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The Coordination of Pupil and Non-Pupil Transportation

Final Report
March 1982

UMTA/TSC Project Evaluation Series
Service and Methods Demonstration Program

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Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UMTA-MA-06-0049-81-13		

4. Title and Subtitle	5. Report Date March 1982 6. Performing Organization Code DTS-243
THE COORDINATION OF PUPIL AND NON-PUPIL TRANSPORTATION	
7. Author(s) H.R. Menhard, J.W. Rodman	8. Performing Organization Report No. DOT-TSC-UMTA-82-7
9. Performing Organization Name and Address *Multisystems, Inc. 1050 Massachusetts Avenue Cambridge, MA 02138	10. Work Unit No. (TRAIS) UM227/R2676 11. Contract or Grant No. DOT-TSC-1756
12. Sponsoring Agency Name and Address U.S. Department of Transportation Urban Mass Transportation Administration Office of Planning, Management and Demonstrations Office of Service and Methods Demonstrations Washington DC 20590	13. Type of Report and Period Covered Final Report 14. Sponsoring Agency Code UPM-30

15. Supplementary Notes

*Under contract to: U.S. Department of Transportation
Research and Special Programs Administration
Transportation Systems Center
Cambridge MA 02142

16. Abstract

At present, home-to-school student transportation and general public transit services are provided almost entirely by separate vehicle fleets. The fact that both of these fleets are not fully utilized throughout the day indicates that there may be the potential to reduce the cost of these operations or to provide additional service to the public by coordinating the two operations. This report examines the potential benefits and disadvantages of coordinated services and identifies barriers to their implementation. The report 1) provides a background on the provision of school transportation; 2) discusses issues involved in the coordination of services, 3) examines a number of examples in which such services have been established, 4) investigates the benefits which can be achieved, and 5) determines what basic system designs are likely to be most effective in generating benefits and applicable to a variety of sites. The report concludes that some coordination efforts should prove worthwhile and suggests several designs for further consideration and testing.

DEPARTMENT OF TRANSPORTATION
APR 4 1983
LIBRARY

17. Key Words	18. Distribution Statement
coordinated/consolidated pupil/non-pupil transportation school bus transit	DOCUMENT IS AVAILABLE THROUGH SUPERINTENDENT OF DOCUMENTS U.S. GOVERNMENT PRINTING OFFICE WASHINGTON DC 20402

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED	158	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UMTA-MA-06-0049-81-13	PB 82-230277	

4. Title and Subtitle

The Coordination of Pupil and Non-Pupil Transportation.

5. Report Date

March 1982

6. Performing Organization Code

DTS-243

7. Author(s)

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MA-06-0049(UM227/R2676)

11. Contract or Grant No.

DOT-TSC-1756

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U.S. Department of Transportation
Urban Mass Transportation Administration
400 Seventh Street, S.W.
Washington, DC 20590

13. Type of Report and Period Covered

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URT-30

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16. Abstract

Over the past few years, as costs of providing transportation services have risen and funding sources have not kept pace with these increases, a greater emphasis has been placed on achieving efficient utilization of existing resources. One transportation resource which has been identified as possibly being used inefficiently is the school bus. The majority of school transportation falls during four hours on weekdays during the school year. The remainder of the time, most of this fleet sits idle. In addition, in many cities, some of the student travel corridors are served by separate, yet duplicative school bus and conventional transit services. Home-to-school student transportation and general public transit services are provided almost entirely by separate vehicle fleets. The fact that both of these fleets are not fully utilized throughout the day indicates that there may be the potential to reduce the cost of these operations or to provide additional service to the public by coordinating the two operations.

This report examines the potential benefits and disadvantages of coordinated services and identifies barriers to their implementation. This investigation has attempted to fulfill the following objectives: 1) to determine the potential benefits and costs which might result from the implementation of coordinated programs; 2) to identify the major factors which will inhibit such programs; and 3) to determine what types of coordinated pupil-general public transit may prove beneficial and are applicable in a number of areas across the United States. This report provides a background on the provision of school transportation; discusses issues involved in the coordination services; examines a number of examples in which such services have been established; investigates the benefits which can be achieved; and determines what basic system designs are likely to be most effective in generating benefits and applicable to a variety of sites. The report concludes that some coordination efforts should prove worthwhile and suggests several designs for further consideration and testing.

17. Key Words	18. Distribution Statement
Consolidation; Coordination; Non-Pupil Transit; Pupil Transit; School Buses; Conventional Transit	Available to the public through the National Technical Information Service, Springfield, Virginia 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	158	A08

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

PREFACE

The School Bus Study was funded by the U.S. Department of Transportation under the UMTA Service and Methods Demonstration Program. As part of that program, Multisystems, Inc., under contract to the U.S. DOT's Transportation Systems Center, has prepared this Final Report.

