given the current fleet of 210 school buses and 14 support vehicles.

[61] Interviews with Lake Olympia Shop Manager, January 22, 2019 and Hodges Bend Shop Manager, February 13, 2019.
[62] 260 – 25 = 235 days x 60 minutes per day = 235 hours
[63] 2,080 annual hours less 200 hours paid time off and less 235 hours for breaks or other duties
[64] Driving a bus route at 3 hours per day AM or PM on average 3 days per week or 108 days per year
[65] 1,645 annual hours less 324 hours driving school bus routes

Table 22. Staff Requirements for Mechanics at Lake Olympia Terminal

Lake Olympia Terminal	Number of Vehicles	Annual Hours Maintenance per Vehicle	Totals
School buses	210	40.5	8,505
Support vehicles	14	12	168
Total annual hours required based on hours per vehicle			8,673
Add 5% contingency for maintenance campaigns (special projects)			425
Total annual hours of maintenance required			**8,930**
Divide by average annual productive hours per mechanic			1,645
Less time driving school bus routes @ 3 hours per day AM or PM on average 3 days/week			(324)
Productive hours per mechanic less time driving a school bus			1,321
Mechanics required			**6.8**
Mechanic full-time positions filled			7
More (less) mechanics than required			0.2

Source: Gibson analysis of annual hours for maintenance required for current fleet divided by the annual average productive hours per mechanic at the LOT, based on information provided by FBISD.

Mechanics at the HBT are asked to drive school bus routes occasionally, three to four days per year, on average 12 hours[66] per year. This reduces the actual time a mechanic at HBT spends on vehicle maintenance to about 1,633 hours[67]. Table 23 documents how many mechanics are required at the HBT given the current fleet of 260 diesel school buses, 30 CNG school buses under warranty, and 9 support vehicles.

Table 23. Staff Requirements for Mechanics at Hodges Bend Terminal

Hodges Bend Terminal	Number of Vehicles	Annual Hours Maintenance per Vehicle	Totals
School buses diesel	260	40.5	10,530
School buses CNG under warranty	30	13	390
Support vehicles	9	12	108
Total annual hours required based on hours per vehicle			11,028
Add 5% contingency for maintenance campaigns (special projects)			527
Total annual hours of maintenance required			**11,555**
Divide by average annual productive hours per mechanic			1,645
Less time driving school bus routes @ 3 hours per day AM or PM on average 4 days/year			(12)
Productive hours per mechanic less time driving a school bus			1,633
Mechanics required			**7.1**
Mechanic full-time positions filled			6
More (less) mechanics than required			(1.1)

Source: Gibson analysis of annual hours for maintenance required for current fleet divided by the average annual productive hours per mechanic at the HBT, based on information provided by FBISD.

[66] 3 hours per day for 4 days

[67] 1,645 annual hours less 12 hours driving school bus routes

Finding 13. Maintenance capacity is reduced by requiring mechanics to drive daily school bus routes.

Most mechanics, servicemen, and the assistant manager parts at the LOT drive bus routes in the AM and/or PM three to four days each week due to the chronic driver shortage at that terminal. Having mechanics drive bus routes on a regular basis is not advisable and interrupts maintenance of a safe vehicle fleet. When mechanics drive bus routes, the cost is at the higher mechanic pay rate. If required to complete assigned work in the shop after driving a route bus, mechanics are paid overtime.

The LOT shop has an appropriate number of mechanics for the current fleet and preventive maintenance inspection program, as Table 22 shows 6.8 mechanics required compared to 7 mechanics on staff. However, if LOT mechanics did not drive school bus routes, the shop would have 1.6 FTE[68, 69] more mechanics than required for the fleet.

The HBT shop has 1.1 fewer mechanics than needed for the current fleet and preventive maintenance program, as Table 23 shows 7.1 mechanics are required compared to 6 mechanics on staff. The additional maintenance capacity is met by servicemen who perform semi-skilled work, the shop manager who is a mechanic, and limited overtime work. This shortage, however, is mitigated CNG buses being currently repaired and maintained by a third-party. When the CNG buses are no longer under warranty, 866 additional maintenance hours[70] will be required for the CNG fleet. The Hodges Bend shop will require an additional 1.6 full-time equivalent (FTE) [71, 72] mechanics. Additional maintenance considerations concerning CNG are discussed further in Finding 17.

Recommendation 13. Eliminate the practice of requiring master mechanics to drive daily school bus routes.

The combination of available maintenance capacity at the LOT if mechanics do not drive route buses and the need for maintenance capacity at the HBT when CNG buses are no longer under warranty, can balance maintenance capacity. Mechanics can be reassigned and/or diesel buses reallocated between the two facilities to manage maintenance capacity issues. This would eliminate the need to create additional mechanic positions at the HBT.

Management Response: *Department Leadership agrees with this recommendation. Staff will work to address driver shortage which will minimize mechanic driving time and allow them the time work on buses. Estimated timeline is December 2020.*

[68] 7 mechanics x 324 hours = 2,268 divided by 1,645 productive hours = 1.4 mechanic full-time equivalents
[69] 0.2 + 1.4 = 1.6 mechanic full-time equivalents
[70] 40.5 annual hours less current 13 hours for CNG under warranty = 27.5 additional hours per bus x 30 CNG buses = 825 hours plus 41 additional time for maintenance campaigns = 866 additional hours
[71] 866 divided by 1,645 = 0.5 mechanic full-time equivalent
[72] 1.1 + 0.5 = 1.6 mechanic full-time equivalents

Fleet Management Software

Finding 14. The Transportation Department fleet management software includes inaccurate data and is not fully used.

An adequate fleet management software should capture data for every work order including all labor hours, parts and supplies, outside vendor services, fluids dispensed, and an accurate record of the date and odometer miles. These data enable the shop manager to manage work assignments, monitor the efficiency and quality of the work performed, and evaluate the cost of maintaining the school bus fleet.

Management is not using existing fleet management software provided by *Ron Turley Associates (RTA)* to serve any of these purposes. A review of the *RTA* records for the 2017-18 school year revealed preventive maintenance inspections are not recorded (if performed), vehicle mileage records are missing or incorrectly recorded, actual labor hours per work order are not recorded, and the parts and supplies cost cannot be verified against a parts room inventory[73]. The fleet management software must accurately capture data for each event by vehicle. Without a complete database, the fleet management software provides no useful function and becomes a burden to record incomplete information. The *RTA* system is not linked to the diesel fueling system, so fuel efficiency cannot be monitored and odometer miles for each bus are not accurately reported. Further, the shops do not have enough computers for mechanics to record hours and technical notes on a real-time basis.

Recommendation 14. Implement new work order reporting procedures.

The Transportation Department should evaluate current procedures and implement new processes to more effectively use the work order system to track work and manage the vehicle maintenance function. The Department should document and formalize what data points must be entered on each work order. Additionally, the Department should procure tablet computers for each mechanic and serviceman, granting them access to input data into *RTA*, as the current number of desktop computers serves as a bottleneck for inputting data into *RTA*.

If additional equipment cannot be purchased, mechanics and servicemen could record time and technical notes on hard copy work orders, and then require the assistant manager parts to enter the work order records in the fleet management software daily. However, a manual system does not take advantage of technology advances, requires redundant labor hours, and distracts from duties for inventory management. Other school districts train a part-time driver to work in the parts room entering work orders in the fleet management system between morning and afternoon routes.

Management Response: *Department Leadership agrees with this recommendation. Staff will utilize the current established RTA fleet software to initiate the work order process. Estimated timeline is December 2019.*

[73] RN 79 RTA Reports.

Inventory Management

Finding 15. The parts room at each terminal is not sufficiently secure and parts are not effectively monitored.

Effective inventory management relies on physical control of inventory, accurate records of remaining and used inventory, an established monitoring system, and employee knowledge of inventory and the monitoring system.

The Transportation Department does not lockdown the parts inventory, leaving the parts room open to any Transportation Department employee and individuals representing vendors. Mechanics and servicemen can retrieve parts as needed and are expected to record the parts used in the appropriate work order. However, due to the issues associated with updating RTA, discussed in Finding 14, recording part usage may not occur. If the assistant manager parts is informed of a part used for a specific vehicle and work order, he records the part and confirms the cost in the fleet management software. These issues result in a potentially inaccurate inventory data at each terminal.

The Manager Inventory and the Assistant Manager Parts for each shop take an annual inventory but could not provide documentation of the most recent audit to reconcile the inventory count to the general ledger. The audit team heard anecdotal evidence that inventory levels are monitored daily, but no formal reports were furnished to corroborate the statement. The estimated value of the inventory at the HBT was not more than $1 million[74]. The District reported expense for supplies and materials (for both terminals) in 2017-18 as $2.9 million[75]

An effective parts inventory management system is integral to managing the costs of supplies and materials and is reliant upon accurate data. Streamlining parts inventory will also have a direct impact on vehicle maintenance. When parts are not available, mechanics and servicemen cannot complete maintenance tasks. An effective inventory management system creates an organized work environment that helps shop managers accurately allocate time for jobs, thereby improving productivity across the entire shop.

