Exhibit 56

PUPIL TRANSPORTATION ADEQUACY IN ARKANSAS

A report prepared for the

Adequacy Study Oversight Sub-Committee
of the
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INTRODUCTION

Student transportation plays an important role in education systems, augmenting the educational programs in schools and allowing many students the opportunity to be fully engaged and to participate in all program offerings of the public schools. The goal of a strong pupil transportation system should be to insure that all children requiring rides to and from school receive them in a safe and efficient manner. This document summarizes current literature on pupil transportation systems with an eye to providing guidance for the development of a transportation funding formula to complement the adequacy funding efforts of the state of Arkansas. Historical reasons for the transportation of students to and from schools include (Wood, Thompson, Picus, & Tharpe, 1995):

1) The distance to walk to school and back from the student's residence is too far;
2) Safety hazards such as inadequate sidewalks, railroad tracks, and busy streets;
3) The need to shift students to different schools within a district to alleviate overcrowding concerns; and,
4) For purposes of meeting desegregation requirements, to transport students to different schools within and between districts.

Over the last century, pupil transportation across the United States has grown considerably. In 1869, the state of Massachusetts passed the first law that authorized use of tax revenues for student transportation. Advances in automotive technology have increased vehicle and passenger safety and have allowed for longer traveling distances.

To facilitate the minimum student transportation distances established by states and districts, bus routing algorithms have been created, which in effect, try to control and reduce costs. As a result, the role of a district's Transportation Operations department has grown for multiple reasons, including:

1) To and from school student transportation;
2) The transportation of students with physical disabilities preventing them (the students) from walking to school; and,
3) Use of buses for activities such as field trips and sporting events, taking place during and after-school operating hours.
4) Intra- and inter-district busing of students for purposes of racial integration;

As a result of this continued growth, Wood, Thompson, Picus, and Tharpe (1995) estimated that Transportation Operations now consumes approximately 4 to 5 percent of total K-12 educational expenditures. In Arkansas, 2004-05 transportation expenditures of $122 million represented four percent of net current expenditures of $3.1 billion (ASR for 2004-05). Factors that affect a district's transportation expenditures include size of district (district square mileage, total number of students transported), geographic terrain, the transportation of students with disabilities and associated safety measures taken to achieve that goal; and, transportation policies (Wood, Thompson, Picus, & Tharpe, 1995).

Generally, one can think of three goals for state transportation aid formulas. These are:

1. Provision of minimum levels of transportation across all districts

2. District provision of effective and efficient transportation services
3. Equitable distribution of funds to equalize educational opportunities

State aid formulas for transportation can be categorized into four funding methods:

1. Actual cost funding
2. Flat rate per unit funding
3. Utilization of multivariate calculations and factors
4. No distinct funding mechanism for transportation.

When states provide financial assistance for district transportation programs, the factors usually included in the system include some or all of the following factors (Wood, Thompson, Picus, & Tharpe, 1995):

- Miles driven
- Hours of operation
- Population density
- Bus capacities
- Total number of students transported
- Factors associated with hazardous walking
- Desegregation
- Cost of bus replacement

There is a prevailing perception that when a state requires local districts to fund a portion of transportation costs (i.e., through cost-sharing plans, etc) funds are spent more wisely and more efficiently (Wood, Thompson, Picus, & Tharpe, 1995). However, a few states, notably Wyoming, have moved to full state funding of pupil transportation costs, although each state interprets the meaning of "fully funded" differently. The appendix to this document contains a summary of how states fund pupil transportation programs.

It should be noted that the proportion of student transportation costs for which districts within a state receive reimbursement varies widely. Because geographic conditions, which are outside of a district's control (population density, road conditions, and total distance), affect student transportation costs, a sparsity factor and/or a district size factor is usually included in any state reimbursement formula. Districts with expensive or difficult transportation needs are provided with additional funds, and districts with less expensive or less difficult transportation needs are provided with fewer funds. Factors including personnel, bus purchasing, and bus replacement, vehicle maintenance, bus routing, and safety all affect a district's Transportation Operations program (Wood, Thompson, Picus, & Tharpe, 1995).

STUDENT TRANSPORTATION SYSTEM DESIGN PROCESS

In order to identify transportation needs, districts often engage in professional surveys. District resources, geographic boundaries, walking distances, individual student grade levels, bus stops, road/street/highway conditions, traffic congestion, and the individual hours of operation at every school including start and stop times are carefully analyzed. Sophisticated software programs enable district administrators and transportation planners to identify the pick-up and drop-off locations for every student in the district. Policies are then created for unique and unusual circumstances regarding such factors as the geographic isolation of some students which may necessitate the parental transportation of a student to some agreed-upon location when and where the bus can effectively and efficiently transport the student to the schoolhouse; policies regarding the types of services provided (district-owned, contractor-owned, some combination program, etc); payments made to individual parents or guardians in-lieu of some payment for transportation; and many others are set, and presented to the school board for recommendation of approval (Fowler, 1988).

Wood, Thompson, Picus, & Tharpe (1995) explain that a measure of the size and extent of a district's student transportation system is the total number of miles driven by buses on an annual basis. Given the diversity of state physical size, geographic terrain, and district population density, using total transportation costs as a basis of comparison across the states, however, can be limiting. Weather and road conditions affect total per pupil costs of transportation. For example, states with severe weather conditions may have higher per pupil transportation costs given greater maintenance needs. Likewise, buses traveling in sparsely populated areas on well-maintained roads may have relatively low total per-pupil transportation costs. Therefore, a District's Transportation Operations program may cost range may be between 4 and 5 percent of total K-12 educational expenditures. Multiple factors (personnel, bus purchasing and bus replacement, vehicle maintenance, bus routing, and safety) all affect Transportation Operations. Examples of issues that must be considered are outlined below.

Personnel

Districts need to hire and train competent bus drivers (often through a state certification program and with follow-up training on safety and student discipline) who are able to effectively communicate with bus mechanics, the transportation supervisor, and the school-site principal regarding concerns and issues. A transportation supervisor (in a small district this may be the assistant superintendent for business, in a large district this can be and often is a separate position) must be able to understand how to operate a bus fleet and to train and work with transportation personnel (Wood, Thompson, Picus, & Tharpe, 1995).

