

August 2001

SAFETY, EFFICIENCY, AND COST-EFFECTIVENESS OF SCHOOL DISTRICT TRANSPORTATION - BACKGROUND MEMORANDUM

House Concurrent Resolution No. 3052 (attached as an appendix) directs the Legislative Council to study issues of safety, efficiency, and cost-effectiveness with respect to school district transportation.

BACKGROUND

Public education in this country has its roots in the mid-1600s. The transportation of public school students in special vehicles, on the other hand, was not known until the late 1800s. The first such vehicles were nothing more than horse drawn wagons, generally borrowed from an area farmer. The wagons were soon replaced with gasoline-powered school trucks. During the 1920s and 1930s, the country's road system increased and improved in both the urban and rural areas. With this increase came the development of the schoolbus industry.

As schoolbus numbers increased, accidents involving schoolbuses caused school officials to think about developing safety guidelines and recommending safety standards. In 1939 representatives from 48 states gathered to develop standards and recommendations for the schoolbus industry. Since 1939 there have been 12 additional national conferences on school transportation. At each conference, representatives from every state have gathered to revise existing standards and to establish new safety standards for schoolbuses as well as operating procedures for the safe transportation of students, including those with disabilities.

Today, there are approximately 36 federal motor vehicle safety standards that are applicable to schoolbuses. These standards address a wide range of vehicle components and systems, including outside mirrors, warning lights, emergency exits, and fuel system integrity. Four of the standards are unique to schoolbuses. These standards govern the performance and use requirements for schoolbus pedestrian safety devices such as stop signal arms, the minimum structural strength of schoolbuses in order to maintain vehicular integrity in the case of a rollover, the minimum requirements for the strength of the joints between the panels of the schoolbus body, and requirements for the seating systems in all sizes of schoolbuses. This last standard also addresses the securing of wheelchairs during transit and the restraint of wheelchair occupants.

More than 24 million students ride schoolbuses each day. During the school year, there are

approximately 9.322 billion passenger journeys (one-way trips) covering over 4.3 billion miles. North Dakota data for the 1999-2000 school year show that 46,114 students were transported 23,349,766 miles at a total cost of \$29,515,603. The average cost of transportation per student transported was \$640.06, and the average cost per mile was \$1.26.

The 2001-03 general fund appropriation for school district transportation is \$36 million.

TRAFFIC SAFETY FACTS

The United States Department of Transportation National Highway Traffic Safety Administration defines a schoolbus-related crash as one which involves, either directly or indirectly, a schoolbus, or a vehicle functioning as a schoolbus, and transporting children to or from school or school-related activities. Since 1989 fewer than one-third of 1 percent of all fatal traffic crashes have involved schoolbuses. Of the 1,445 people who died in those crashes, 65 percent were occupants of other vehicles and 25 percent were nonoccupants, such as pedestrians or bicyclists. Only 10 percent of the victims were occupants of schoolbuses. The latest available statistics from the National Highway Traffic Safety Administration show there were no North Dakota fatalities among school-age children in schoolbus-related crashes.

OTHER SAFETY ISSUES

Advertising on Schoolbuses

As school districts around the country experience an increase in student transportation costs and insufficient appropriations to meet those costs, they have attempted to reduce costs or to find alternate sources of revenue. Some school districts have extended student walking distances, eliminated schoolbus service in favor of public transit, and imposed passenger fees. Others have turned to the sale of advertising space on schoolbuses.

While the sale of advertising space on schoolbuses generates legal discussions about the nature and extent of the advertising as well as a school district's ability to preclude certain types of advertising based on its perceived appropriateness, it also generates considerable discussion about safety concerns. Proponents of this revenue-raising measure point out there are no data to show that advertising on schoolbuses, or on

any other type of bus, is or would be distracting to passing motorists. Therefore, they suggest there are no safety risks associated with advertising on schoolbuses or that the risks, if they exist, are within acceptable limits.

Opponents on the other hand state that while there have been no national studies to determine the effects of driver distraction resulting from advertising on any kind of vehicle, including transit buses and taxicabs, there have been national studies regarding the effects of driver distraction and inattention on motor vehicle crashes in general. The National Highway Traffic Safety Administration estimates that 3.2 percent of all tow-away crashes are caused by a driver being distracted by something outside the vehicle. That "something" might have been another person, an object, or an activity. Also, the National Highway Traffic Safety Administration points out that schoolbuses are designed in a way that makes them highly visible, i.e., their bright yellow color, their unique flashing light systems, their stop-arm signals, etc. If one puts advertising on the outside of a bus to catch the attention of passing motorists, there is the inherent risk the motorists will focus on the advertising, and the safety of the students entering or exiting the bus will be compromised.