Knowledge of the inventory and inventory management are critical success factors for vehicle maintenance. Inventory control staff require a good working knowledge of vehicles and their parts requirements. Knowing that particular vehicles follow a parts replacement cycle allows for efficient inventory planning and control, and cost-effective purchasing practices. A good parts inventory system results in adequate stock on hand, eliminating the need for more frequent and last-minute ordering.

[74] Interview with parts inventory staff at Hodges Bend Terminal, February 13, 2019.
[75] TEA Transportation Operation Report, 2017-18 and PEIMS reported expenses 2017-18, FBISD.

Recommendation 15. Implement controls to improve security and monitoring of the parts inventory.

The Department should lockdown the parts room and limit access to only select individuals. Limiting the access and securing the inventory will reduce the risk of theft or other loss. Additionally, the Department should require the Assistant Manager Parts to record all part usage data. This control will increase data accuracy and accountability, as one individual will be responsible for ensuring the inventory record is accurate and updated. The increased data accuracy will then reduce the likelihood of stock-outs or excessive purchasing, as management would have better knowledge of inventory levels.

Management Response: *Department Leadership agrees with this recommendation. Staff will begin a review of the current process and develop a plan to improve and implement such measures. Estimated timeline is December 2020.*

Compressed Natural Gas Fleet

In November 2014, the FBISD Board passed a resolution affirming the District's commitment to reducing ozone forming emissions to help promote air quality in Fort Bend County[76]. The Executive Director for the Transportation Department and the Budget Director for the Finance Department made a presentation to the Board in March 2016 to describe a plan to purchase a fleet of 150 CNG buses over 10 years, beginning in 2017, to replace an equal number of diesel buses[77].

Commendation 3. FBISD has applied for and won grant funding to purchase 30 CNG buses and to install a mobile fueling station at the Hodges Bend Terminal.

FBISD won the following grants from the Texas Commission on Environmental Quality (TCEQ):

- TCEQ awarded FBISD a Clean Air Act grant of $1,417,461 for the purchase of the 30 CNG buses[78]. The buses were placed into service in June-July 2017 for the 2017-18 school year.

- TCEQ awarded FBISD a grant of $273,400 from the Alternative Fueling Facilities Program to install slow-filling infrastructure at the Hodges Bend Terminal[79]. Because there is no onsite storage or onsite compression system, the CNG buses at HBT are fueled daily after business hours by a mobile delivery service. The filling station is a temporary concrete installation with fill posts around 14 feet apart on both sides (total 15 dual hose fill posts for 30 buses). A driver parks the bus at angle and connects the hose to the nozzle receptacle on the bus. The buses are filled overnight.

[76] RN 72 C_CFO_Emission Reduction_Resolution_Agenda 11-03-14 and RN 72 -REVC1_CFO_Emission Reduction _Resolution_Agree_sign-11-17-14.doc, FBISD.
[77] RN 72 FINAL DRAFT-Compressed Natural Gas Powerpoint (district template), FBISD.
[78] RN 72 Fbisd Clean Air, FBISD.
[79] RN 72 COO_Memo_Grant Awarded for Compressed Natural Gas Fueling_07_26_18, FBISD.

Benefits of Compressed Natural Gas

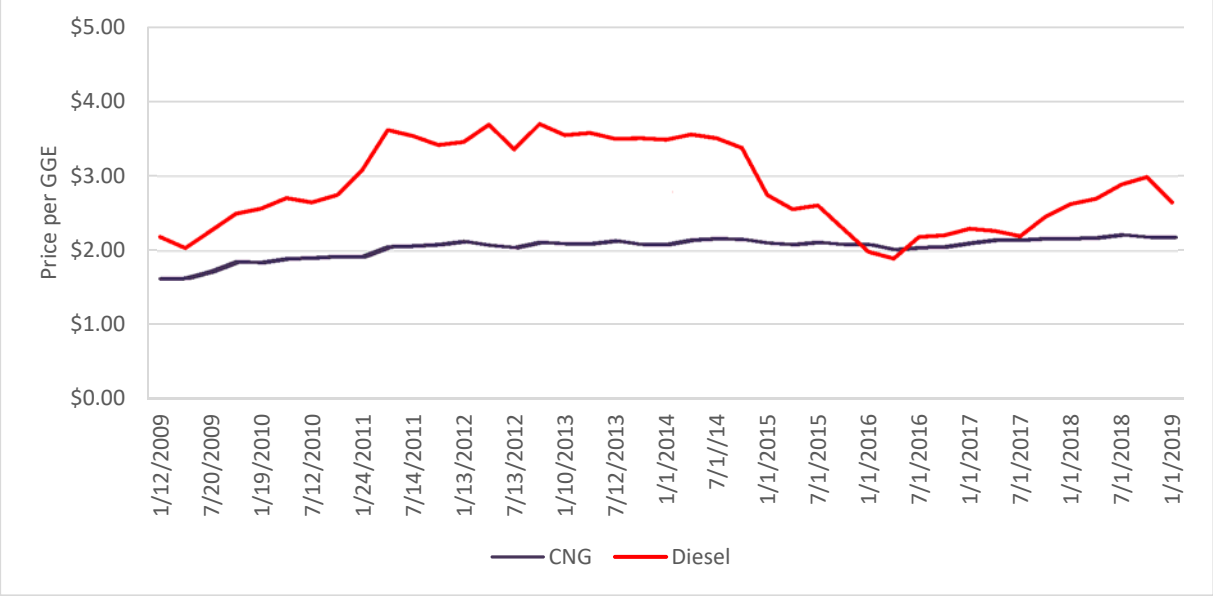
The benefits of a CNG fleet replacing diesel buses include the following:

- Reduced emissions for environmental benefits to promote air quality.
- Reduced engine noise.
- Increased service life for a CNG bus of 20 years, compared to a diesel bus of 15 years.
- Less dependency on the unpredictable price of diesel fuel.
- Lower operating costs based on lower cost per CNG gasoline gallon equivalent (GGE)[80].

Price of Fuel

Historically, the price of a GGE for CNG fuel is lower than the price of a gallon of diesel, and the price of diesel is more volatile than the price of CNG. Figure 32 presents the historical trend for the past 10 years in the diesel price per gallon and the CNG price per GGE.

Figure 32. Historical Diesel and CNG Prices per GGE



Source: Clean Cities Alternative Fuel Price Report, U.S. Department of Energy, updated March 2019.

At the time of the March 2016 Board presentation, the price of diesel was at a 10-year low and was below the CNG price per GGE. However, by July 2016, the diesel price per gallon was higher and has been higher through 2017, 2018, and in January 2019. In the cost analysis described by the Budget Director before the

[80] Information–Compressed Natural Gas (CNG) Phase-in Update, Regular Business Meeting, FBISD Board of Trustees, March 28, 2016. Accessed May 5, 2019, https://v3.boardbook.org/Public/PublicMeetingMaterials.aspx?ak=888888&mk=50188270#

Board in March 2016, the operating cost analysis was based on a historical average cost of $1.81 per GGE for CNG and $2.60 per gallon for diesel[81].

At the time, the Finance Department assumed a cost of $140,000 for a CNG bus and $90,000 for a diesel bus[82]. The CNG buses purchased in 2017 were below the estimate, costing $127,559 each[83].

The Finance Department performed a break-even analysis using the acquisition cost of vehicles (with no grant funding) amortized over the projected service life, accounting for the type of fuel and the operating costs differences, given the variation in miles per gallon and cost per gallon. The analysis projected an investment in 15 CNG buses would be recovered (breakeven) in 6.07 years[84].

The Board awarded a contract to provide CNG fuel at the Hodges Bend Terminal as of November 1, 2017. The contract runs through November 20, 2022. The mobile fuel provider, CNG 4 America, Inc., installed the CNG fueling system at the HBT for $115,465 and provides a transport system to supply CNG to the HBT according to scheduled days of operation. The pricing structure includes the fuel rate for operation charges plus a natural gas component per GGE, less a 10 percent discount plus a delivery fee. The CNG 4 America, Inc. fuel reports for the months of October, November, and December 2018 reflected a CNG price of $2.15 per GGE[85]. FBISD is also eligible for fuel rebates. The shop manager at Hodges Bend Terminal reported a $0.60 rebate per GGE[86].

Infrastructure

The plan to purchase a fleet of 150 CNG buses is expected to require an investment in infrastructure for a permanent CNG fueling station and maintenance bays specifically designed to meet the safety standards for CNG buses. In March 2016, the estimated cost of the infrastructure was $2.85 million according to the U.S. Department of Energy[87]. The Budget Director stated the additional capital investment for infrastructure for a fleet of 150 CNG buses would extend the breakeven to 13.5 years[88].