Fowler (1988) explains that school districts are accountable for and assume the responsibility for all students' safety from the moment they board the school bus in the morning until they leave the school bus at the same point as being picked up in the afternoon. Qualified personnel, therefore, must assume varying levels of responsibility in order to ensure the successful operations of a district's Transportation Operations Program. Fowler (1988), outlines roles and responsibilities:

- <u>The Superintendent</u>: provides information to the governing board to determine pupil transportation policy; makes student transportation policy recommendations; within the framework of the board policy, makes administrative decisions; as pertaining to the Transportations System, the superintendent fines personnel responsibilities; and, s/he is charged with promoting public support for and understanding of the district's student transportation program (Fowler,1988).
- <u>The Director of Transportation</u>—The Director of Transportation, recommended at 1 FTE per district, usually is under the direct supervision of the Assistant Superintendent of Business Services. The Director of Transportation is responsible for planning, organizing, scheduling, and the supervision of all personnel in the transportation personnel as well as the supervision of students riding school vehicles. The Director of Transportation also assigns bus drivers,

the servicing and repair of vehicles including the cleaning of school buses; assigns school bus drivers; assists in the personnel selection and the training thereof; maintains lines of communication with all education stakeholders; submits routine and special-request reports regarding the transportation program; helps develop the budget for the transportation program; order materials, equipment and supplies; maintains accurate and detailed records; and, addresses public complaints and criticisms regarding transportation. The Director of Transportation may subordinate managers and directors, based upon minimum FTE requirements and otherwise as-needed to effectively, efficiently, safely, and economically run the transportation program (Fowler,1988).

- The Secretary—1 FTE Secretary in the district's Transportation program is needed for every 4 schools; 0.5 FTE Secretaries are needed for every 2 schools within the district. Secretaries perform clerical, office, typing, and records duties as assigned by the Director of Transportation (Fowler,1988).
- The Clerk—1 FTE per district Transportation program is recommended. The Clerk is responsible for maintaining records, conducting office, clerical and typing duties as assigned by the office unit (Fowler,1988).
- The Transportation Manager: Districts that have a minimum of 10 buses will need 0.5 FTE Transportation Managers; districts with a minimum of 20 buses will need 1 FTE Transportation Manager. Smaller districts with fewer then 5 buses, it is recommended that the district(s) job-share the role of Transportation Manager between 2 or more districts. The Transportation Manager is required to: advise and plan for the immediate supervisor regarding matters involving student

transportation; ensuring district rules and regulations are being followed by all transportation department personnel; maintaining a personnel training program continuously; developing the organizational structure, routing, and transportation maintenance system to operate buses, personnel, and fiscal resources efficiently and effectively; maintenance of communication between transportation personnel and school services; develop hiring and dismissal policies and procedures with the administrations; and reviewing and developing safety procedures (Fowler,1988).

- The Dispatcher Supervisor / Bus Driver Supervisor: Districts that have a minimum of 10 buses will need a 0.5 FTE Dispatcher Supervisor / Bus Driver Supervisor; districts with a minimum of 20 buses will need 1 FTE Dispatcher Supervisor / Bus Driver Supervisor. The Dispatcher Supervisor: develops efficient routing systems and training programs for drivers; works with drivers regarding matters concerning student discipline; develops safe bus stops; works with the public regarding bus transportation problems; and, works with drivers on mechanical problems in order to ensure that the drivers will properly follow procedures in reference to work and repair orders. The position in this class also supervises the assigning of equipment to and routes to drivers; calls in relief / substitute drivers as necessary; conducts internal auditing of master schedules, routes, route maps and running times for contractor-owned and district-owned buses; assists school personnel (usually the principal or assistant principal) in reference to special education transportation needs; coordinates use of contractors; answers student and parent questions regarding transportation program options; assists in the selection and evaluation of drivers, maintaining accurate and detailed records; and, makes period reports and as requested to and for the Director of Transportation (Fowler,1988).

- <u>The Driving Training Instructors:</u> Districts that have a minimum of 25 buses will need 0.5 FTE Driving Training Instructors; districts with 50 buses will need 1 FTE Driving Training Instructors. Driving Training Instructors are responsible for: developing bus-driving training programs that meet all state laws and any additional local requirements; and, to develop driver-training follow-up programs in regards to classroom work as well as behind-the-wheel training. Training programs should focus on safety (Fowler,1988). In addition, a 2004 driver-training survey (McMahon, September 2004), finds in school districts across the United States, there is an average ratio of Bus Drivers to Driving Training Instructors of 44 Bus Drivers to 1 FTE Driving Training Instructor.
- <u>The Bus Driver</u>—The actual number FTE Bus Drivers depends on the number of buses used, the particular types of buses used, routes used, and other circumstances. Bus Drivers must operate the bus assigned them, efficiently, economically, and safely in addition to competently supervising students on the bus. It has been noted that Bus Drivers, while on the bus, teach qualities such as good citizenship, provide good leadership, and earn the respect and cooperation of teachers, students and parents (Fowler,1988).
- <u>The Mechanic Supervisor—</u>For every 100 pieces of equipment (inclusive of buses, trucks, vans, and other vehicles), 1 FTE Mechanical Supervisors are needed. If in the event a district has fewer than 100 pieces of equipment and five shop personnel, then a Mechanic Lead-Man is utilized. The Mechanical

Supervisors are responsible for: supervising the purchasing of supplies with an eye for cost and quality effectiveness; development of a maintenance schedule for all equipment, ensuring safety standards and economical stewardship; development of personnel hiring requirements for mechanics as well as service personnel, based on the departmental needs; development of training programs and follow-up training programs for departmental use; developing and maintaining effective lines of communication with the Transportation Manager, Dispatcher Supervisor, Driving Training Instructor(s); Bus Drivers; and other shop personnel (Fowler,1988).

