



**Comprehensive Bus Report**  
**By Dr. Lois daSilva- Knapton**  
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CES Kindergarten first bus ride

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# Comprehensive Bus Report

## Introduction

According to the National Association of State Directors of Pupil Transportation Services there are nearly 480,000 school buses operating in the United States. This is the largest mass transportation fleet in the country. These buses transport nearly 25 million children to and from school and school related activities. It is important to remember that the student transportation industry is much more than a transportation provider or the iconic yellow bus. It is an integral part of the education system. School buses across the country have numerous differences in terms of their standard and optional equipment. The school bus fleet is comprised of buses of various ages with different mileage accumulations. It is a remarkable fleet of vehicles.

The Canterbury Fleet includes twelve, 71- passenger School Buses, one 29-passenger Mini Bus, and five vans. At this time the Canterbury Fleet does not own any buses with a lift, that would transport students on crutches, in wheelchairs, or in need of handicapped accessibility.

The school bus industry is highly regulated. No other motor vehicle is held to its level of federal safety standards. No other motor vehicle is governed by the extensive level of State regulation. And no other motor vehicle is subject to the strict inspection standards of a school bus. Timely replacement of school buses is a necessity and must be a planned process. Available funding is usually the single most important consideration in determining when school buses are replaced. However there are some key factors in the decision to replace buses. Solid data and information is critical when making any decision.

*First*, according to the National Association of State Directors of Pupil Transportation, "Whenever there is a significant improvement in the federal standards for safety, fuel efficiency, or exhaust emissions requirements of a school bus, it is reasonable to establish a policy with respect your timely replacement of the older buses with newer school buses". For example, the federal government has maintained a policy that pre 1977 school buses should be replaced at the earliest possible time. Canterbury does not need to be concerned with this Federal standard, as our oldest bus was purchased in 2005. However the diesel emission requirements implemented in 1988 and the substantial changes to the school bus emergency exit and exterior mirror requirements



made in the early 90s have caused Canterbury to make some changes in their fleet. Our bus mechanic, Gary Anderson, has been working for Canterbury Public Schools for 20 years. He reported that the emissions testing regulations have caused more need for technological repairs and buses off the road.

“ It is reasonable to assume that there will be continued improvement in the Federal Motor Vehicle Safety standards that apply to school buses. Some improvements would likely apply to passenger safety, while others may be directed at avoiding crashes and still others to driver safety” (National Association of State Directors of Pupil Transportation Services, January 2002). In addition, federal requirements with regard to fuel efficiency and vehicle emission improvements will continue.

*Second*, the question arises do the benefits of buying a new school bus offset the cost of operating and maintaining our older buses? This is the classical cost-benefit analysis. The National Association of State Directors of Pupil Transportation Services tell us that, “the vehicle age at which the total operating cost of an older bus versus a newer bus becomes intolerable is not an exact science. In the 1980s independent studies of annual School Bus operating cost was conducted in California and Washington. Both studies reached the same conclusion, after 12 years of use, the annual operating cost of a Type C and D School Bus began to increase significantly and continued an annual increase each year thereafter”. All the buses in Canterbury are a type C bus, known as the conventional bus, which is the most recognizable. It has the common hood configuration with the door behind the front wheels, and is usually built to accommodate 36 to 72 passengers. Additionally a January 2000 study of life cycle cost for type D school bus in South Carolina indicated that 15 years should be adopted as the cycle for school bus replacement. The study also noted that school buses that accumulate mileage quickly such as vehicles used for special education transportation should have their life cycle cost analysis based on mileage accumulation, not age.

Mark Freddick, a School Bus representative from Dattco bus company states, “Buses last based on how good they are serviced, maintained and washed. Towns typically keep their buses for longer periods of time. I have seen them anywhere from 12 to 17 years. Contractors keep them for ten years max”.

Regarding mileage considerations, according to data published by the Federal Highway Administration the average annual mileage for all school buses is approximately 8,000 Miles. “however, based on discussions with individual state directors and local transportation directors it appears that many individual school buses accumulate much

higher annual mileage". In Canterbury, our buses travel an average of 25,000 miles per year.

Some of the factors affecting the average life cycle of a bus include maintenance (both preventive and corrective), terrain and road conditions over which school buses operate, climate conditions in the area the buses run, environmental conditions of how and where the school buses are stored, can directly impact the useful life of various components especially those made of plastic, rubber, or vinyl.

School Bus breakdowns present many problems. First and foremost is the safety of our bus drivers and children while they wait in or near the broken down bus for a replacement bus. Second is the cost of towing and repairing, and third is loss of classroom time for students or time on the field for sports.

### **Green Technology**

This excerpt was taken directly from the White Paper published in 2013 by the National School Transportation Association: The Yellow School Bus Industry:

Green Technology: The EP standards that took effect in 2007 and 2010 have resulted in school buses that run 95% cleaner than their older counterparts. Most school buses still run on Diesel fuel, but now it is an ultra low sulfur diesel fuel in clean diesel engines. Older buses can be retrofitted with these devices....to reduce exhaust emissions, making them almost as clean as new buses; and many contractors have taken advantage of Grants from the EPA or their state clean air agencies to upgrade their buses" *(note: All Canterbury buses have been retrofitted to meet these standards).*

An increasing number of contractors are using biodiesel fuel in their buses. This fuel, made from natural sources such as animal fats and vegetable oils, can be blended in small portions (up to 20%) with petroleum diesel for use in most engines without modification. It provides a small reduction in both harmful emissions and our reliance on fossil fuels.