Update

In September 2017 memo, the Transportation Department stated data from 30 CNG buses will be compared to 30 new diesel buses over the course of two years. The data for comparison were to be in several areas: vehicle costs of fuel, vehicle maintenance, parts, performance, and pollutants[89]. The

[81] Ibid.
[82] Ibid.
[83] RN 79 School Bus Fleet Data, FBISD.
[84] Information–Compressed Natural Gas (CNG) Phase-in Update, Regular Business Meeting, FBISD Board of Trustees, March 28, 2016.
[85] RN 75 CNG Oct 2018 Report, RN 75 CNG Nov 2018, and RN 75 CNG Dec 2018 Report, FBISD.
[86] Interview Hodges Bend Shop Manager, February 13, 2019.
[87] Information–Compressed Natural Gas (CNG) Phase-in Update, Regular Business Meeting, FBISD Board of Trustees, March 28, 2016.
[88] Ibid.
[89] RN 72 COO_Compressed Natural Gas Fueling_09_11_17_oap, FBISD.

analysis was to assist the District in determining the future of the alternative fuel program. However, because the CNG buses are under warranty and because of the limitations of the data in the *RTA* fleet management software, the Transportation Department cannot prepare such a comparative analysis.

The Alternative Fuel Life-cycle Environmental and Economic Transportation (AFLEET) tool can compare CNG and diesel school buses. The AFLEET tool is available through the U.S. Department of Energy's Clean Cities Program. The Department enlisted the expertise of Argonne National Laboratories to develop a tool to examine both the environmental and economic costs and benefits of alternative fuel. Argonne developed the AFLEET tool for others to estimate air pollutant emissions and cost of ownership of various vehicles (including school buses) using simple spreadsheet inputs[90].

Table 24 documents the data assumptions for the AFLEET tool using the actual FBISD reported costs.

Table 24. Assumptions in AFLEET Model

AFLEET Model Input Category	Diesel Bus	CNG Bus
Vehicle Acquisition Cost		
Number of vehicles	30	30
Acquisition cost per vehicle	$90,000	$127,559
Acquisition cost for 30 vehicles	$2,700,000	$3,826,770
TCEQ Clean Air Grant	$0	$1,417,461
Net acquisition cost	$2,700,000	$2,409,309
Net cost per vehicle	$90,000	$80,310
Service life per vehicle	15 years	20 years
Fuel Economy		
Annual vehicle mileage	11,400	11,400
Fuel economy (miles per GGE)	6.7	4.37
Fuel Price per GGE		
Price	$2.26	$2.15
Rebate for alternate fuel	$0.00	$0.60
Net cost per GGE	$2.26	$1.55

*CNG fueling infrastructure cost not included. Mobile fueling station funded by a TCEQ grant.

Sources: RN 79 School Bus Fleet Data, FBISD; RN 72 FBISD Clean Air, FBISD; RN 113 - Fuel Usage by Bus_17-18_Bob_Baldwin, FBISD; RN 105 – Fuel recap Trans PFC, FBISD; Interview Hodges Bend Shop Manager, February 13, 2019.

The AFLEET model outputs reported in Table 25 include a comparison of the total cost of ownership and petroleum use for a diesel bus with a service life of 15 years and a CNG bus with a service life of 20 years. The Total Cost of Ownership per year for a CNG bus over 20 years is approximately $20,600 less than the cost per year for a diesel bus over 15 years.

[90] Download AFLEET at https://greet.es.anl.gov/afleet_tool.

Table 25. AFLEET Model Results Summary

Total Cost of Ownership	Diesel Bus	CNG Bus
Service Year Life	15 years	20 years
Depreciation	$2,521,439	$2,342,990
Fuel	$2,050,573	$2,994,601
Diesel exhaust fluid	$51,991	$0
Maintenance and repair	$5,181,966	$7,220,304
Insurance	$2,492,820	$3,418,527
License and registration	$262,556	$360,056
Total cost of ownership (TCO)	$12,561,344	$16,336,479
TCO per year over 15 years	$837,423	
TCO per year over 20 years		$816,824
Petroleum use (barrels) over 15 years	19,129	180

Source: AFLEET model

Finding 16. FBISD does not have a master plan for fueling and maintenance of the CNG buses.

The Transportation Department has not determined a permanent solution for fueling CNG buses as the fleet increases. FBISD plans to purchase 15 to 30 additional CNG buses with the funds from the 2018 Bond program[91]. The additional buses can be fueled at the Hodges Bend Terminal with an additional temporary concrete installation with fill posts on one or both sides (for 15 to 30 buses); however, this is not a permanent fueling station.

The maintenance bays at the HBT are not suitable for repair of CNG buses. Facilities that maintain vehicles fueled by CNG require implementation of different safety measures than facilities that maintain vehicles fueled by diesel or gasoline. CNG is lighter than air and will therefore rise to the ceiling of the maintenance facility and quickly dissipate rather than remaining at or near floor level like liquid fuel vapors in the event of a release. If concentrations of CNG encounter an ignition source, the natural gas may ignite, with potentially serious results. The lower flammability limit (LFL) for CNG (5.3%) is considerably higher than that for diesel (0.6%)[92].

[91] RN 72 – Transportation Bond 2018, FBISD.
[92] U.S. Department of Energy, Compressed Natural Gas Vehicle Maintenance Facility Modification Handbook, September 2017. Accessed May 6, 2019 https://afdc.energy.gov/files/u/publication/cng_maintenance_facility_mod.pdf.

The five primary elements below must be considered when developing a CNG vehicle maintenance facility design that will protect against the ignition of natural gas releases[93].

1. Ventilation must provide sufficient air flow to reduce the concentration of the released gas and at the same time evacuate the gas from the structure.
2. Paths of migration must be controlled to prevent the released gas from entering unprotected areas of the structure.
3. Space heating must be designed in accordance with guidelines so that open flames or hot surfaces do not provide an ignition source.
4. Electrical wiring and equipment must be installed in such a manner that they do not provide sources of ignition due to sparking. The equipment itself can be designed to be "explosion proof."
5. Methane detection and control systems and alarms must provide defense against dangerous concentrations of natural gas by alerting personnel and disabling potential electrical ignition sources.

All are accompanied by the need to establish specific protocols and training to ensure safety.

Recommendation 16. Develop a master plan for fueling and maintaining CNG buses.

A master plan that ensures safe maintenance and fueling of CNG buses should be created. The plan should evaluate facility locations that will permit more efficient routing.

The Transportation Department should evaluate the design and installation of a permanent fueling station on FBISD property or arrange to fill the FBISD buses at a private fueling station. The Transportation Department fueled at a private station in Rosenberg temporarily in 2017, but other private fueling sites may be available now or an agreement with a private supplier may be negotiated to construct a facility more convenient for FBISD.

The Transportation Department may want to evaluate locations other than the Hodges Bend Terminal for the permanent location of the CNG fleet. Student enrollment is increasing, particularly in the eastern part of the District. Assignment of bus routes out of the HBT to this area of the district may not be efficient considering the deadhead miles (miles from the terminal to the beginning of the route and miles from the school back to the terminal) and the traffic. The Lake Olympia Terminal is centrally located; however, the property at the LOT is surrounded by development and expansion is limited. FBISD owns property along FM 521 Road to the far east of the district. The Transportation Department may want to evaluate locating a third transportation terminal on this property for specifically the CNG fleet.

[93] Ibid.

Management Response: *Department Leadership agrees with the recommendation. The current implemented fueling method is a temporary method to address the first purchase of CNG buses. FBISD will build a permanent CNG Fueling Station and service bays to accommodate expansion of the CNG fleet. Estimated timeline is August 2024.*

Finding 17. Mechanics do not have appropriate training or certifications to work on CNG buses.

The Railroad Commission of Texas is the state agency responsible for regulating the safe storage, transportation and use of CNG and other alternate fuels, pursuant to the Texas Natural Resources Code (TNRC). The Railroad Commission has also adopted regulations for each fuel type under the Texas Administrative Code, Title 16, Chapters 9, 13, and 14.

The Railroad Commission's Alternative Fuels Safety (AFS) Department enforces both the state statutes and the Railroad Commission's regulations on these fuels, by conducting safety evaluations of stationary facilities and mobile equipment, licensing companies engaged in alternative fuel activities, and providing training to individuals working in the alternative fuels industries.

The regulations for CNG require each individual performing regulated activities to be certified through examination and renewed annually. There are two levels of examination: management and employee.

- Management: A licensee must employ at least one company representative who has passed the applicable management-level qualifying examination and met all applicable training requirements. Each license category has a corresponding management level exam. A company representative applicant may not perform work or be employed in any capacity requiring contact with CNG before these requirements are met.