- The Mechanic Lead-Man—The Mechanic Lead-Man, not exactly a supervisor, does have increased levels of authority. A district with fewer then 100 pieces of equipment and 5 or fewer shop personnel employ a Mechanic Lead-Man, who is responsible for: developing lines of communication with her/his immediate supervisor; monitors shop safety programs and shop production required by the Transportation System; and, functions as a producing member within the mechanics department (Fowler,1988).
- Heavy Duty Mechanic Leadworker—The Heavy Duty Mechanic Leadworker is responsible for the supervision and monitoring of work of skilled mechanics; performs skilled maintenance and mechanical repair on large gasoline and diesel-powered buses as well as on other district mechanical equipment; assists with and supervises major engine and transmission overhauls; inspects major repair work conducted; upon completion of a job, tests performance; conducts diagnostic tests,

inspects equipment, and carries out a preventative maintenance program . (Fowler,1988)

- The Service Mechanic—The Service Mechanic services school buses and other mechanical equipment; checks and fills buses with appropriate fuel and oil; greases, lubricates and services equipment and vehicles on schedule; inspects and repairs tires, brakes, lights, and other equipment; cleans, washes, and waxes vehicles; assists mechanics in major repairs and minor repairs; may pick up and deliver parts and supplies; maintains tools and equipment used and all garage service areas in a clean and orderly fashion; and, on occasions, may be required to drive a school bus on an emergency, as-need basis for purposes of transportation of students (Fowler,1988).
- Shop Technical Support Staff-- The Shop Technical Support Staff help the district's Transportations Operations Program by functioning independently, efficiently, economically, and safely, and consist of skilled trades. Districts are encouraged to carefully screen applicants for any Shop Technical Support Staff position, and these personnel must be training continuously on new, state-of-the-art techniques. Examples of Shop Technical Support Staff include the Automotive Parts Technician and the Autobody Specialist (Fowler,1988).

Bus Purchasing and Bus Replacement

District owned- and provided transportation services can not only result in cost savings for purposes of academic and athletic field trips, but often during the year there is a charter bus shortage with respect to supporting the numerous student activities which require busing (Rogers & Randall, March/April 2003). Wood, Thompson, Picus, &

Tharpe (1995) note that every district must have a system for purchasing new and replacing old, worn-out buses, taking advantage of improved technology and safety standards. The National Highway Traffic Safety Administration (NHTSA) in 1977, issued safety standards, known as Post-DOT bus safety standards for school bus design. Effective April 1, 1977, manufactured buses were designed to be stronger and better able to withstand accidents; the standards included features such as padding for the sides and backs of seats in buses to minimize student injury. One qualitative measure of a district's or state's bus fleet is the number of pre-1977 buses still used. However, as a result of the Post-DOT design and safety standards, the cost of purchasing a school bus has steadily risen. State and district bidding requirements, for which there are two bid components (one for the body, one for the chassis) and options taken on bus features including engine type (gasoline, diesel, alternative fuel), transmissions, size of bus (passenger capacity), and specialized equipment for students with disabilities such as lifts and restraints, all affect total purchase and replacement costs of school buses (Wood, Thompson, Picus, & Tharpe, 1995).

The *Union of Concerned Scientists* (Monahan, May 2006) explains that the United States has a current total bus fleet of 505,000 buses transporting 25.4 million students a total of 5.8 billion miles per year. The average bus across the U.S. travels 11,400 miles per year. Bus fuels used predominately include diesel (94 percent), gasoline (5 percent), and alternative fuels (1 percent). In relation, there are a total of 6,535 buses in operation in Arkansas, with 65 percent of the bus fleet being older than 10 years.

Some states have formulas for the purchase and replacement of vehicles. For more information in regards to the state programs and formulas, please see the appendices:

Bus Maintenance

A good vehicle maintenance program will extend the useful lifecycle of the bus, reduce replacement costs, and help provide adequate school bus safety. Daily driver vehicle inspections, often conducted in teams, often bus tire-inflation, leaks, headlights, brake lights, rear lights, running lights, crossing lights, flashers, blinkers, stop arms and other safety features are required. A method for drivers reporting vehicle maintenance needs and mechanical service / repair work conducted must be in-place. Routine, preventative (proactive) maintenance such as oil changes, break inspections, and engine overhauls need to be established. The scheduling of vehicle maintenance should be conduced in such as way as to minimize the impact on student transportation and an adequate supply of spare buses must be maintained. Commercially available computer programs can help maintain the detailed maintenance records needed for preventative maintenance scheduling and the proper tracking of all vehicles (Wood, Thompson, Picus, & Tharpe, 1995) .

Formulas such as for Washing and Greasing Expense, the amount of insurance premium applicable to each type of equipment, and equipment depreciation are often employed by states and districts around the country (Fowler, 1988). For more information regarding state reimbursement formulas, please see the appendices:

Bus Routing

An accurate database of student residencies, location of schools attended, and the most efficient method of transporting students is critical to the success of the Transportation operations program. The person responsible for bus routing must consider factors that at least include: (1) ride safety; (2) total time spent riding on bus; (3) total bus seating capacity; (4) minimizing the practice of operating school buses as empty, commonly referred to as "deadheading"; (5) staggered school starting schedules; (6) use of circular versus linear driving routes; (7) total distances traveled by students on the buses; and (8) other factors deemed necessary by the federal government, state government, and/or local boards of education(Wood, Thompson, Picus, & Tharpe, 1995). The CASBO Transportation Research and Development Committee (Fowler 1988) recommends a bus routing schedule that allows for no more than 30 minutes of students riding on the bus one-way, and no more than one-hour of ride-time per school day. Route types used to achieve this standard include circular routes, "spoke" or "shoestring" routes, and trunk and feeder routes. Route service includes single trip routes and multiple trips routes, with a layover time, or time between each trip, being approximately 10 minutes. Consequently, in estimating route mileage and time required, many district transportation planners fall back on a 1948 national survey that revealed that a bus route that was 11.9 miles long took approximately 49 minutes. The formula that estimates time to travel any given route, consequently, is given as:

[(X miles) x 2) + 1 minute per stop] = Time to Travel on Any Given Route.

bus to the schoolhouse. Students are expected to behave appropriately, and must clearly understand enforced-rules critical for the successful management of students who ride the buses. In California, for example, state regulations regarding school bus driver authority include:

1. A bus driver shall not require any student to leave a bus before the student has reached her/his destination;
2. School bus drivers shall be held responsible for student orderly conduct while students are on the bus and/or when students are being escorted across the road, street or highway;
3. Students being transported in a school bus are under the authority of and are directly responsible to the school bus driver; and,
4. Student continued disorderly conduct and/or student persistent refusal to submit to the driver's authority is a sufficient reason for a student to be denied transportation on the school bus.