While the National Highway Traffic Safety Administration recognizes the evidence to date regarding advertising on schoolbuses is anecdotal rather than empirical, it has determined that advertising on schoolbuses could present a safety problem and has therefore chosen not to endorse such activity.

Passenger Vans Used as Schoolbuses

A schoolbus is defined in federal law (49 United States Code Section 30125) as "a passenger motor vehicle designed to carry a driver and more than 10 passengers, that the Secretary of Transportation decides is likely to be used significantly to transport preprimary, primary, and secondary school students to or from school or an event related to school." Federal rules (49 Code of Federal Regulations (CFR) 571) defines a schoolbus as "a bus that is sold, or introduced in interstate commerce, for purposes that include carrying students to and from school or related events, but does not include a bus designed and sold for operation as a common carrier in urban transportation." North Dakota Century Code Section 39-01-01 defines a schoolbus as "any motor vehicle owned by a public or governmental agency and operated for the transportation of children to or from school or to or from school-related activities, or privately owned and operated for compensation for the transportation of children to or from school or to or from school-related activities."

In recent years, again out of an attempt to reduce transportation costs, school districts have resorted to purchasing or leasing full-sized passenger vans or

minivans in lieu of schoolbuses. One of the safety concerns often raised is that a passenger van does not offer the same level of safety to its occupants as does a full-sized schoolbus or even a schoolbus built on a van-type chassis. According to the National Highway Transportation Safety Administration, the likelihood of significant injuries or fatalities is greatly increased in cases in which children are transported in vehicles that do not conform to the agency's schoolbus standards.

North Dakota Administrative Code Sections 67-12-01-01 and 67-12-01-02, when read together, require all public schoolbuses in this state to meet the minimum body and chassis standards established for schoolbuses in 49 CFR 571. North Dakota Administrative Code Section 67-12-01-03 provides that "whenever body and chassis standards identified in the 1995 revised edition of the national minimum standards for schoolbus construction, as developed by the 12th National Conference on School Transportation, May 21-26, 1995, exceed or are in addition to the federal motor vehicle safety standards for schoolbuses, those national minimum standards for schoolbus construction apply and are hereby adopted by reference." In discussions with personnel from the Department of Public Instruction, it appears the standards are applied to traditional schoolbuses but not to passenger vans used in the transportation of students.

A concomitant issue with respect to passenger vans involves the licensure and training of the drivers. North Dakota Century Code Section 15.1-07-20 provides that:

1. To be eligible to drive a schoolbus or other school vehicle, an individual must:
 - a. Hold a valid North Dakota driver's license;
 - b. Be free from communicable diseases;
 - c. Be in good physical health and have normal use of both hands, both feet, both eyes, and both ears;
 - d. Be of sound mental health;
 - e. Pass any drug and alcohol screening tests required by the school board; and
 - f. Be at least twenty-one years of age, unless the board of a school district determines that an individual not meeting this requirement can safely and adequately perform the required duties.
2. Each year, the board of a school district shall designate licensed health care professionals, as defined by department of transportation standards, to examine schoolbus and school vehicle drivers.

3. Prior to commencing duties as the driver of a schoolbus or other school vehicle, whether employed by the school district or by another entity with whom the school board has contracted, and every two years thereafter, an individual shall present to the school board verification by a designated health care professional that the individual has been examined and meets the health requirements of this section.
4. This section does not prohibit teachers or administrators employed by the district from operating vehicles for the purpose of transporting students to regular or special events related to educational programs in which the students are enrolled.

According to personnel at the Department of Public Instruction, an individual whose normal driving experience is limited to a small car could find himself or herself transporting students to an extracurricular event in a full-size passenger van with no special instruction or training regarding the handling of the vehicle in either favorable or nonfavorable weather conditions.

Seatbelts

The issue of whether to require seatbelts in large schoolbuses is a topic that has been studied thoroughly and debated vigorously for many years. Advocates for the installation of seatbelts point to their potential benefits in terms of reduced injuries and fatalities in certain types of crashes--principally side impact and rollover crashes. They reference improvements in student behavior as a result of seatbelt usage. Finally, they reference consistency in teaching children to buckle up in all types of vehicles. Opponents point to the safety record of schoolbuses in general as negating the need for seatbelt installation and existing crash data proving that a restraint placed around the hips is not as effective as a combination lapbelt and shoulderbelt.