- Employee: No individual may perform work or be employed in any capacity requiring contact with CNG until he or she has passed the required Railroad Commission qualifying examination.

Mechanics at the HBT are currently performing safety inspections of CNG buses without the appropriate technical training or certifications. Repair work is currently performed by a third-party, as the buses are under warranty. When the warranty expires, repairs will need to be performed in-house, further necessitating the need for CNG trained and certified mechanics.

Recommendation 17. Implement a training program for the Hodges Bend Terminal shop manager, mechanics, and servicemen who are responsible for the CNG bus fleet.

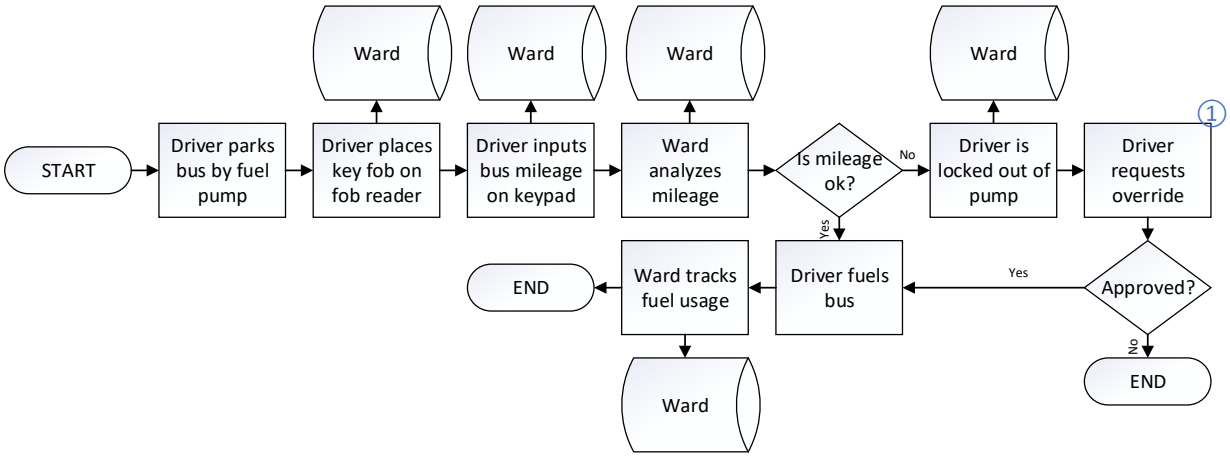
The CNG buses are under warranty and the fueling systems on the buses are repaired by a third party; however, the Transportation Department shop manager, mechanics, and servicemen who inspect CNG buses should be knowledgeable about how to handle CNG-fueled vehicles safely. The Transportation Department should make training available from either the Railroad Commission or a third-party trainer. After the training, both the shop manager and employees of the Transportation Department should be expected to pass the exams to be certified by the Railroad Commission.

Management Response: *Department Leadership agrees with this recommendation. At this time, CNG buses are still under warranty so any repairs are sent to the bus supplier. Leadership will start to schedule shop employees for training to attain the knowledge and skills needed to be able to perform work on CNG buses once the warranty has expired. Estimated timeline is August 2021.*

Diesel Fuel Usage

Fort Bend ISD currently has fuel stations located at the Lake Olympia and Hodges Bend Transportation Facilities. Physical access to the pumps is restricted after hours by a locked gate that is opened by using key fobs. *Ward*, a third-party fuel management systems, tracks and measures fuel usage and has system controls to limit excess fuel distribution. Drivers are responsible for fueling their vehicles. A process flow of fueling vehicles is included in Figure 33. Once a driver parks their bus by a pump, they must press their key fob against a reader located between the pumps. The driver must then enter the current odometer mileage from their bus using they keypad. *Ward* will then compare the newly entered mileage to the previously entered mileage. If the variance is not within a predetermined range, the driver will be locked out of the system and must request an override from the Inventory Manager or Assistant Parts Manager. The Inventory Manager or Assistant Parts Manager will investigate the lockout and either approve the override or keep the lockout active until the issue can be resolved. Once the lockout is lifted, the driver will fuel the bus. *Ward* will track the dispensed fuel and apply the most recent fuel cost per gallon within the system.

Figure 33. Bus Fueling Process



1 Request is made by calling the Inventory Manager or Assistant Parts Manager who must approve the request.

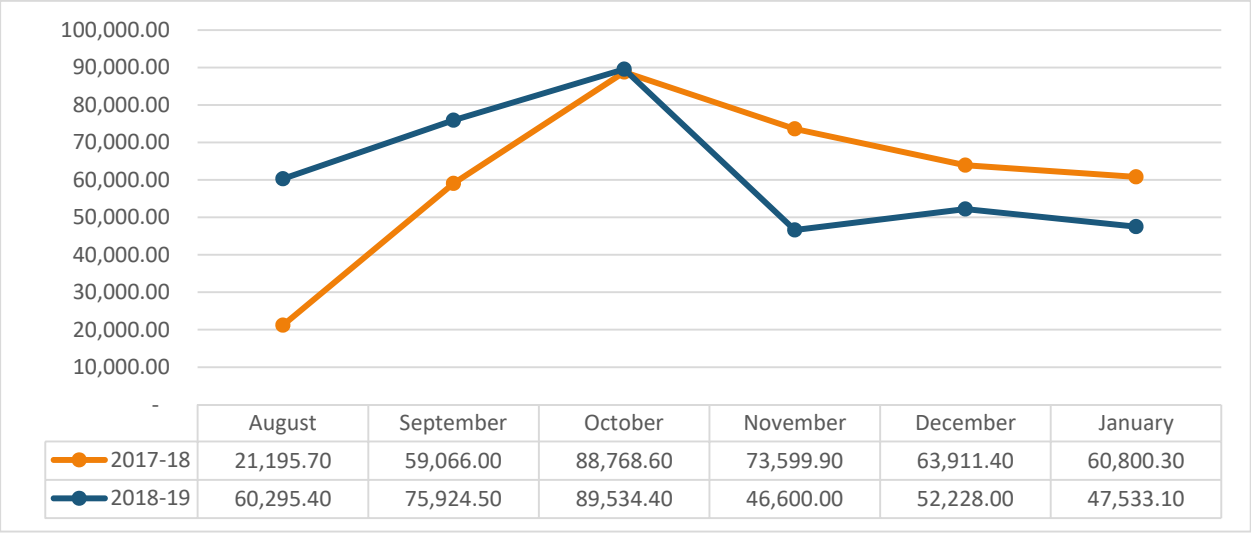
Source: Gibson Consulting Group, 2019

The Inventory Manager is responsible for reordering fuel from one of three awarded vendors. The Inventory Manager will call each vendor to request spot quotes and select the lowest priced option.

Finding 18. Fuel usage is not comprehensively monitored for reasonableness

The audit team conducted a fuel usage test to ensure fuel usage remains constant over time and that any fluctuation could be easily explained. Monthly usage reports for diesel were obtained from the *Ward* system for fiscal years 2018 and 2019 to date. The audit team considered differences in fuel pricing as well as school breaks and holidays when conducting the analysis. Currently, the Transportation Department does not track fuel usage for each month to note any discrepancies from expected usage for each month. The audit team focused solely on diesel usage, as unleaded gasoline usage was not a significant expense. Figure 34 compares the monthly usage in gallons of fuel for fiscal years 2018 and 2019 thus far. Year-over-year variances in all months excluding October warranted further investigation.

Figure 34. Fort Bend ISD Monthly Diesel Fuel Usage, 2017-18 and 2018-19

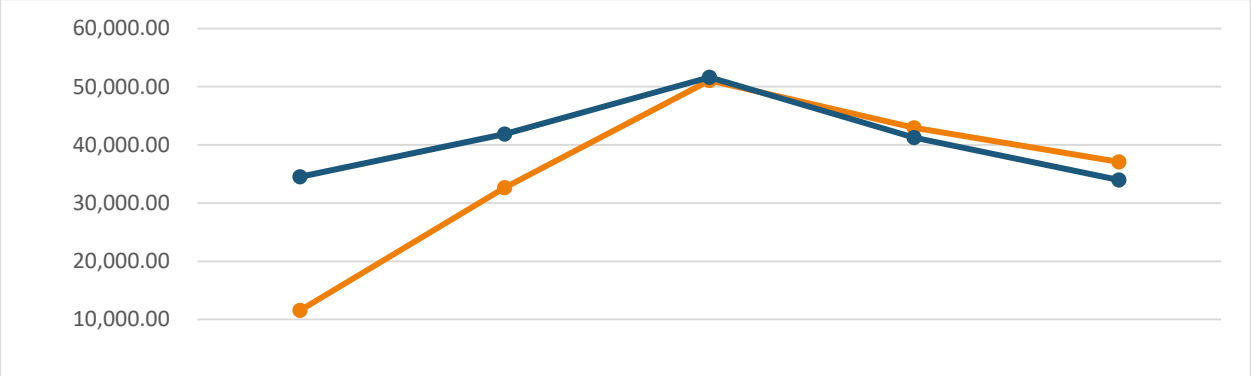


	August	September	October	November	December	January
2017-18	21,195.70	59,066.00	88,768.60	73,599.90	63,911.40	60,800.30
2018-19	60,295.40	75,924.50	89,534.40	46,600.00	52,228.00	47,533.10

Source: FBISD data generated from Ward, 2018 and 2019

The audit team disaggregated the fuel usage data by transportation facility to further investigate the variances. Figure 35 provides the Lake Olympia Transportation Facility monthly fuel usage for FY 2018 and 2019.