The authors wish to express particular thanks to the following individuals for their assistance to the project:

Howard Slavin	Evaluation Monitor, Transportation Systems Center
Joseph Goodman	Project Manager, UMTA

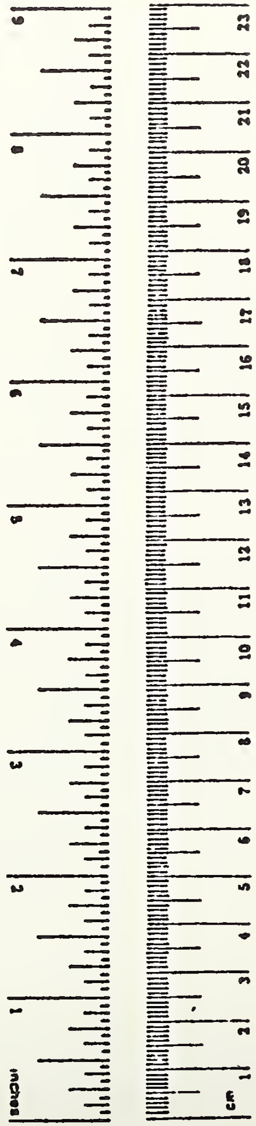
The authors also wish to thank all the Multisystems staff members who contributed to the project, in particular Martin Flusberg for reviewing and making constructive recommendations to the report, and Gail Bublis and Gail Pasquale who typed the draft and final reports.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

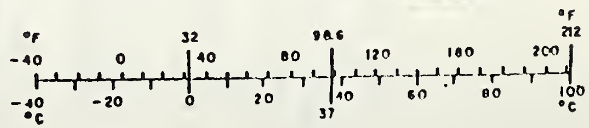
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in ≡ 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures. Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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CHAPTER 1

INTRODUCTION

Over the past few years, as costs of providing transportation services have risen and funding sources have not kept pace with these increases, a greater emphasis has been placed on achieving efficient utilization of existing resource. One transportation resource which has been identified as possibly being used inefficiently is the school bus. The majority of school transportation falls during four hours on weekdays during the school year. The remainder of the time, most of this fleet sits idle. In addition, in many cities some of the student travel corridors are served by separate (duplicative) school bus and conventional transit services.

In order to increase efficiency, school buses might be used to provide other services during periods in which they would otherwise sit idle, and fulfill currently unmet needs of the general public or of certain special markets. Transit service, on the other hand, might be used in place of school bus routes, thereby reducing the size of the school bus fleet (or completely eliminating it). There appear to be innumerable ways in which pupil and non-pupil transportation services can be either consolidated or coordinated.

The desired results of coordinating pupil and general public transit services is either to reduce the costs of those services already being provided or to increase the amount of service being provided within the monetary constraints that exist. A coordination effort may be able to produce a number of benefits to the system operators and to potential users. If the amount of service remains constant, coordination implies the reduction of monetary outlays. The primary benefit of new or improved services are their ability to attract new riders and improve the mobility of the general population or specific market segments.

Unfortunately, the process of increasing efficiency of these services is not free from numerous pitfalls and disadvantages. In many ways, school transportation and general public transit programs are not complementary. Peak hours for pupil travel tend to fall at the same time as those of the general public; therefore, without alteration of the travel patterns of either students or the general public, there may be few prospects for consolidation or coordination. Furthermore, the overwhelming concern of school districts for student safety and the unwillingness of the public to mix with students act as additional deterrents to integration efforts. Other obstacles to coordinated pupil and non-pupil transportation are seen in the physical specification of vehicles, restrictive legislation, and other institutional barriers inherent in certain organizational structures. It is unclear to what extent these problems can be overcome or avoided. A careful analysis is required to determine exactly what gains can be achieved in this area.

1.1 Purpose of the Study

During the past several years, there have been a number of studies performed at the local level, to determine the feasibility of individual service designs within specific settings. In addition, efforts by Eckman (6), Harris (13), and Wolf (31) have overviewed a number of these studies and examined some of the constraints on attempts to coordinate transportation in these two sectors. Given these studies as a basis for examination, this report synthesizes available information and update it to take into account recent changes. The primary goal of this study was to determine the potential role of coordinated/consolidated pupil/non-pupil transportation programs in the urban and rural areas of the United States.

To achieve this goal, this investigation has attempted to fulfill the following objectives:

1. to determine the potential benefits and costs which might result from the implementation of such programs,

2. to identify the major factors which will inhibit such programs; and

3. to determine what types of coordinated pupil-general pubic transit may prove beneficial and are applicable in a number of areas across the United States.

To reach the primary goal and fulfill the objectives, it is necessary to identify the current status of school transportation (previous efforts have sufficiently documented the status of public transit), identify the key issues involved in merging pupil and non-pupil services, determine the factors that impact how these issues may be resolved, investigate the successes and failures which have occured with this sort of an effort, and to identify and analyze other promising options and designs which should be further tested.