Alternative-fuel school buses are gaining acceptance as well. Compressed natural gas (CNG) buses are popular and districts where the infrastructure is available to support them, especially when grants can help with the purchase price. Natural gas is often less expensive than diesel fuel but the initial cost of



CNG buses much higher than a clean diesel bus and the infrastructure is costly to install.

Hybrid-electric buses continue to gain acceptance since a separate fueling infrastructure is not required. The cost however still remains prohibitive for some, thereby slowing adoption.

Propane is another alternative for clean buses. They are not as popular as CNG. Propane also needs additional fueling infrastructure and requires particular safety training at facility accommodations.

Of note, one of the smaller transportation companies in the area has just converted to propane. The Canterbury school board is looking into moving toward green technology school buses but has not made an active step in this direction yet. There may be a way, in the future, to share fueling stations with our neighbors.

### Canterbury Fleet

For the Canterbury fleet, I used a 14 year life span. I also used 25,000 miles, as an average per year for miles. Taking into account all the research and using an excel spreadsheet to calculate miles per year and life span, I will now describe our fleet and suggest if the bus should be retired or how much longer its lifespan is.

### Buses

- Bus number 26 was manufactured in the year 2005. It is 14 years old. It currently has 236,312 miles on it. It has passed inspection this year but it is likely to not pass inspection next year. **This bus should be retired** and held onto for parts.
- Bus number 27 was manufactured in the year 2005. It is 14 years old. It currently has 249,876 miles on it. It has passed inspection this year but is likely not to pass inspection next year. **This bus should be retired** and held onto for parts.
- Bus number 28 was manufactured in the year 2005. It is 14 years old. It currently has 223,875 miles on it. It did pass inspection last year but is likely not to pass inspection next year. **This bus should be retired** and held on to for parts.
- Bus number 30 was manufactured in the year 2007. It is 12 years old. It currently has 248,230 miles on it. Fourteen years from the manufacture date, by the year 2021, running an average of 25,000 per year, it will have 298,230 miles

on it. **This bus should be retired no later than the year 2021** and used for parts.

- Bus number 31 was manufactured in the year 2007. It is 12 years old. It currently has 254,622 miles on it. Fourteen years from the manufacture date, by the year 2021, running an average of 25,000 miles per year, it will have 304,622 miles on it. **This bus should be retired no later than the year 2021** and used for parts.
- Bus number 32 was manufactured in 2009. It is 10 years old. It currently has 249,605 miles on it. Fourteen years from the manufacture date, by the year 2023, running an average of 25,000 miles per year, it will have 349,605 miles on it. **This bus should be retired no later than 2023** and used for parts.
- Bus number 33 was manufactured in 2009. It is 10 years old. It has 252,441 miles on it. Running an average of 25,000 miles per year, this bus will have 352,441 miles on it in the year 2023, fourteen years from the manufacture date **This bus should be retired no later than 2023** and used for parts.
- Bus number 34 was manufactured in the year 2010. It is 9 years old. It currently has 225,970 miles on it. Fourteen years from the manufacture date, in the year 2024, running an average of 25,000 miles per year, the bus will have 350,970 miles on it. **This bus should be retired no later than 2024** and used for parts.
- Bus number 41 was manufactured in the year 2013. It is 6 years old. It currently has 134,826 miles on it. Fourteen years from the manufacture date, by the year 2027, running an average of 25,000 miles per year, it will have 334,826 miles on it. **This bus should be retired no later than 2027** and used for parts.
- Bus number 43 was manufactured in the year 2013. It is 5 years old. It currently has 107,763 miles on it. Fourteen years from the manufacture date, by the year 2028, running an average of 25,000 miles per year, this bus will have 332,763 miles on it. **The bus should be retired no later than 2028** and used for parts.
- Bus number 46 was manufactured in 2016. It is 3 years old. It currently has 16,826 miles on it. Fourteen years after the manufacture date, in the year 2030 and running at 25,000 miles per year average, this bus will have 291,826 miles on it. **This bus should be retired in 2030** and used for parts.
- Bus number 44 was manufactured in the year 2017. It is 2 years old. It currently has 71,803 miles on it. Fourteen years from the manufacture date, in the year 2031, if this bus runs 25,000 miles per year it will have 371,803 miles on it. **This bus should be retired no later than 2031** and used for parts.
- Bus number 45 was manufactured in 2017. It currently has 69,068 miles on it. It is 2 years old. Fourteen years from the manufacture date, in the year 2031, if this bus runs 25,000 miles per year, it will have 369,068 miles on it. **This bus should be retired no later than 2031** and used for parts.

## **Vans**

(of note, 4 of the 5 vans have over a hundred thousand miles on them. High mileage on school buses is very different than high mileage on vans. The district should consider purchasing more vans in the future).

- Van number 37 was manufactured in 2010 and currently has 104,319 miles on it
- Van number 38 was manufactured in 2010 and currently has 104,006 miles on it
- Van number 39 was manufactured in 2010 and currently has 130,581 miles on it
- Van number 40 was manufactured in 2012 and currently has 70,791 miles on it
- Van number 42 was manufactured in 2013 and currently has 102,290 miles on it

## **Financing**

To be determined by the Canterbury Board of Education using the most current RFP which was opened on August 26, 2019.