Figure 35. Lake Olympia Transportation Facility Monthly Diesel Fuel Usage, 2017-18 and 2018-19



	August	September	October	November	December
2017-18	11,548.90	32,636.70	51,075.80	42,926.50	37,083.40
2018-19	34,507.70	41,862.10	51,613.40	41,263.50	33,967.00

Source: FBISD data generated from Ward, 2018 and 2019

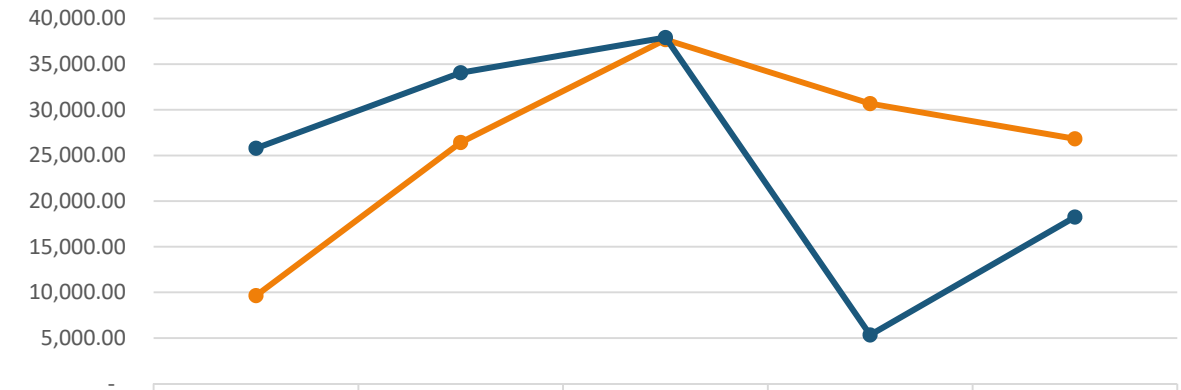
The differences in diesel usage in August and September were discussed with terminal managers who did not provide any explanation regarding the variances. The audit team investigated further, noting the *possible* explanations for the variances.

- August – In 2017-18, the devastating impact of Hurricane Harvey resulted in a two-week closure of FBISD, from August 24, 2017 to September 10, 2017. Additionally, the 2018-19 school year commenced on August 15, 2018.

- September – The variance is primarily explained by the Hurricane Harvey related closure in 2017-18.

Similar to the LOT data presented above, Figure 36 provides the Hodges Bend Transportation facility monthly fuel usage for FY 2018 and 2019. With the exception of October, each month's activity substantially differed from the prior year.

Figure 36. Hodges Bend Transportation Facility Monthly Diesel Fuel Usage, 2017-18 and 2018-19



	August	September	October	November	December
2017-18	9,646.80	26,429.30	37,692.80	30,673.40	26,828.00
2018-19	25,787.70	34,062.40	37,921.00	5,336.50	18,261.00

Source: FBISD data generated from Ward, 2018 and 2019

The differences in diesel usage in August, September, November, and December were discussed with terminal managers who did not provide any explanation regarding the variances. The audit team investigated further, noting the *possible* explanations for the variances.

- August – In 2017-18, the devastating impact of Hurricane Harvey resulted in a two-week closure of FBISD, from August 24, 2017 to September 10, 2017. Additionally, the 2018-19 school year commenced on August 15, 2018.
- September – The variance is primarily explained by the Hurricane Harvey related closure in 2017-18.
- November – The cause of variance is unknown.
- December – The cause of variance is unknown.

Recommendation 18. Review fuel usage by facility for reasonableness monthly.

Management is currently relying on the *Ward* system control, discussed earlier, to manage and monitor fuel usage. This transaction control does mitigate the risk of unauthorized fueling. However, there is no current control over the inefficient use of fuel. Under the *Ward* system, a bus driver can fuel his or her bus assuming the bus meets the mileage requirement. There is no transaction limit imposed on the system, allowing a driver to refuel at a faster rate than necessary if they are driving inappropriate routes or having more deadhead time than expected. A monthly review control would pinpoint these anomalies and prompt management investigation. The District should ensure the *Ward* fueling system "talks" to *RTA* or at a minimum, record fuel use and odometer miles by vehicle every week.

Management Response: *Department Leadership agrees with this recommendation. A Key fob is assigned to each unit and tracks the fuel used by vehicle. The Shop Foreman reviews the Monthly Fuel Usage Report. Estimated timeline is July 2019.*

Fleet Planning

School buses represent a large capital investment for school districts. Many districts adopt replacement plans to regularly introduce new buses in the fleet. Regular purchases of buses prevent the purchase of a large number of buses, and the capital investment required, in any one year. A replacement plan enables a district to plan the budget and avoid large one-time expenses. Further, an annual replacement plan smooths out the vehicle maintenance effort and enables the Transportation Department to predict annual vehicle maintenance labor and costs by maintaining a consistent average fleet age.

For a school district with a growing student enrollment, good planning requires a projection for when additional route buses will be required to transport more student riders. In the case of FBISD, an adjustment in the spare ratio can provide for growth in route buses.

The Transportation Department is responsible for developing the fleet replacement plan and working with the Finance Department to project the capital investment required. The FBISD Board approves the purchase of the vehicles.

Finding 19. FBISD does not have a 10-year plan for school bus replacement and expansion.

The FBISD Board does not have a policy for annual bus purchases nor does the District have a 10-year plan for school bus replacement. Purchases are usually budgeted as part of a bond proposal. The 2018 bond program includes purchase of regular program buses (CNG and diesel), special program buses, activity buses, and small 14-passenger bus purchases for replacement. The lack of a replacement plan has negatively impacted the Department because of an aging fleet and the burden of a large number of buses purchased in some years, creating recurring maintenance demands.

First, the FBISD school bus fleet has a higher spare ratio than the recommended 27 to 30 percent (see Table 26) of the peak service requirement, resulting in more preventive maintenance inspections and repairs than necessary. The excess spares include 69 DPF buses, which have over 15 years of service and are used sparingly, offering limited productivity. The DPF buses can be retired the summer of 2021.

Second, in March 2016, staff made a presentation to the FBISD Board reflecting a 10-year plan to purchase 150 CNG buses[94]; however, the Transportation Department does not have a schedule for the procurement and delivery of the CNG buses. A schedule would be an advantage in applying for grant assistance for purchase of CNG buses.

Finally, the FBISD demographer, Population and Survey Analysts (PASA) presented a demographic update and made a presentation to the FBISD Board in February 2019[95]. In the demographic update and presentation, PASA projected a growth in student enrollment for each year 2019 through 2028. Although

[94] RN 72 FINAL DRAFT-Compressed Natural Gas PowerPoint (district template), FBISD.
[95] RN 48 PASA Demographic Update - Fort Bend ISD - Feb 2019 and RN 48 PASA presentation before FBISD Board 02-18-19, FBISD.

student enrollment is growing, the Transportation Department has not projected an increase in the peak requirement for buses.

Recommendation 19. Adopt a policy for annual bus purchases and develop a 10-year plan for bus replacement and expansion.

Table 26 documents a recommended 10-year retirement and fleet replacement schedule for the regular and special fleet. The first year, 2019, reflects the existing FBISD plan for purchases of school buses. Figure 37 illustrates new bus purchases by regular and special and by fuel type. The assumptions in the 10-year plan reflect the following:

- Replace buses on an annual schedule for predictable annual vehicle maintenance requirements.
- Retire diesel buses over 15 years' service life in each year[96].
- Retire DPF buses in 2021.
- Reduce the spare ratio for special and regular buses over time to near 30%.
- Accommodate growth in route buses to reflect an increase in student enrollment without increasing the total fleet.
- Increase the CNG fleet to 115 buses by 2028 through annual bus purchases that can be the subject of grant applications for federal or state funding assistance.
- Achieve a consistent average fleet age between 8 and 9 years.