1.2 Organization of the Report

This report documents the three-step effort which has been applied for this study. These steps include:

1. a review of relevant literature;
2. an update of information available; and
3. the identification of potential benefits achieved through coordination and service designs which can produce them effectively.

Chapter 2 presents the basic data collected regarding the current student transportation environment. This includes pupil transportation on both conventional school buses and on public transit. In Chapter 3, the key issues in combining student transportation with other programs and the factors shaping the resolution of these key issues are identified. Special emphasis is placed on the institutional and legislative barriers which artificially constrain the potential design of such systems. Chapter 4 presents a number of case studies which illustrate how these issues have been resolved in the past, drawing conclusions regarding potential service options which appear to have proven to be acceptable. Chapter 5 examines the benefits which can be achieved through coordination and discusses some promising service designs for achieving the benefits effectively. Finally, Chapter 6 presents the conclusions which have been drawn from this study.

CHAPTER 2

THE PUPIL TRANSPORTATION ENVIRONMENT

In order to fully identify the potential to coordinate and consolidate pupil and other transportation services, it is important to examine the current pupil transportation environment. This includes services offered using conventional yellow school buses as well as pupil transportation programs employing public transit routes. This chapter presents relevant background with respect to pupil transportation both on school buses and on mass transit systems. The background is approached in terms of the legislative and organizational environment, as well as the operations of these systems.

2.1 Organizational Structure of Pupil Transportation

Basically, the responsibility of pupil transportation lies with the states. As stipulated by Federal Safety Standard Number 17, a single state agency is to be delegated with the primary responsibility for the administration of pupil transportation. The two most important tasks of this agency are: 1) to promulgate and ensure compliance with legislation and regulations governing pupil transportation; and 2) to allocate state funding to local educational agencies (LEA) to reimburse all or part of the cost of transporting pupils.

In most states, the actual provision of pupil transportation on the local level (i.e., within a county, municipality, community, or school district) is delegated to the LEA. The most common LEA is a school board. Virtually every LEA has established a department or designated a person to be responsible for pupil transportation.

The two primary modes used to transport pupils are school bus and public transit. For the purpose of this report we define the former as operating and/or contracting a pupil transportation service which utilizes the traditional yellow school bus and all other vehicles which bear "School Bus" markings. The latter involves the use of existing public transit to transport pupils.

2.2 The Use of School Buses to Transport Pupils

The most common means of transporting pupils is by operating or contracting school bus service. Information on school bus operations may be classified into legislative and operational. The legislative environment includes federal and state laws and policies. Operational aspects include vehicle supply, vehicle use, fuel supply, routing, labor, maintenance and vehicle storage, inspection, insurance, and cost structure and funding.

2.2.1 Legislative Environment

Federal Legislation and Regulations

USDOT Highway Safety Standard No. 17 - This standard establishes minimum requirements for pupil transportation safety to which all state laws must comply. Specifically, the pertinent requirements regulate the identification, specifications, operations, and maintenance of school buses.

This standard defines Type I school buses as motor vehicles used to carry more than 16 pupils to and from school. Included in this definition are vehicles that at any one time exclusively carry pupils and/or school personnel; specifically excluded are common carriers. Type II school buses are defined as motor vehicles used to carry 16 or fewer pupils to and from school. Excluded from this definition are private autos.

Federal Safety Standard No. 17 requires that all type I school buses:

1) be identified with the word's "School Bus" printed on the front and rear of the vehicle with letters at least eight inches high;

2) be painted the national school bus glossy yellow color;

3) be equipped with an eight-light warning signal system;

4) be equipped with a system of mirrors providing the seated driver a view of the roadway on either side of the bus and immediately in front of the front bumper; and

5) be equipped with stop arms at the option of the State.

In cases where Type I school buses are operated by a publicly or privately owned transit system primarily for public transportation but also for pupil transportation service, such vehicles:

1) need not be painted yellow and black;

2) must be equipped with temporary "School Bus" signs while transporting pupils to and from school; and

3) need not be equipped with a warning signal system if the vehicle is used only in places where such a system is prohibited.

Type I school buses that are <u>permanently</u> converted for other than school transportation uses must be painted in a color other than school bus yellow.

While Type I school buses are used for non-pupil transportation, the words "School Bus" must be concealed or removed and the system of warning signals deactivated.

It is left to each state to promulgate comparable minimum requirements for Type II vehicles.

Federal Safety Standard No. 17 also regulates seating specifications on all school buses requiring all seats to be permanent (non-auxiliary) and be of a minimum size and have a minimum spacing between seats.

This standard also requires routing to be coordinated to preclude standees during vehicle operation.

Finally, Federal Safety Standard No. 17 requires school buses to undergo a state inspection twice a year, and pre-trip inspection (performed by the driver).

1978 Excise Tax Bill - Up until November 9, 1978, any person who purchased a school bus was exempted from a 10% Federal excise tax if they signed an affidavit stating that the bus would be used exclusively for pupil transportation. This affidavit was binding for up to three years, after which the school bus could be sold or used for another purpose.