In the event that discipline problems occur, the driver may employ remedial steps including changing the student's seat. Continued disruptions and/or violations may result in a conference held between the student and his/her teacher or the school-site principal; parental notification and request for assistance; and, transportation privileges being withdrawn for a set period of time. Students may not, however, be taken off a bus while the bus is en route at other than a scheduled bus stop (Fowler, 1988).

Pollution

Pollution from older school buses can pose a health risk (asthma, cancer, heart disease, premature death) to students. The *Union of Concerned Scientists* (Monahan, May 2006) explains that recent studies have found that pollutants can concentrate inside school buses, leading to higher pollution exposure rates to students who ride buses. Cleaner-burning fuels and pollution controls for diesel-powered buses can cut the pollution collected within buses. In a national survey, the *Union of Concerned Scientists* found that:

(1) Some of the oldest vehicles on the road are currently school buses;

(2) Pollution performance by buses varies widely;

(3) Significant improvements in curbing bus pollution have been made by clean school bus programs such as in California and Washington state;

(4) Nine states and the District of Columbia have not taken action to clean up bus pollution;

(5) Increased investments in cleaner-burning fuel buses are needed as the average bus in the cleanest fleet was found to emit 20 percent more soot per mile then the average big rid, and that emissions could be substantially reduced by utilizing existing technology and fuels available;

(6) Replacement and retrofitting buses will require substantial investment nationwide, with replacement costs of all buses built before 1994 estimated to be $13.4 billion; and,

(7) Parents and school administrators need to collaborate more on pollution control efforts (Monahan, May 2006).

It is estimated (Monahan, May 2006) that if the average diesel school bus were converted to a 20 percent Bio-diesel bus, there would be a 10 percent reduction in soot emitted. Furthermore, if the average diesel bus were retrofitted with a Soot Trap, there would be an 85 percent soot reduction. Finally, it is believed that a 93 to 97 percent soot reduction could be achieved if a 2007 Diesel or Natural Gas Bus were used. The problem, though, as Monahan (May 2006) indicates, is that on a standard grading scale (A, B, C, D, F) of all fifty states, no states received a Soot Pollution Grade of "A" or "F". A total of 16 states received a "B", 22 states received a "C", and 13 states including Arkansas received a "D". Arkansas received a ranking of "Poor" for its own cleanup program and a raking of "Poor" for its smog-forming pollution. Policy implications of the study include:

1. States and individual District Transportation Operations need to meet the U.S. Environmental Protection Agency's goal of retrofitting or replacing all school buses by 2010;
2. Increased federal (and state) funding such as through the EPA's Clean School Bus Grant Program is needed;
3. States need to build their programs to reduce school bus pollutants. Examples of model programs include California's "Lower-Emission School Bus Program," and Washington's "Clean Bus, Healthy Kids Retrofit Project" (Monahan, May 2006).

Regarding new technological developments Sorensen (2004) further explains that promising new technologies such as incorporating fuel cells, although still in its testing phase with larger passenger vehicles such as buses, can potentially reduce school bus transportation costs. In conventional spark-ignition engines like diesel engines used in buses, hydrogen can be used as a fuel, with engine efficiency in hydrogen-powered vehicles noted as being as high as diesel- or gasoline-powered vehicles. By 2005, approximately 50 fuel cell buses were driving regular route patterns in cities around the world and the number is expected to increase given that "the fixed route driving and use of dedicated filling stations have made it easy to accommodate the limited range of current fuel cell buses and to establish dedicated hydrogen filling stations at suitable locations in the test cities" (Sorensen, 2004; p. 219). However, even though hydrogen combustion can be incorporated into buses, significant safety concerns given the wide flammability range of hydrogen preclude any formal recommendation of school district investment in or adoption of hydrogen-powered school buses until more research can substantiate viability and arrest safety concerns

It should be noted here that the average school bus across the United States is currently nine years old, and more then 30 percent of school buses used are more than ten years old. Soot-control technology can include: Diesel Particulate Filters, Diesel Oxidation Catalysts, Low NOx Traps and NOx Absorbers. Clean fuels can include Bio-Diesel, electricity, and hydrogen. It should be additionally noted that the Arkansas Department of Economic Development has developed an "Adopt a School Bus Program" to encourage district use of Bio-diesel. However, the average school bus in Arkansas is 13 years old, or a total of 4 years older then the national average. (Monahan, May 2006).

The long-term health effects of children exposed to diesel fumes are not exactly clear. However, Ross (May 2002) indicates that proactive measures can be taken and possibly result in transportation cost savings, including:

1. Monitoring idling time of school buses;
2. Disallow prolonged idling when school buses are parked in close proximity or while around school buildings;

3. Do not "warm buses up" in the mornings by letting the engines run;
4. For purposes of identifying buses with high fuel consumption, analysis of fleet fuel efficiency reports should be conducted;
5. With respect to any vehicles used that pre-date 1988 compliance with federal air pollution guidelines, replace the bus immediately; and,
6. Schedule bus replacements and incorporate alternative fuel engines into the replacement schedules.

Insurance

Fowler (1988) notes that typical insurance coverage of buses include: Liability Insurance, Bodily Injury Insurance, Property Damage, Medical Payments, Physical Damage Coverage, Fire and Theft, Collision, Comprehensive Material Damage Coverage, Non-Ownership Liability Insurance, and/or Single Policy. The extent of the insurance coverage and cost of the insurance premiums varies widely.

Transportation Service Type

According to Wood, Thompson, Picus & Tharpe (1995), districts must decide whether to (lease) own vehicles and/or use contractor-provided services. It is our understanding that at the present time the only district in Arkansas employing a contractor to provide pupil transportation is Little Rock. Advantages associated with the use of contractor-provided services include:

1. District relief of responsibility for capital outlay expenditures for new bus acquisition;

2. District relief from the responsibility for maintenance and operations of the bus, a responsibility for which school district officials usually receive little or no training, as explained by Wood, Thompson, Picus, and Tharpe (1995);
3. It may increase a district's flexibility for adding bus routes or obtaining buses for extra-curricular activities;
4. It can place the responsibility of hiring and training bus drivers on the contractor; and,
5. It can minimize some of the complaints and criticism about bus service directed at the district by projecting those complaints and criticisms on the contractor(s).