At least two states have required the installation of seatbelts in large schoolbuses--New York and New Jersey. New York installed the seatbelts but did not add a requirement that students use them. New Jersey estimates that 75 percent of its student riders use the lapbelts. Neither New York nor New Jersey has had a significant schoolbus crash from which data concerning the benefits of the use of seatbelts could be derived.

The response by the National Highway Traffic Safety Administration is that it intends to continue its research programs to evaluate and upgrade its current standards for all aspects of crash protection in schoolbuses.

Diesel Fumes

A study released on February 12, 2001, by the Natural Resources Defense Council and the Coalition for Clean Air reported that a child riding in a diesel-fueled schoolbus is exposed to a level of toxic diesel exhaust that is four times higher than that to which a person standing outside the bus is exposed. The study found that matter in bus exhaust poses a particular threat to children because of children's developing immune and respiratory systems. The study alleges there is a correlation between the age of the bus and the extent of the risk. The study consequently suggests that compressed natural gas should be used in schoolbuses instead of diesel fuel because doing so would reduce the noxious emissions.

The American Council of Science and Health called the report "replete with invalid and unsupported assertions." The council is a consumer education consortium consisting of more than 350 scientists and physicians concerned with issues related to food, nutrition, chemicals, pharmaceuticals, lifestyle, the environment, and health. The council did not conduct another study of diesel exhaust. What it did conduct was a peer review of the Natural Resources Defense Council's study. The American Council of Science and Health concluded the Natural Resources Defense Council did not describe its study in sufficient detail nor did it present enough data to allow for a thorough and informed critique of its validity. It found the conclusions could therefore not be confirmed. In its summary statement, the American Council of Science and Health states the "conclusions presented in the . . . report should be viewed as opinions based on limited data and risk estimations, as scientific evidence is currently lacking to support the claim that schoolbus exposures are associated with an increased risk of cancer to children."

EFFICIENCY AND COST-EFFECTIVENESS OF SCHOOL DISTRICT TRANSPORTATION

North Dakota Century Code Section 15.1-27-26 provides for the following transportation payments:

1. Twenty-five cents per mile for each schoolbus and school vehicle having a capacity of nine or fewer students and transporting students who reside outside the incorporated limits of the city in which their school is located;
2. Sixty-seven cents per mile for each schoolbus and school vehicle having a capacity of 10 or more students and transporting students who reside outside the incorporated limits of the city in which their school is located;
3. Twenty-five cents per mile for each schoolbus and school vehicle having a capacity of nine or fewer students and transporting students who

reside within the incorporated limits of the city in which their school is located;

4. Thirty-five cents per mile for each schoolbus and school vehicle having a capacity of 10 or more students and transporting students who reside within the incorporated limits of the city in which their school is located; and
5. Twenty-five cents for each one-way trip by a student who rides a schoolbus or a commercial bus to or from school and who resides within the incorporated limits of the city in which the student's school is located.

The payment system is based on historical costs. Districts receive transportation formula dollars based upon the miles traveled by a particular sized schoolbus. Regardless of whether a large bus transports 2 students or 40 students, the rate of payment is the same. The method presently used by North Dakota to promote efficiency involves the capping of transportation payments at 90 percent of the actual cost incurred by the district.

Data Envelopment Analysis

In 1997 the Legislative Assembly appropriated \$50,000 for North Dakota State University's data

envelopment analysis project, but funding was not continued in either 1999 or 2001.

Data envelopment analysis is an alternate method for measuring and encouraging efficiency of school district transportation. It involves an analysis of comparable operating units. All school districts in the state would be divided into categories or peer groups that have comparable circumstances. One example of similar categories already in existence is the weighting categories, which are statutorily established according to school district enrollment and serve as the basis for calculating state aid payments.

After the categories are established, the next step is to standardize the inputs. The inputs might include costs for administrators, drivers, mechanics, repairs, fuel, etc. Through use of a mathematical formula, variables are analyzed to determine the relative efficiency of each district. Each district is compared to the other districts in its category. If funding were made a part of the formula, the funding would then be based on the operational cost of the most efficient district in the category. Through formula application, data envelopment analysis could assist school districts in reconfiguring their transportation routes to provide the greatest efficiency.

ATTACH:1