The 1978 Excise Tax Bill eradicated all excise taxes on school bus purchases after November 9, 1978, but was not retroactive. Hence, some school buses purchased prior to this date may still be bound by such an affidavit.

USDOE Special Rule No. 9 - In the event of an energy shortfall, USDOE Special Rule No. 9 (which was extended indefinitely in January 1980) guarantees 100% of diesel fuel requirements for surface passenger mass transportation. According to USDOE, this includes both publicly and privately owned school buses used for either pupil transportation or public mass transit.

State Legislation and Regulations

As previously discussed in Section 2.1, there exists in every state a plethora of laws and policies regulating the use of school buses for pupil transportation. Table 2-1 summarizes the extent to which basic aspects of pupil transportation have been specifically mentioned in state laws.

2.2.2 Operational Aspects

Vehicle Supply

School buses are built in two stages. The standard school bus is built on a truck chassis with a front-end engine. Most chassis are produced by major truck manufacturers such as Ford and General Motors. The chassis are then sent to the body plant where the entire bus is assembled. There are eleven school bus body manufacturers in the United States: Blue Bird, Bus Con, Carpenter, Coach & Equipment, Collins, Crown, Gillig, Superior, Thomas, Ward, and Wayne. Collectively, these manufacturers are producing about 32,000 school buses annually.

Table 2-1

Aspects of Pupil Transportation Which Are in State Laws

Type of Law	Number of States
Buses stop at railroad crossing	48
Passing school buses on the highway	48
Standards for school bus drivers - licensing	47
Standard for buses	46
Registration of school buses	46
Insurance or liability	42
Who may or must be transported (e.g., distance from school; public and/private schools, etc.)	41
School bus operating regulations	40
Allocating or computing state funds	38
Contracts for transportation	31
School bus purchase procedures	25
School bus speed limit	24
School bus routes and route standards	23
School bus inspections	21
Curricular and extra-curricular use of buses	20
Records and reports for transportation	19
Special tax levy for transportation	11
School bus maintenance	10
Training program for school bus drivers	10

Source: Wolf (31)

Table 2-2

Use of School Buses for Pupil Transportation

(1977-1978)

State	Number of Enrolled Pupils Transported at Public Expense	Number of Vehicles Used*					Expenditure of Public Funds for Transportation Including Capital Outlay
		Total	Type**		Ownership		
			Type I	Type II	Public	Private	
TOTALS	22,846,492	320,709					$2,976,588,861
Alabama	452,485	5,889	5,840	49	5,724	165	$ 37,431,743
Alaska	34,467	605	549	56	110	495	14,371,213
Arizona	167,477	2,471	2,471	-	2,363	255	30,624,815
Arkansas	259,983	4,143	4,063	80	4,081	62	23,700,591
California	944,041	17,376	11,963	5,413	10,650	6,726	207,886,933(x)
Colorado	234,478	4,385	3,863	522	4,238	147	27,494,835(x)
Connecticut	385,500	4,604	4,204(e)	400(e)	420	3,784	34,667,900
Delaware	77,989	1,060	1,042	18	176	884	10,307,777
D.C.	2,000(e)	142	32	110	142	-	3,439,991
Florida	732,155	6,518	6,518	-	6,006	512	79,834,154
Georgia	717,258	7,721	N/A	N/A	7,661	60	62,864,958
Hawaii	36,184	679	471	208	15	664	7,180,000
Idaho	110,967	1,993	1,842	151	1,808	185	11,341,204
Illinois	742,000	16,000	16,000	N/A	N/A	N/A	135,000,000
Indiana	684,067	7,820	7,774	46	5,058	2,762	54,683,271
Iowa	291,135	7,132	6,533	599	6,867	265	45,423,327
Kansas	158,312	4,470	4,005	465	3,383	1,087	27,718,655
Kentucky	472,150	6,678	6,476	202	6,313	365	46,254,716
Lousiana	581,582	7,449	6,355	1,094	2,742	4,707	64,968,106(x)
Maine	179,230	2,180	127	2,053	1,705	475	21,897,267
Maryland	496,449	4,844	4,457	387	2,273	2,571	57,267,733
Massachusetts	872,563	8,433	N/A	N/A	422(e)	8,011(e)	124,000,000
Michigan	1,041,557	14,500(e)	12,500(e)	2,000(e)	13,200(e)	1,300(e)	155,000,000(e)
Minnesota	660,910	9,374	8,333	1,041	4,538	4,863	92,515,759
Mississippi	312,110	5,024	4,916	108	4,971	53	31,125,248
Missouri	624,717	8,409	7,820	589	5,445	2,964	68,500,096
Montana	59,563	1,549	1,469	80	826	623	14,467,657
Nebraska	79,362	3,046	2,260	786	2,433	613	16,257,535
Nevada	49,753	768	686	82	766	2	8,385,864
New Hampshire	109,836	1,808	1,493	315	360	1,448	10,567,395(x)
New Jersey	650,000(e)	11,178(e)	7,446(e)	3,732(e)	4,363(e)	6,815(e)	107,720,515(e)
New Mexico	131,453	2,033	1,758	275	259	1,774	19,114,108
New York	2,188,777(e)	23,000	19,140(e)	3,860(e)	11,500(e)	11,500(e)	398,960,300(e)
North Carolina	744,613	11,910	11,802	108	11,910	-	51,072,904
North Dakota	52,019	2,085	1,946	139	1,625	460	13,615,838(x)
Ohio	1,385,353	14,525	14,322	203	13,445	1,080	136,863,467
Oklahoma	291,207	5,234	4,911	323	4,848	386	37,095,736
Oregon	254,413	3,964	3,671	293	2,961	1,003	43,657,214
Pennsylvania	1,500,000	18,250	14,530	3,720	5,157	13,093	165,313,024
Rhode Island	103,204	1,389	279	1,110	72	1,317	9,845,644
South Carolina	402,784	6,801	6,171	630	6,573	228	27,490,892
South Dakota	51,751	1,648	1,487	161	1,182	466	8,646,069
Tennessee	620,810	6,749	5,891	858	5,143	1,606	43,183,411
Texas	773,803	16,726	15,393	1,333	16,172	-	109,272,177
Utah	105,142	1,160	1,106	54	1,116	44	13,020,437
Vermont	74,963	1,093	943	150	709	384	8,616,459
Virginia	760,849	8,877	8,734	143	8,620	257	65,642,951
Washington	313,090	5,360	4,962	398	4,705	655	67,027,066
West Virginia	294,168	2,817	2,750	67	2,750	67	38,224,519(x)
Wisconsin	544,122	7,977	7,414	563	2,233	5,744	74,873,422
Wyoming	33,691	863	646	217	735	128	12,153,965