Advantages of district-owned and operated buses include:

1. Potentially Lower costs;
2. Ease of use of buses for other purposeful programs like field trips;
3. Increase of control of hiring and training of drivers;
4. It can reduce legal complexities given any litigation; and,
5. It allows a school district to integrate its transportation into the instructional program being offered (Wood, Thompson, Picus, & Tharpe, 1995).

Kern (March/April 2003) acknowledges that transportation costs have been steadily increasing, not the least of which reasons is because mainstreaming students with special education (IDEA, 1975) has put pressure on district transportation resources, with respect to selecting proper school bus vehicle type. Establishing school district partnerships with respect to transportation of special education students for reasons due to services lacking in one school district and offered in another, as an example, may not only benefit both districts financially but also help the districts increase articulation with one another. Rogers and Randall (March/April 2003) further note that when it comes to selecting transportation service type, there are other measures by which a district might employ to reduce transportation costs in emergency situations, but they warn that careful and thoughtful analysis should be taken before any of the following are considered:

1. Eliminating after-school activity busing;
2. Eliminating mid-day Kindergarten busing;
3. Raising parent fees to cover costs;
4. Contracting for transportation services.

Additionally, the long-term repercussion of any such cost-cutting action needs to be considered as well.

A SCHOOL DISTRICT TRANSPORTATIONS OPERATIONS CASE STUDY: SACRAMENTO CITY UNIFIED SCHOOL DISTRICT

During the 1998-1999 year the Sacramento City Unified School District in California had approximately 51,000 students, over half the students living in low-income families, with nearly sixty percent of the students qualifying for the Free-and Reduced-Priced Meals program. The district had in its employ, 130 transportation staff members. Transportation planners determined that Sacramento City Unified School District (SCUSD) was 67 square miles, used 201 school buses to transport students to and from their homes, as well as for academic and athletic field trips. During the 1998-1999 year, there were 186 district-owned buses and 15 contractor-owned buses.

Table 1: Profile of SCUSD Daily Transportation Operations: Education Program

Education Program	Number of Students Transported
General Education Classes	5,335
Special Education Classes	1,304
Total Transported	6,639

Table 2: Profile of SCUSD Daily Transportation Operations: Total Miles Driven

Transportation Function	Annual Mileage
Home-to-School Transportation	2,303,136
Academic & Athletic Field Trips	107,243
Total Miles Driven	2,410,379

After factoring in the average cost for a new school bus during the year ($96,000)[2] as well as all other transportation expenses, it was determined by district administrators that the Total Cost Per Mile for Transportation Operations was $1.69 per mile.

Wiggins and Hunter (May/June 2004) partially attribute varying costs in a district's Transportation Operations program to different bus sizes and categories. For example, in California, Type I School Buses are designed for regular education programs carrying in excess of 16 passengers plus the driver. Usually Type I School Buses, depending upon seat design requirements and seatbelt / lap-belt requirements, have a seating capacity that can be as 84 passengers. Type II School Buses are typically designed for special education, regional occupational programs, and class-size reduction programs. Type II School Buses typically carry 16 or fewer passengers plus the driver. There is a maximum seating capacity on Type II School Buses of 18 persons. New seats

[2] The report, Sacramento City Unified School District. (1999). Investing in kids: Our budget. (A report). Sacramento, CA: SCUSD, explains that the average bus cost ranged from $95,000 to $97,000. The mid-point ($96,000) was determined to be the average cost of the bus given that the true average cost was not specified.

for Type I School Buses range from $140 to $260 per student seat. Costs for new seats for Type II School Buses for special education program students can range from $2,500 to $2,600 per student seat. Additionally, federal law requires that all small school buses, defined as being under 10,000 pounds gross vehicle weight, such as the Type II School Buses, have seat belts.

Given increased demands for accountability, many districts like SCUSD have established Internal Service Funds (ISFs), which allow the districts to account for the provision of goods and services on a cost reimbursement basis, especially for vehicle maintenance operations. "The ability to accumulate accurately and isolate the total cost of selected activities or programs is one of the primary reasons to us an ISF," states Greg Rees (June 2003), who further explains that,

> An ISF, for example, allows a vehicle maintenance operations to cost and price the services in question more easily, and, in turn, more accurately determine an appropriate charge-back rate. This allows the vehicle maintenance operation to respond to assertions from outside contractors and others that privatization would be more cost-effective and efficient (pp. 11-12).[3]

Using an ISF, Rees (June 2003) provides a budget for a district's vehicle maintenance operations program:

[3] For more information on establishing an Internal Service Fund, please see Rees, Greg. (June 2003). Vehicle maintenance internal service fund answers demand for accountability. School Business Affairs. Volume 69, Number 6. (pp. 11-14). Association of School Business Officials International.

Table 3: Vehicle Maintenance Sample Budget[4]

Salaries and Benefits ($)	Purchased Services ($)	Supplies and Materials ($)	Capital Outlay ($)
Manager: (60,000)	Training and Conference: (5,000)	Office Supplies: (4,000)	Office Equipment (6,000)
Fleet Analyst (40,000)	Printing (1,000)	Tool Allowance (15,000)	Shop Equipment (45,000)
Secretary (30,000)	Hardware/software maintenance (14,000)	Miscellaneous Shop Supplies (60,000)	
Mechanics (900,000)	Uniform Service (15,000)	Fuel (925,000)	
Parts personnel (80,000)	Contract Repair—Equipment (25,000)	Vehicle Parts (965,000)	
Overtime (50,000)	Contract Repair—Buildings (22,000)		
Benefits (275,000)	Contract Repair—Two-Way Radios (7,000)		
	Contract Repair—Vehicle Parts (85,000)		
	Contract Repairs—Vehicles (105,000)		
Subtotal: (1,435,000)	**Subtotal: (279,000)**	**Subtotal: (1,969,000)**	**Subtotal: (51,000)**
Total (143,500 + 279,000 + 1,969,000 + 51,000)		**($3,734,000)**	

Additionally, Rees (June 2003) provides formulas for the calculation of labor rates that correspond with Table 3: Vehicle Maintenance Sample Budget:

- For a total of 20 mechanics, use the calculation of 1,600 direct hours per year per mechanic, or *[(1600 hours) x (20 mechanics)] = 32,000 hours*

[4] Table adapted from, "Table 1 Sample Line-Item Budget for a Vehicle Maintenance ISF", as found in: Rees, Greg. (June 2003). Vehicle maintenance internal service fund answers demand for accountability. School Business Affairs. Volume 69, Number 6. (p 13). Association of School Business Officials International.