[96] FBISD expects CNG buses to achieve a 20-year service life. No CNG buses are retired in the next 10 years.

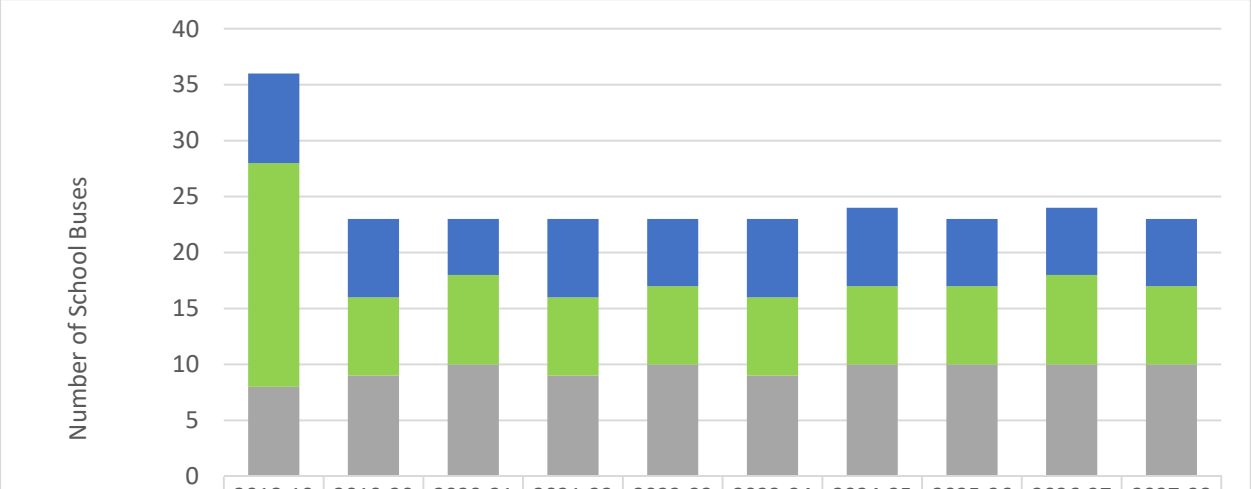
Table 26. Recommended 10-Year Fleet Retirement and Replacement Schedule

Fleet Category	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	10-Years
Special Route Buses	**83**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	
Growth in Route Buses*		1	1	1	1	1	1	1	1	1	
New Peak Requirement	83	84	85	86	87	88	89	90	91	92	
Current Regular Fleet	115	113	116	116	114	113	113	116	118	117	
Retired Buses	-10	-4	-5	-9	-7	-7	-4	-4	-7	-4	
Purchases for Replacement	8	7	5	7	6	7	7	6	6	6	
Net Fleet End of Year	113	116	116	114	113	113	116	118	117	119	
Spare Ratio	36%	38%	36%	33%	30%	28%	30%	31%	29%	29%	
Regular Route Buses	**223**	**223**	**226**	**229**	**233**	**236**	**239**	**242**	**245**	**248**	
Growth in Route Buses*		3	3	4	3	3	3	3	3	3	
New Peak Requirement	223	226	229	233	236	239	242	245	248	251	
Regular Fleet First of Year	385	399	384	319	322	318	313	307	319	321	
Retired Buses	-14	-31	-14	-13	-21	-21	-23	-5	-16	-14	
DPF Buses Retired			-69								
Purchases for Replacement	28	16	18	16	17	16	17	17	18	17	
Net Fleet End of Year	399	384	319	322	318	313	307	319	321	324	
Spare Ratio	79%	70%	39%	38%	35%	31%	27%	30%	29%	29%	
Total Retired	-24	-35	-88	-22	-28	-28	-27	-9	-23	-18	-302
Total Purchased	36	23	23	23	23	23	24	23	24	23	245
Net Change in Total Fleet	12	-12	-65	1	-5	-5	-3	14	1	5	-57

*Growth in route buses reflects increased student enrollment, RN 48 PASA presentation for FBISD Board 02-18-19

Source: RN 79 School Bus Fleet Data, FBISD and Gibson analysis of a schedule to retire buses over 15 years of each year and purchase new vehicles to sustain a consistent number of purchases each year and lower the spare ratio over time.

Figure 37. 10-Year Annual Bus Purchases by Regular and Special Buses and by Fuel Type



	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Special	8	7	5	7	6	7	7	6	6	6
Regular CNG	20	7	8	7	7	7	7	7	8	7
Regular Diesel	8	9	10	9	10	9	10	10	10	10

Source: Gibson analysis of the number of new vehicles to purchase each year by subfleet to sustain a consistent number of purchases each year and increase the CNG bus fleet versus diesel buses.

Management Response: *Department Leadership agrees with this recommendation. Staff will develop a plan to ensure timely replacement of buses. Estimated timeline is March 2020.*

Chapter 6 – Safety and Training

Safety and training are critical to the day-to-day operations and long-term success of FBISD Transportation. This chapter examines several topics related to safety and training including:

- An analysis of bus accidents.
- Student management and disciplinary incident processes.
- An overview of training processes and organizational responsibilities in the FBISD Transportation Department (specifically driver, monitor, and mechanic training).
- An overview of an upcoming project to utilize student identification (ID) cards to help track student locations on FBISD buses.

Bus Accident Analysis

School districts who provide student transportation are required by TEC §34.015 to report school bus accidents to the TEA using the bus accident reporting system (BARS). Table 27 provides the 2017-18 accidents and accident rates for FBISD and peer districts. In 2017-18, the FBISD Transportation Department reported 17 accidents to BARS, with an accident rate of 0.32 accidents per 100,000 miles. The District's accident rate was equal to the peer average.

Table 27. Peer District Accidents and Accident Rates 2017-18

District	Accidents	Odometer Miles	Accident Rate
Cypress-Fairbanks ISD	55	9,106,543	0.60
Katy ISD	1	4,338,571	0.02
Klein ISD	14	3,214,525	0.44
Lewisville ISD	1	3,264,308	0.03
Plano ISD	2	3,157,518	0.06
Peer Total	*73*	*23,081,465*	*0.32*
Fort Bend ISD	**17**	**5,358,794**	**0.32**

Source: TEA, Foundation School Program, BARS 2017-18 and *Operations Report*s 2017-18.

In addition to BARS data, the FBISD Transportation Department keeps their own accident records and provided the audit team with historical accident data. Due to Board Policy CNC (Legal), only a few types of accidents are required to be reported to TEA through BARS, so internal accident tracking provided by FBISD will not agree to BARS reports. The following types of accidents are not reported to BARS based on the Board policy:

- The bus was driven by a school district employee or by an employee of the school district's bus contractor, the accident occurred when no passenger other than the school district's driver or bus

contractor's driver was on board the bus, and the accident did not involve a collision with a pedestrian; or

- The accident involved a bus chartered by a school district for a school activity trip and no school district personnel or students were on board the bus at the time of the accident

Finding 20. The accuracy of FBISD's internal accident reporting is suspect.

The FBISD Transportation Department determines whether accidents are preventable or not. Preventable accidents require drivers to be retrained prior to driving again. Table 28 displays a breakdown of accidents by facility and preventability from 2014-15 through 2017-18.

Table 28. FBISD Transportation Department Accidents by Preventability Determination, 2014-15 through 2017-18

Accident Type	2014-15	2015-16	2016-17	2017-18
Preventable				
LOT	13	9	5	12
HBT	25	9	1	0
Total Preventable	**38**	**18**	**6**	**12**
Non-Preventable				
LOT	7	3	9	6
HBT	15	3	0	0
Total Non-Preventable	22	6	9	6
Undetermined				
LOT	0	0	0	1
HBT	0	25	50	0
Total Undetermined	**0**	**25**	**50**	**1**
Grand Total Accidents	**60**	**49**	**65**	**19**
Annual Odometer Miles	**5,533,768**	**5,737,092**	**5,913,637**	**5,358,794**
Accident Rate (per 100,000 miles)				
Preventable Accident Rate	0.69	0.31	0.10	0.22
Total Accident Rate	**1.08**	**0.85**	**1.10**	**0.35**

Source: FBISD Transportation Department, RN 65 – Bus Accident History.xlsx.

A large percentage of accidents are reported as either non-preventable or undetermined. In 2014-15, 69 percent of the accidents were reported as preventable, but this percentage dropped to 22 percent in 2017-18. The lack of a preventability determination implies that no corrective action was taken after an accident.

It is not clear whether the data reflects a management issue or a data quality issue, or both. For example:

- The total number of total reported accidents decreased by 71 percent in 2017-18. This is an unusually large annual change in accident frequency.
- The total number of undetermined accidents increased from 0 in 2014-15 to 50 in 2016-17, then declined from to 0 in 2017-18. These wide fluctuations are atypical.
- There were zero accidents in FBISD records at the HBT in 2017-18.