* excludes school buses owned by private and parochical schools
** Type I (large bus) Type II (small bus)
(e) estimated
(x) excludes capital outlay
N/A not available
Totals do not include outstanding data for some states
Source: NSTA (23)

Currently, there are 391,000 school buses in this country - 60% are publicly owned and 40% are privately owned. Most publicly owned school buses belong to LEA's; the rest belong to municipalities, counties, states, and authorities. Most privately owned school buses belong to private for-hire contractors while the rest (approximately 40,000 vehicles) belong to private and parochial schools.

The sizes of school bus fleets used to transport pupils at public expense in each state are listed in Table 2-2. Table 2-3 illustrates the nationwide supply by vehicle capacity. As shown, the 66-passenger school bus is by far the most common. Of the 47,000 smaller school buses, 35,000 (8.5% of total supply) are lift-equipped.

Table 2-3

School Bus Supply by Vehicle Capacity

Vehicle Capacity*	Number of School Buses	Percent of Total School Bus Supply
14, 15, 16, 24, & 26	46,920	12
66	312,800	80
68, 72, 84, 90	31,280	8
Total	391,000	100

* measured by the maximum number of pupils seated (usually three per seat).

Source: Reynolds, (66)

The life of a vehicle varies with climate and use; operators in southern states maintain vehicles for up to 15-18 years, whereas northern fleets last from 5-8 years. The nationwide average for vehicle life is between ten and twelve years. This life time can be stated as between 100,000 and

120,000 miles of service. A profile of typical fleet by vehicle age is illustrated in Table 2-4.

Table 2-4

Fleet Profile by Vehicle Age

Vehicle Age (in years)	Per Cent of Fleet
0-1	10
1-2	10
2-3	10
4-5	10
5-6	10
6-7	10
7-8	9
8-9	9
9-10	8
10-11	7
11 and over	7

Source: Reynolds, (66)

Vehicle Use

Approximately 23 million pupils are currently transported on school buses. This represents 38% of all primary and secondary pupils. The number of pupils in each state transported at public expense is listed in Table 2-2.

Collectively, school buses log three billion vehicle miles annually, 90% of which is attributed to home-to-school trips. School buses travel about 9,500 miles per year on regular routes. The number of vehicle miles traveled by buses in each state is listed in Table 2-5.

Generally, school bus fleets are fully utilized for home-to-school transportation on school days for the two hours before school opens and the two hours after school closes. A part of the typical school bus fleet (perhaps around 20%) may be used during midday hours (i.e., 11:00 am to 12:30 pm) for kindergarten and special education pupils. Additionally, parts

Table 2-5

Total Vehicle Miles Traveled
(1977-1978)