- For a total of 4 shop foremen, use the calculation of 240 hours per year per foreman, or *[(240 hours) x (4 foremen)} = 960 hours*
- To calculate the fully burdened labor rate, *the Total dollar figure ($) to be covered by the prevailing labor rate is divided by the total number of expected direct hours and the result is the fully burdened labor rate* (Rees, June 2003, p. 13)

STATE-FUNDED DISTRICT TRANSPORTATION OPERATIONS RECOMMENDATIONS

In order to determine an adequate state expenditure level for Transportation Operations, a methodology based on the triangulation of data (Patton, 2002) has been chosen. A total of 50 states' funding formulas for school district transportation operations plus the District of Columbia have been reviewed (please see the appendices for details on state pupil transportation programs). Based upon the amalgamation of the evidence, policy recommendations for the state of Arkansas include: Transportation Base Funding Formula and Adjustments to the funding formula which take into consideration socio-economic and geographic cost considerations.

Base Funding Formula

A good place to start is with a state-district cost sharing plan. Nevada provides a reasonable example as that state's funding model is based on such a cost sharing plan. The formula is:

Total District Transportation Aid Per Pupil = [((equipment acquisition costs + equipment replacement costs) / 2) + (((Salaries for Prior Year) + (Operating Expenses for Prior Year)) / (Total District ADA))] x Inflation Factor

The formula also provides an annual inflationary adjustment to the Transportation Operations formula. However, a potential problem which might result in a shortage of funds is that the formula takes the average cost of new equipment acquisition and equipment replacement costs for each district. It has already been noted that the cost of new school buses has steadily risen, and, districts that still utilize school buses that predate the 1977 Post-DOT school bus requirements are not required to upgrade those particular buses to modern efficiency and environmental regulations and standards, implying that the cost of maintenance and upkeep of those buses may not be as much as the maintenance requirements of newer school buses. The methodology of the formula, though, provides an appropriate structure that can be built upon. The base funding formula recommended for use, then is:

Total District Aid Per Pupil for Transportation Operations = [((Equipment Acquisition Costs) + (Equipment Replacement Costs) + (Salaries for Prior Year) + (Approved Operating Expenses for Prior Year] / (Total District ADA))] x Inflation Factor

Equipment (Bus) Acquisition and Replacement Costs

A national survey conducted by *School Bus Fleet* (Neal, March 2005) statistically profiles the total number of buses in school fleets:

- *1-24 Buses (25.5%)*
- *25-49 Buses (21.4%)*
- *50-99 Buses (21.8%)*
- *100-299 Buses (20.0%)*
- *300+ Buses (11.3%).*

In addition, the same survey reveals that *69.8%* of school district Transportation Operations programs are *District-Operated*, whereas *25.6%* are *Contractor-Operated*, and *4.6%* being classified as *Other* (Neal, March 2005).

The Sacramento City Unified School District Case study presented earlier reveals that in 1998-1999, the same time period reviewed as other state programs and policies, the average cost of a new school bus was $96,000. The state of Virginia in 1998-1999, appropriated $41,147 for each bus based upon the formula:

> *Bus Replacement Cost Adjustment =*
> *(1/12th of prevailing number of buses per 100 students at a replacement cost of $41,147 per bus)*

The formula indicates that a total of $1/12^{th}$, 8.33% of school buses for every 100 students would be replaced at a flat funded rate of $41,147 annually. Additionally, the states of Arkansas and Alabama allow bus depreciation. For Arkansas,

> *Depreciation = (Sum of individual allowance for each approved bus in district)*

For Alabama, *School Bus Depreciation = (Total Bus Purchase Price / Bus Chassis Life)*, but for no more than 10 years. The state of Florida, although technically funding school bus replacements, has not earmarked funds to do so since 1992-1993.1 And, in the state of Pennsylvania which provides various formulas for vehicles allowances in relation to bus seating capacity, makes funds available up through buses' eleventh year of use. Finally, two telephone interviews conducted on June 8, 2006 with *Midwest Bus Sales, Inc.* and *Collins School Bus Co.*, reveal additional bus price considerations. A sales representative at *Midwest Bus Sales, Inc.* explains that price range of buses go from $35,000 for small, special education buses to $145,000 for large seating capacity, fully loaded with all options buses. Similarly, a sales representative for *Collins School Bus Co.* explained range of prices for new school bus is determined by size, options, and fuel type requirements. The highest price vehicles, fully loaded with all equipment and special natural gas fuel type sell for $145,000. Lowest price models with seating capacity of 20 students or fewer with regular fuel type (diesel) go for $55,000. Therefore, in order to determine an adequate state appropriation for school bus replacement and new school bus purchasing, provided that not every student in state utilizes home-to-school district transportation, and given the literature and telephone interviews regarding the price ranges reveals that two buses based upon potential passenger seating capacities can approximately hold 100 students (one being allocated for regular student transportation and the other being allocated for special education student transportation), can be averaged when all data sources are factored:

- Sacramento City Unified School District Bus Replacement Average = $96,000
- State of Virginia flat-funded Annual School Bus Replacement = $41,147
- *Midwest Bus Sales, Inc* Average between High and Low Range
  ($35,000 + $145,000 = $180,000 / 2) = $90,000
- Collins School Bus Co. Average between High and Low Range
  ($55,000 + $145,000 = $200,000 / 2) = $100,000.
- Averaging the variables reveals that
  (96,000 + 41,147 + 90,000 + 100,000 = 327,147 / 4) = $81,796.75

Therefore, it can reasonably be estimated that an appropriate state expenditure for new school bus purchase and school bus replacement would be $81,796.75. This figure, however, would need to be annually adjusted for inflation, and it is recommended that the

Arkansas Consumer Price Index (ACPI) be used as the annual inflationary adjustment. It can be noted that other states also use their own state CPI in terms of inflationary adjustments to their funding formulas (for more details, please see *Appendix A: Profile of Selected States' Transportation Formulas and Adjustments to Formulas*).