Management could not explain the factors that could be contributing to these highly unusual accident trends. The integrity of these data is suspect and cannot be relied on until the numbers are validated or corrected.

Recommendation 20. Overhaul accident analysis and reporting procedures to ensure data integrity.

Accident reporting procedures and preventability determination protocols should be well-defined and strictly followed. Accurate accident data are necessary for performing useful data analysis that can help prevent accidents. By tracking all accidents in a consistent manner, the District would be able to pinpoint specific areas where additional training is needed, such as backing out of the bus parking space. The District could then assess the effectiveness of their driver training, analyzing the accident trend after the training program was completed. Finally, accident analysis reduces the District's risk exposure by helping Transportation focus only on providing effective preventive measures. However, the benefits cannot be realized without complete and accurate data, which is dependent upon defined reporting and compilation processes.

Management Response: *Department Leadership agrees with this recommendation. Staff made one person responsible for the record keeping of all accidents/injuries as well as the filing of accident reports. Estimated timeline is December 2019.*

Student Management and Discipline

A challenging area of student transportation that commonly provides operational challenges in districts across the country is student management and discipline. This is due to many reasons, such as communication deficiencies among campus personnel, drivers, and transportation administration. Practically, the role of a bus driver in student management and discipline is not easy to perform while the individual is primarily focusing on safely and efficiently operating a school bus.

FBISD has established bus conduct guidelines for students. There are four levels of infractions, as presented in Figure 38.

Figure 38. Examples of Student Conduct Infractions

Examples of Infractions			
Level I	**Level II**	**Level III**	**Level IV**
• Standing up while bus is moving • Out of assigned seat • Loud voice • Not seated "on pockets" • Gum • Food • Getting on/off at the wrong stop	• Throwing objects on the bus • Arguing/disrespectful towards the bus driver • Profanity • Inappropriate physical contact • Verbal altercation with another student • Persistent Tier I offenses	• Profanity directed at the bus driver • Physical altercation: slapping, kicking, hitting, pushing • Throwing objects out of the bus • Throwing items at or near the bus driver • Vandalism to the bus • Any action that necessitates a delay in completing the route • Threats towards a student • Possession of a knife (less than 5.5 inches) • Bullying • Persistent Tier II offenses	• PSUU of drugs, alcohol, or tobacco • Assault of a student • Assault of the bus driver • Threats towards the bus driver • Possession of a knife (more than 5.5 inches) • Persistent Tier III offenses

Source: FBISD website, *Student Safety,* https://www.fortbendisd.com/Page/396.

More serious infractions are associated with more significant consequences, and consequences also increase with the number of repeat infractions (see Figure 39).

Figure 39. Consequences Associated with Student Conduct Infractions

Consequences

	Elementary Grades (Pre-K to 5)	**Secondary Grades (6 to 12)**
Level I	Driver documents and conference with student	Driver documents and conference with student

1st Referral Consequences		
	Elementary Grades (Pre-K to 5)	**Secondary Grades (6 to 12)**
Level II, 1st Offense	Discipline referral By Transportation to school administration and parent contact by school	Discipline referral by Transportation to school administration and parent contact by school
Level II, Additional Offenses	1 Day Bus Suspension	3 Day Bus Suspension
Level III	3 Day Bus Suspension	5 Day Bus Suspension
Level IV	5 Day Bus Suspension	10 Day Bus Suspension

Second and Third Referral Consequences		
	Elementary Grades (Pre-K to 5)	**Secondary Grades (6 to 12)**
Level II	3 Day Bus Suspension	5 Day Bus Suspension
Level III	5 Day Bus Suspension	10 Day Bus Suspension
Level IV	10 Day Bus Suspension	15 Day Bus Suspension

***Severe and repeated infractions may result in immediate and permanent bus removal.

Source: FBISD website, *Student Safety,* https://www.fortbendisd.com/Page/396.

Drivers and monitors for special needs transportation are responsible for documenting student conduct infractions onboard buses. Level 1 infractions should be documented by the driver and drivers should hold a discussion with the student about the behavior. Level 2 infractions and above are documented on a student conduct referral form. A driver submits the form to his or her area supervisor, who will usually review video evidence to substantiate the conduct referral. Upon substantiation, the area supervisor

sends the conduct referral and the video evidence to the student's school principal via email. The principal then decides what action, if any, is needed. Area Supervisors often follow-up with school principals over the phone if a student is having repeat issues or if the planned disciplinary action did not occur.

The number of bus conduct referrals varies from month to month and from area to area. Area Supervisors who participated in interviews estimated an average of 5 to 10 conduct referrals per month per area, between 40 and 80 total referrals per month[97]. This estimate does not include conduct referrals from special needs transportation.

Training Process and Responsibility Overview

The Safety and Training Supervisor at the LOT and one of the Area Supervisors at HBT are responsible for bus driver and monitor training. Cover drivers/trainers support the supervisors by providing both classroom and hands-on training, both for new hires and existing employees.

New-Hire Training

Newly-hired bus drivers must have or earn a CDL with passenger and school bus endorsements. Drivers must also attend the Texas School Bus Driver Certification course. FBISD Transportation provides paid training for new hires with CDL permits to obtain their full CDL. FBISD trainers provide the CDL and school bus training to new hires and accompany drivers during their on-the-road tests.

Drivers follow different training protocols based on their level of experience and/or history of prior employment with FBISD Transportation[98]:

- Class 1 drivers are rehired FBISD drivers who have been separated less than 3 years. They are required to retrain at least four to eight hours with a trainer (as determined by their assigned trainer).
- Class 2 drivers are drivers from another school district or are drivers who have be separated from FBISD for more than three years. They are required to train between 10 and 20 hours.
- Class 3 drivers have no school bus driving experience. They must take all training courses, which is approximately eight days of training, including a combination of hands-on and classroom-based training, equating to approximately 52 hours (60 hours for Special program drivers because of additional curricula).

[97] Source: FBISD Area Supervisor interviews. There are eight areas, if each area has between 5 and 10 referrals, then the total is between 40 and 80.

[98] FBISD Transportation Department, RN 61 - NEW TRAINING CHECKLIST-2018.docx.

Training covers a wide range of topics, including:

- Bus familiarity
- Vehicle condition report procedures
- Precision driving maneuvers
- Defensive driving
- Railroad crossing procedures
- Student loading and unloading
- Fueling procedures
- Emergency and mechanical breakdown procedures
- Field trip procedures
- Various administrative procedures (e.g., collecting student head counts, handling parent notes)
- Student management

Once a driver has completed all initial training and has obtained his/her CDL, the driver begins route training with an assigned cover driver/trainer to become familiarized with what will be the new hire's assigned route. After route training is complete, and the driver has obtained his or her Texas School Bus Driver Certification, the driver is ready to drive solo and is released from training.

Special education drivers and monitors take an additional day of training that includes topics specific to special program transportation[978]:

- CPR/First aid training[99].
- Conflict prevention institute (CPI) training
- Types of special needs
- Mobility and safety devices (e.g., wheelchair securement and car seats)
- Emergency evacuation
- Making behavior plans

Finding 21. New hire training methods for non-driving skills are inadequate.

School bus driving requires both skills to safely operate the bus and to manage the students onboard to ensure the safety and comfort of all riders. Student management training is an important tool to help drivers maintain a safe and enjoyable environment inside their buses and to empower drivers to succeed and handle difficult interactions with students. The training checklists provided for both regular program and special program transportation appear to be comprehensive in scope. However, the delivery methods and depth of information is not meeting the needs of drivers and monitors and were inadequate based on the audit team's assessment.

Current student management training appears to be largely one-sided and passive, heavily utilizing videos and PowerPoints, which does not give drivers and monitors an opportunity to learn student management

[99] CPR/First aid training is part of the training checklist. Bus drivers who attended the driver focus group reported not having CPR training.

and practice student management skills. In one example, special education drivers and monitors mentioned that student restraint training was not actually provided on a bus, reducing the applicability of guidance provided during the training. Additionally, special education drivers and monitors communicated not having CPR (and other medically-focused) training. Regular education drivers also expressed concerns about student management procedures, including inconsistency of disciplinary actions recommended by drivers.

Recommendation 21. Enhance the new-hire training program.

The Transportation training program needs to be more comprehensive and more hands-on to improve its effectiveness. The topics included in the training program should cover regular work situations to high-risk, low-occurrence incidents, such as medical emergencies and evacuations. The Department should use a variety of delivery methods to cover each topic, increasing the engagement of drivers and monitors, better preparing them to fulfill their responsibilities. In particular, student management training needs to be more robust and hands-on, ensuring that the needs of students, especially special needs students, are addressed.