State	Number of School Buses	Annual Mileage (000)	State	Number of School Buses	Annual Mileage (000)
Alabama	5,889	45,583	Missouri	8,409	84,434
Alaska	605	6,254	Montana	1,549	15,930
Arizona	2,471	29,318	Nebraska	3,046	29,336
American Samoa	4,143	45,739	Nevada	768	9,748
California	17,376	231,335	New Hampshire	1,808	6,738
Colorado	4,385	40,003	New Jersey	11,178	40,814
Connecticut	4,604	NR	New Mexico	2,033	17,354
Delaware	1,060	11,448	New York	23,000	200,000
Washington D.C.	142	964	North Carolina	11,910	97,645
Florida	6,518	102,679	North Dakota	2,085	25,093
Georgia	7,721	80,000	Ohio	14,525	142,076
Hawaii	679	4,778	Oklahoma	5,234	54,392
Idaho	1,993	NR	Oregon	3,964	39,040
Illinois	16,000	NR	Pennsylvania	18,250	202,504
Idaho	7,820	58,236	Rhode Island	1,389	13,042
Iowa	7,132	58,166	South Carolina	6,801	58,768
Kansas	4,470	50,314	South Dakota	1,648	18,113
Kentucky	6,678	63,684	Tennessee	6,749	64,844
Louisiana	7,449	58,513	Texas	16,726	108,879
Maine	2,180	30,000	Utah	1,160	12,454
Maryland	4,844	67,218	Vermont	1,093	10,658
Massachusetts	8,433	NR	Virginia	8,877	76,005
Michigan	14,500	112,000	Washington	5,360	49,671
Minnesota	9,374	109,013	West Virginia	2,817	32,476
Mississippi	5,024	34,988	Wisconsin	7,977	77,000
			Wyoming	863	4,320
			United States	320,709	3,000,000

NR not reported
Source: School Bus Fleet: Fact Book (23)

of the fleet may be in service after school or during midday hours for transportation of students to and from athletic events or vocational programs and other field trips. No national data is available on the extent to which vehicles are used for these purposes. As an example, in Arlington, Texas a maximum of 36% of vehicles were used at one time (on a Friday afternoon) for field trips. At other times, such use never exceeded 13% of the fleet (Multisystems (18)).

Fuel Supply

Under normal conditions, public and private school bus operators contract with wholesale fuel distributors to regularly supply enough gasoline and diesel fuel to operate their fleets and sustain a sufficient reserve supply. During an emergency, school bus operators receive priority consideration for fuel needs. Diesel fuel requirements are guaranteed under USDOE Special Rule No. 9 as discussed earlier, while gasoline resoures are set aside by most states for both public and pupil transportation. There is generally a lengthy process associated with obtaining additional fuel allotments.

Routing

The primary objectives of routing are to minimize both travel time and vehicle miles traveled while accommodating the designated demand with a minimum number of vehicles. This process may be directly impacted by state legislation regulating school bus routes and route standards or indirectly by state laws that, for example, allocate funding by the length or type of route. Institutional factors affecting school bus routing are inherent in local policies regulating safety standards, school schedules, co-mingling of younger and older pupils, and the transportation budget. Other practical constraints include the location of students to be transported, the size (and capacity) of the available school bus fleet and the characteristics and terrain of the service area. Previous studies, including Bloom (1976), and Multisystems (1980), have indicated that many school bus routings are inefficient.

Resource requirements may be reduced in some areas by as much as 25% without a degradation of service. This inefficiency in part results from the incremental approach often used to modify routes from one year to the next.

Labor

School bus drivers are, in general, part-timers, homemakers, college students, and other persons with large blocks of available time. In rural areas, the bulk of the drivers are from farm families. Some southern states are even experimenting with training high school students as school bus drivers. In most states, applicants are carefully screened for driving and criminal records. Virtually every state has established standards for school bus drivers, most of which focus on licensing requirements. Ten states require successful completion of a drivers training program.

Most school bus drivers are not unionized. Those school bus drivers who are hired full-time usually divide their duties between driving and maintenance (either as school custodians or garage mechanics). The school bus drivers in several major cities (notably New York City) are members of unions. Some drivers also belong to state employee associations or school unions.

Wages vary from minimum wage to that equal to the wage earned by public transit operators. Most drivers start at about $3.75 per hour, and work a 16-20 hour a week. Wages are generally higher in urban areas. Driver's wages represent between 25% and 30% of the total school transportation budget.

Maintenance and Vehicle Storage

The provision of vehicle maintenance is impacted by legislative and institutional factors. Federal Safety Standard No. 17 requires that all states establish preventive maintenance programs. Ten states specifically regulate maintenance procedures and identify who may perform maintenance. Vehicle ownership, the pupil transportation budget and available facilities may often determine who performs maintenance - the LEA, itself, its contractor, or a local garage. Maintenance is generally the key to successful school bus operations. Preventive maintenance not only saves money in the long run, but enhances system reliability and pupil safety. Many state pupil transportation associations hold maintenance clinics at annual meetings. Moreover, both public and private operators send chief mechanics to receive appropriate schooling when new equipment is introduced into the industry. Nationwide, maintenance (including parts and labor) averages between 15 and 20 percent of the total school transportation budget.