According to Hirano (November 2004), during the 2002-2003 school year, the state of Arkansas used a total of 6,535 buses (6,290 district-owned buses + 245 contractor-owned buses), and transported a total number of 316,662 students for a total of 43,628,580 miles. Considering the average depreciation and state reimbursement schedule given (Virginia, 12 years; Alabama, 10 years; and, Pennsylvania, 11 years) is 11 years *[(12+10+11)/3]=11* , and given a 2006 estimated average purchase price per bus of $81,796.75, and given an average 11-Year Lifecycle, it can be determined that if Arkansas currently retains 6,535 school buses, the state will need to replace 1/11th of their fleet (approximately 9.1%) annually, with annual inflationary adjustments according to the Arkansas CPI. A replacement cost schedule is provided:

> *[(($81,796.75 per bus) x (6,535 buses in fleet)) / 11 Year Lifecycle] = $48,594,705.57*

Considering the 316,662 students transported for the school year examined, an adequate expenditure per pupil can further be determined:

> *[((($81,796.75 per bus) x (6,535 buses in fleet)) / 11 Year Lifecycle)] / 316,662 students = $153.46 x Arkansas Consumer Price Index annual inflationary adjustment is the per pupil expenditure required for new school bus acquisition and school bus replacement funding.*

Transportation Operations Salaries + Benefits:

Bus Drivers: A national survey conducted by *School Bus Fleet* (Neal, March 2005) reveals interesting statistics and characteristics about employees in school districts' transportation operations departments. Regarding Bus Drivers, *24.7 percent* of respondents cited *Work Schedules* and the reason why they chose to become a bus driver. Other reasons cited were: *Like Children, 17.6%; Like Buses, 16.1%; Benefits, 9.7%; the Only Job Around; 2.8%; Pay, 2.9%*; and, *Other, 26.2%.* Nearly 75 percent of respondents also stated that they were either very satisfied or *satisfied* with their jobs, compared with *2.5%* of respondents who stated that they were *Not Satisfied.* However, when asked *"What would make your job more satisfying?"*, a total of 46.4% of respondents cited Better Pay / Benefits (other reasons attributed to potentially increased satisfaction included *More Training, More Career Development, More Hands-on Support from Supervisor, More Feedback/Recognition*, and *Other*). When asked about the "*Highest level of education completed?*", overwhelmingly reported *Some College (48.4%),* with fewer then *1.4%* reporting that they had *less than a high school diploma or GED*, and nearly *2.1%* reporting that they had a *Post-Graduate Degree*. In another survey (Hirano, April/May 2005), Bus Drivers' *knowledge of the mechanical workings of buses* were founded to be nearly *90 percent in the fair to good range*. Thus stated, a 2005 contractor survey (McMahon, June/July 2005) finds the average bus driver pay rates by district fleet sizes (please see *Table 4: Bus Driver Wages According to District Fleet Size*):

Table 4: Bus Driver Wages According to District Fleet Size[5]

	1-49 Buses	50-99 Buses	100-299 Buses	300 + Buses
Wages ($) per Hour	12.53	11.62	12.97	12.50

Therefore, if the average of the wage rates for the various district fleet sizes is considered, a prototypical expenditure for Bus Driver Salaries would be $12.41 per hour *[($12.53+11.62+12.97+12.50) / 4]*.

Mechanics: A 2005 maintenance survey (Hirano, April/May 2005) finds that in 2004, the average starting salaries of mechanics was $14.02 an hour, and that had dropped in 2005 to $13.09 per hour (reasons attributed to drop include sampling error and fiscally tight budgets). However, 23 percent of respondents reported a starting salary of upwards of $17 per hour. The biggest challenges mechanics faced, include:

- *"Schooling on computer diagnostics;"*
- *"Keeping up with unscheduled maintenance;"*
- *"Training drivers on each of the different buses;"*
- *"Failure to purchase new buses;"*
- *"Keeping an aging fleet running;"* and,
- *"Getting trained on new engines and transmissions"* (Hirano, April/May 2005).

A correlation was found between the size of district maintenance staff and the likelihood of the maintenance program within the districts transportation operations to have a training program embedded. Specifically, districts with a training program had an average of 5.7 mechanics, whereas districts without training programs had an average of

[5] Facts and figures adapted from, McMahon, Thomas (Editor). (June/July 2005). 2005 contractor survey: Soaring fuel prices ground contractors. School Bus Fleet. Torrance, CA: Access Date: June 10, 2006. (http://www.schoolbusfleet.com/t_inside.cfm?action=research#).

3.5 mechanics. A potential problem that found was that 52 percent of respondents reported a Mild to Desperate Bus Mechanics Shortage; alternatively, 71 percent reported a Mild to No shortage; therefore, no determination can be made at this time if there is a nationwide shortage of Bus Mechanics. In addition, a Bus-to Mechanic Ratio was found (please Table 5: Bus-Mechanic Ratio):

Table 5: Bus-Mechanic Ratio[6,7]

Range of Buses in Fleet	Average Number of Mechanics for Bus Fleet Range
1-24	13.4
25-49	15.2
50-99	17.8
100-299	18.2
300+	24.1

Transportation Manager: The 2005 contractor survey (McMahon, June/July 2005) also found comparative average salaries for a Bus Terminal Manager, which has reported, is proportionate to fleet size. Salaries ranged from a high of $100,000 to a low of $20,000. Below, *Table 6: Transportation Manager Salaries*, summaries the findings:

Table 6: Transportation Manager Salaries

Range of Buses in Fleet	Average Salary Level for Fleet Range
1-49	$38,979
50-99	46,766
100-299	49,481
300+	51,714

[6] Facts and figures adapted from, Hirano, Steve (Editor). (April/May 2005). 2005 maintenance survey: technician training programs are uncommon. School Bus Fleet. Torrance, CA: Access Date: June 10, 2006. (http://www.schoolbusfleet.com/t_inside.cfm?action=research#)

[7] Table 5: Bus-Mechanic Ratio does not include school district "White Fleet".