Management Response: *Department Leadership agrees with this recommendation. Staff has assigned one person to oversee the training and the program has been centralized. Estimated timeline is August 2019.*

Ongoing Training and Retraining

The FBISD Transportation Department provides ongoing training opportunities to drivers and monitors through monthly safety meetings. These meetings are scheduled between route times and are mandatory for drivers and monitors. Topics covered include basic reminders of appropriate safety procedures, such as adjusting mirrors, policy issues, and student management tips.

Separately, if a driver has a preventable accident, the driver is required to successfully complete a customized retraining class that specifically addresses the skills or behaviors that contributed to the preventable accident. Drivers with preventable accidents are not eligible to drive until they have completed their retraining.

Finding 22. Driver and monitor training is inconsistent across both transportation facilities.

There are multiple potential reasons behind the inconsistency of training across both the HBT and the LOT. As previously discussed, each facility has an individual responsible for training. At the LOT, there is a Training and Safety Supervisor; at the HBT, there is an Area Supervisor whose duties include overseeing training. Although these two employees coordinate their efforts to some degree, there is no centralized training oversight or strategic guidance.

Also, Special Transportation Supervisors handle the training of Monitors and the training of additional skills necessary for Special Needs Drivers. This training responsibility is in addition to managing special transportation routing and supervising drivers and monitors.

Recommendation 22. Reorganize the FBISD Transportation Department training group.

Because of the safety risks associated with transportation students in buses, it is critical that the Transportation Department's training program is consistently applied within and across transportation facilities. A centralized approach to training is the best approach for ensuring effectiveness. Quality control is difficult to maintain when training is not centralized, as training curriculums, strategies, and data collection are not completely coordinated. Also, as business processes, technology, and policies evolve, the FBISD Transportation Department needs a central point of contact and responsibility for maintaining an effective and up-to-date training program. The FBISD Transportation Department is already pursuing changes to create a centralized training program.

Management Response: *Department Leadership agrees with this recommendation. Staff has assigned one person to oversee the training program and oversee all trainers. Estimated completion is December 2019.*

Finding 23. Training records are not centrally tracked.

Training records are maintained manually, either through paper records or Excel spreadsheets, depending upon the transportation facility. Although the current method of training tracking appears to be used well, the lack of a centralized training activities database makes it difficult to have a comprehensive view of training conducted and training needed at both facilities.

Recommendation 23. Centrally track training history and requirements for each employee.

A centralized training database would allow FBISD to have a single source of data about training activities, including who has attended training and who is due for training. Training databases can also keep track of attendee scores on tests or assessments and can be used to evaluate training effectiveness by associating training activities with other actual performance data. For example, a training database could help answer the question of whether attendees at a particular student management training have an overall lower number of disciplinary referrals. The District could either create their own system for training tracking or purchase a third-party system.

Management Response: *Department Leadership agrees with this recommendation. Staff has assigned one person to oversee the training program and all training records are centralized and kept by this person. Estimated completion December 2019.*

Student Identification on Buses

Commendation 4. FBISD is implementing a universal student ID card system.

FBISD is implementing a universal student ID card system that will help unify both facility access and student access to services into a single ID card that can be read by a radio frequency identification (RFID) system. This system is an emerging best practice among school systems across the country and has significant benefits for student safety and student information reporting. The District's transportation

function will also benefit by being able to know where every child is while they are in transit to or from school.

The audit team gathered information regarding this system and how it will potentially work to support the accurate reporting of student locations onboard FBISD buses. The student ID card system will be provided by *ScholarChip* and will be implemented in the 2019-20 school year. All students will be issued RFID cards at the start of the school year and will keep the cards until their graduation. To mitigate the risk of losing cards, elementary students may also be issued fobs that would be attached to students' backpacks and the ID cards would be not be taken home. The ID cards and fobs utilize passive RFID technology so the cards must be tapped on a reader (a device that can read the data on the card).

Although FBISD plans to have the system fully deployed in schools in the 2019-20 school year, the FBISD Transportation Department will not have all buses equipped right away. Transportation, in coordination with other FBISD functions, will conduct a pilot test of the technology on two routes. To read the data on student ID cards, the bus will need a tablet computer with a card reader attached via a USB connection.

When a student taps his or her card on the reader, the tablet will present a picture of the student and a green or red box around the student's picture to indicate whether the student should be on that particular route. *ScholarChip* also provides a scanner "wand," that is a handheld device that can be used to read the ID card or fob. This wand may be useful if elementary students have fobs attached to their back packs. If the two-route pilot is successful, FBISD Transportation intends to deploy the system to all buses.

ScholarChip accepts data exports from various FBISD data systems, including *Transfinder*, which is the Transportation Department's routing and scheduling system. Because *ScholarChip* will rely on data contained in other systems (e.g., *Transfinder*), it will be important that FBISD keep all systems up-to-date.

The audit team and FBISD's implementation team have several key questions outstanding regarding the functionality of the *ScholarChip* system on school buses, for example:

- A student's assigned bus route may change without much advanced notice. How will tablets in the field be able to receive updated data from *ScholarChip* to ensure accuracy when students are boarding buses?
- Will student suspensions or a list of expelled students be able to be loaded to *ScholarChip* to ensure drivers know the current status of students? And if so, what are the privacy and policy implications of doing so?
- How well will students adapt to both tapping on and tapping off of buses (a required action for accurate data about student whereabouts)?
- Will *ScholarChip* support attendance tracking (bus roll calls) for data collection and TEA reporting purposes? If so, what will outputs from *ScholarChip* contain and will those outputs be able to replace current paper-based roll call procedures?

Appendix A – Interview Roster

Bill Conaway, Director

Michael Brassfield, Executive Director of Transportation

Bob Bongio, Shop Manager

Lori Allbright, Operations Manager

Kenneth Heimann and David Valesquez, Inventory Manager and Assistant Parts Manager

Elmer Jett, Rona Williams, and Sheila Wardlaw, Area Supervisors

Mae Haynes and Frank Page, Dispatchers

Sheila Wardlaw, Route/Safety Supervisor

Julia Nick, Special Needs Supervisor

Connie Hammond, Customer Care Clerk

Barbara Blough, Carol Brooks, Marvalett Lott, Chantene Newman, Angie Sandavol, Drivers

Matt Eggert, GoldStar General Manager

Donna Carter, GoldStar Operations Manager

Noe Vazquez, GoldStar Shop Manager

Darrell Broudneaux, GoldStar Safety & Training

Terrilyn Holmes, Assistant

Steve Bassett, Chief Financial Officer

Charles Dupre, Superintendent

Oscar Perez, Chief Operations Officer

Elementary/Secondary Principals

Melissa Sandoval, Routing Supervisor

Mary Alexander and Julie Ashouri, Routing Specialists

Stacy Broussard, Operations Router for GoldStar

Traci Love, Field Trip Supervisor

Esther Ramirez, Field Trip Supervisor

Gus Rodriquez, Director

Chuck Svboda, Shop Manager

Donald Aikens and Terrell Smith, As assigned

Deidra Oliver, Operations Manager

Donald Aikens and Terrell Owens, Inventory Manager and Assistant Parts Manager

Bryan Cruce, Steven Cameron, Henry Brown, Isaac Malbrough, LaTarsha Simon, Area Supervisors

Narci Salinas, Payroll Clerk

Tiffany Sootoo, Special Needs Supervisor

Beth Martinez, Chief of Staff and Strategic Planning

Georgia Kall and Tonia Babineaux, Dispatchers

Steve Singleton; Ronnie Serrato; Douglas Browne; Brantly Stone; Walter Turcios; Ricardo Camacho; Pedro Monay, Charles Reynolds; Wolde Beyene, Mechanics
Berry Walker; Sharon Butts; Quinton Ard; Robert Ayala; Daniel Sierra; Linda Perez; Edna Pena; Ruth Medina; Cathy Maneley, Drivers

Appendix B – Suggested Performance Indicators for Contracted Transportation Services

Performance Indicators	Contracted Routes	Service Order per Trip
Service Quality		
On-time performance (bus arrival AM, bus departure PM)	Yes	Yes
Trips > one hour	N/A	Yes
Safety		
Collisions per 10,000 miles	Yes	Yes
Student discipline incidents	Yes	Yes
Vehicle Reliability		
Breakdowns in service	Yes	Yes
Preventive maintenance inspections on time	Yes	N/A
Customer Satisfaction		
Complaints from school administrators and parents	Yes	Yes
Customer rating by survey of school administrators and parents	Yes	Yes
Cost-Efficiency		
Operations cost per mile	Yes	Yes
Cost-Effectiveness		
Operations cost per rider	Yes	Yes
Service Effectiveness		
Route tiers not operated	Yes	N/A
Trips missed	N/A	Yes
Reported student No Shows in either AM or PM	N/A	Yes
Riders per route bus	Yes	N/A

Table Note: N/A – Does not apply