Vehicle storage is most sensitive to climate. In colder states, garages are a necessity to preserve the longevity of a school bus. In contrast, garages in the south and southwest are unnecessary and impractical. Under these circumstances, the less expensive alternative is to store school buses outside within a fenced-in area.

Inspection

Federal Safety Standard No. 17 requires two school bus inspections per year. Most states comply with this directive; other states exceed the requirement. Twenty-one states include school bus inspections in legislation. Generally, State Motor Vehicle Department/Registries perform vehicle inspections; however, in several western states, it is the responsibility of State Departments of Education, and in a few states, the State Highway Patrol performs inspection. General inspection procedures include the removal of wheels and checking of individual bus maintenance and service records. Vehicles which have defects are "sidelined" (i.e., denied certification without which it cannot be operated) unless the problem can be corrected (usually within a week). Most states have one formal bus fleet in-depth inspection plus informal spot checks with no advance notice. Bus drivers also are required to perform pre-trip inspections of lights, brakes, tires, seats, warning system, emergency door, etc.

Insurance

Liability insurance for pupil transportation services is generally purchased at the state and/or School Board-mandated levels. Forty-two states specify levels of liability coverage in legislation. The premiums issued on pupil transportation services using school buses usually cover home-to-school and return trips and sometimes extra-curricular trips. Insurance rates for services using school buses exclusively for pupil transportation are much lower than for general transit. This is because:

- pupil transportation operations must meet rigid federal and state safety regulations resulting in good school bus safety records;
- damage claims involving children do not cause loss of income; and
- the type of service provided (i.e., limited hours of service, limited to specific routes) results in fewer accidents, minimizing losses paid out on school bus policies.

Insurance costs generally represent between 3 and 4 per cent of the total pupil transportation budget.

Cost Structure and Funding

Table 2-6 illustrates the cost structure of a typical school bus operation. Note that driver wages, and vehicle depreciation and financing comprise over 70% of the budget.

The current purchase cost of a 66-passenger school bus ranges between $20,000 to $30,000 depending on the engine and power package. The cost of smaller buses ranges from $12,500 to $15,000 depending on the handicapped accessibility equipment installed. The larger buses (72 passenger and up) range in cost from $40,000 to $50,000.

Table 2-7 summarizes the supply, use and cost of school bus operations over a recent ten year period (1968-1978). The increase in expenditures is particularly noteworthy since it is

Table 2-6

Cost Components of a School Bus Operation
(1978-1979)

Fixed Costs*	%	Variable Costs	%
o vehicle costs		o fuel	11.7
- depreciation and finance	24.3	o parts	9.9
- insurance	3.4	o personnel costs	
- licensing	1.5	- drivers' wages	26.7
o administrative costs	9.0	- dispatcher's wages	3.2
		- maintenance wages	6.6
		- vacation pay	1.1
		- total employee benefits	2.6
Total Fixed Costs	38.2	Total Variable Costs	61.8

* For a given fleet size

Source: Reynolds (66)

Table 2-7
Supply, Use and Cost of School Bus Operations
(1968-1978)

Year	Number of Pupils Transported*	Number of Vehicles Used*	Public Expenditure	Cost Per Day Per Pupil Transported**
1977-78	22,846,492	320,559	$2,976,588,861	$0.72
1976-77	23,156,006	298,173	2,666,446,831	0.64
1975-76	22,757,316	312,030	2,285,840,977	0.56
1974-75	22,398,556	282,834	2,000,991,592	0.50
1973-74	21,169,633	271,552	1,537,148,592	0.40
1972-73	20,047,589	262,579	1,407,472,462	0.39
1971-72	19,191,483	257,804	1,324,740,407	0.38
1970-71	18,752,735	245,608	1,178,910,190	0.34
1969-79	18,467,944	239,973	966,135,767	0.29
1968-69	17,271,718	238,102	901,353,107	0.29
1967-68	16,684,922	230,578	822,595,699	0.27

* at public expense
**assumes 180 days in school year

Source: Reynolds (66)

seven times the increase of both the supply and use. From 1968-1978, expenditures increased by 255% while the number of pupils transported and number of vehicles used increased 32% and 39% respectively.[1] The effect of this disproportionate increase in expenditures is that the cost per pupil has more than doubled from $0.27 per day to $0.72 per day. Recent estimates indicate that the current average cost per pupil has risen to $135.50 per year or $0.75 per day. The average operating cost has been estimated to be $0.98 per vehicle-mile (which translates into per bus cost of approximately $9,285 per year).

The cost of transporting pupils on school buses is financed through state and local taxes and is not federally funded in any way. Generally, state funding is the responsibility of the state educational agency; however, some states have a provision for voting a special tax levy specifically to finance pupil transportation. Some states reimburse 100% of the total pupil transportation costs; others cover only a portion. Four methods are used by states to allocate funding: flat grant, percentage grant, actual or approved expenditures, and formula. Formulas are based on number of pupils, number of pupils transported, number of pupils eligible to be transported, number of vehicles, mileage, road conditions, population density, vehicle depreciation, and combinations thereof. Table 2-8 summarizes the extent to which each method is utilized. (Note that some states use more than one method). When the state does not finance total costs, the balance is funded by the local school tax base.