A district might thus employ a Transportation Manager at a salary level of $46,735 (based on an average of the various salary level averages within each fleet range, or *(38,979+46,766+49,481+51714)/4*).

To find the average expenditure per pupil for each Transportation Manager, the salary of $46,735 is divided by the ADA in a prototypical district (650 students). The result is an expenditure of $71.90 per student (plus benefits).

By comparison, Hirano (November 2004) finds that the average annual salary for a transportation manager is $55,055 with a median salary of $52,000. However, a closer examination of the study (Hirano, November 2004) reveals a $4,000 Glass Ceiling for transportation supervisors. *Table 7: Annual Transportation Manager Salaries* reveals the Hirano findings, also reported and analyzed by fleet size:

Table 7: Annual Transportation Manager Salaries[8]

Range of Buses in Fleet	Average Salary Level for Fleet Range
1-49	$45,243
50-99	58,201
100-299	65,961
300+	89,400

Table 7 reveals that the average of all salaries across all fleet range sizes *(45,243+58,201+65,961+89,400) = $64,701.25*

If the results of Table 6 and Table 7 average salaries for the two years for the two different sampling groups are in turn averaged, the results indicate that a prototype school district might employ a Transportation Manager at a salary level of $55,718.13. On a

[8] Adapted from, Hirano, Steve. (Editor). (November 2004). 2004 school district survey: Despite budget challenges, manager salaries eclipse $50K. School Bus Fleet. Torrance, CA: Access Date: June 10, 2006. (http://www.schoolbusfleet.com/t_inside.cfm?action=research#).

per-pupil basis, based upon a 650 ADA school, a prototype school would need to allocate $85.72 per pupil.

Transportation Operating Expenses: Many states adjust their formulas according to individual district needs (socio-economic, demographic, and geographic cost-constraint factors). In order to provide an adequate resource expenditure per pupil for district operating expenses, variation within the formula will be required, necessitating a construction of many of the traditionally funded components:

(1) Cost Per Mile Reimbursement. Numerous states reimburse districts for operating expenses based on the district's prior year's approved route mileage. (For more information on various state programs and mileage reimbursement, please see: *Appendix B: Selected States' Minimum Mileage Requirements for Reimbursement*; and, *Appendix C: Average of Selected States' Mileage Reimbursement Programs*). However, recommended state reimbursement of approved district mileage is based upon the prevailing averages of the myriad programs. For clarification and purposes of illustration, please see *Table 8: Recommended Minimum Mileage Reimbursement.*

Table 8: Recommended Minimum Mileage Reimbursement

Average Minimum Mileage Reimbursements by Education Program Type		
Program Type	**Average Minimum Mileage**	**Rounded (up or down to nearest 1/2 mile)**
Regular Education		
(K-12 combined)	1.02	1
(Elementary)	0.96	1
(Secondary)	1	1
Special Education[9]	0.73	0
Educational Choice / Enrollment Options		
Programs	1.18	1
Vocational Education	0.81	1
Technical Education	0.83	1
Occupational Educ.	1.08	1
Mass Trans. Reimbursement	1.5	1.5
Nonpublic Education	0.75	1
Bilingual Education	1.08	1
Academic /		
Athletic Field Trips	Difficult to determine since most states require districts to fund these programs out of General Fund Revenue. However, one state funds field trips (1.001 mile)	1
Hazardous Walking	Most States do not require any minimum mileage.	0

Furthermore, it is recommended that the mileage reimbursement rate by funded at $0.92 per round-trip mile. Round trip mileage implies the distance from the first pickup of the first student in the morning to the last drop-off at the end of the day. (For more details, please see: *Appendix B: Selected States' Minimum Mileage Requirements for Reimbursement;* and, *Appendix C: Average of Selected States' Mileage Reimbursement Programs*).

[9] Note that Special Education has been treated differently as the mileage has been rounded to 0, given that local and federal legislation, in some instances, requires districts to transport special needs students and it is believed that these costs should be fully funded.

The approved mileage allowance formula = [(Approved Round Trip Daily Miles) x (# of School Days in Service) x $0.92)].

(2) Additionally, funded adjustments to the mileage reimbursement rate include provisions for:

- *A 50% per mile reimbursement rate ($0.46) of approved bus route mileage without students; plus,*
- *A linear density adjustment = (Total Eligible Students / Total Approved Route Mileage); plus,*
- *Nonpublic school student transportation adjustment = [(Regular Education Transportation Base Formula) + (100% Cost of Transportation for Non-Regular Activities such as Shared-Time, late-activities, and activities including field trips)] ; plus,*
- *The Nonregular Transportation Adjustment embedded within the Nonpublic school transportation formula = [((100% Actual district cost for nonregular transportation in the second year prior to the currently funded year) x (the Adequacy-Based School Block Grant Funding Formula for the current year)) / (the general education funding formula for the second previous fiscal year)] ; plus,*
- *Unpaved Road Adjustment = [(% of unpaved roads traveled on in a district by bus on approved routes)] ; plus,*
- *The Cost-Efficiency (Negative Seating Capacity Adjustment) = For purposes of maintaining accountability and cost-efficiency, the state may wish to impose a Negative Seating Capacity Adjustment to the Reimbursed Mileage Rate. For example, if the prevailing average school bus within a district fleet are operated at less than 50 percent capacity, it is recommended that a negative adjustment to the $0.92 per mile reimbursement rate be imposed at (50% x $0.92). In order to do this, districts and the states would be expected to keep accurate and detailed records of Transportation Operations.*

(3) Additionally, Transportation Operating Expenses would include provisions for each of the following adjustments:

- *Transportation Safety Aid = $1.50 per ADA; plus,*
- *Excess Driver Hour Allowance = [(Approved Round Trip Daily Route Miles) x ($3 per hour)]; and,*

- *Excess Cost Reimbursement = district's share of excess costs would be limited to one-half mill of the district's market value. If excess costs exceed one-half mill of the district's market value, then district is entitled to an adjustment as a reimbursement equivalent to the excess cost beyond one-half mill of the district's market value.*

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