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[1] The increase in students transported resulted from more liberal school transportation programs which reduced eligibility requirements, court ordered bussing required to achieve racial balance in school districts, and school closings which have resulted in more students living far from the school they attend.

Table 2-8

State Programs for Financing
Pupil Transportation

Programs	States
Basis for state allocation	
Formula	24
Actual or approved expenditure	20
Percentage grant	19
Flat grant	2
Factors used to determine local entitlement	
Number of students	16
Mileage	12
Density	9
Vehicle Depreciation	7
Number of vehicles	4
Road conditions	2

Source: Wolf (31)

2.3 The Use of Public Transit to Transport Pupils

The primary alternative to operating or contracting school bus service to transport pupils is to utilize the existing public transit service. LEA's in several cities are transporting pupils on public transit instead of, or in addition to, school buses, primarily because it is advantageous to those particular LEA's in terms of both cost and service efficiency.

The purpose in examining this segment of the pupil transportation industry is to identify the mechanisms of, and constraints upon, such use of public transit. The legislative and operational background is reviewed in the following sections.

2.3.1 Legislative Environment

Federal Legislation and Regulations

Definitions - Title 49, Part 605 of the Code of Federal Regulations prescribes policies and procedures relating to the provision of pupil transportation on public transit. Notably, it defines the following:

- <u>School Bus Operations</u> - the transportation by bus exclusively for school students, personnel, and equipment in Type I and Type II school vehicles (see Federal Highway Safety Standard No. 17).

- <u>Tripper Service</u> - regularly scheduled mass transportation service which is open to the public, and which is designed or modified to accommodate the needs of school students and personnel, using various fare collections or subsidy systems. Buses used in tripper service must be clearly marked as open to the public and may not carry designations such as "school bus" or "school special". These buses may stop only at an operator's regular service stop. All routes traveled by tripper buses must be within the operator's regular route service.

- <u>Incidental Charter Bus Operations</u> - the transportation of school students, personnel, and equipment in charter bus operations during off peak hours. Such operations may not interfere with regularly scheduled service to the public.

<u>The Urban Mass Transportation Act of 1964, Section 3g</u>

> No Federal financial assistance shall be provided under this Act for the construction or operation of facilities and equipment for use in providing public mass transportation service to any applicant for such assistance unless such applicant and the Secretary shall have first entered into an agreement that such applicant will not engage in schoolbus operations, exclusively for the transportation of students and school personnel, in competition with private schoolbus operators. The subsection shall not apply to an applicant with respect to operation of schoolbus program if the applicant operates a school system in the area to be served and operates a separate and exclusive schoolbus program for this school system. This subsection shall not apply unless private schoolbus operators are able to provide adequate transportation, at reasonable rates, and in conformance with applicable safety standards; and this subsection shall not apply with respect to any State or local public body or agency thereof if it (or a direct predecessor in interest from which it acquired the function of so transporting school-children and personnel along with facilities to be used therefor) was so engaged in schoolbus operations any time during the twelve-month period immediately prior to the date

> of the enactment of this subsection. A violation of an agreement under this subsection shall bar such an applicant from receiving any other Federal financial assistance under this Act.

Under the provisions of these regulations, a public transit operator benefiting from Federal assistance may not engage in school bus operations in competition with private school bus operators unless: 1) the private operators are incapable of providing adequate service; or 2) the public transit operator has already been delegated the responsibility of pupil transportation. Note that the public transit operator <u>is</u> permitted to provide tripper service and incidental charter bus operations.

<u>Open Seating</u> - Federal regulations also disallow the reservation of seats on public transit vehicles. While there is "priority seating" for the elderly and handicapped on public transit vehicles, giving up one's seat for this reason is requested and not required.

<u>Section 504</u> - The Section 504 accessibility regulations promulgated by USDOT require that all new buses purchased by an organization receiving or benefiting from USDOT funds must be accessible to all handicapped persons, including wheelchair users. Moreover, within three years (or within ten, if an exception is made), one-half of the peak period bus fleet must be fully accessible. USDOT specifically exempts school buses from the accessibility requirement, but it appears that this exemption applies only to school buses used exclusively for pupil transportation.

<u>Urban Mass Transportation Act of 1964, Section 13c</u>

> It shall be a condition of any assistance under section 3 of this Act that fair and equitable arrangements are made, as determined by the Secretary of Labor, to protect the interests of employees affected by such assistance. Such protective arrangements shall include, without being limited to, such provisions as may be necessary for (1) the preservation of rights, privileges, and benefits (including continuation of

> pension rights and benefits) under existing collective bargaining agreements or otherwise; (2) the continuation of collective bargaining rights; (3) the protection of individual employees against a worsening of their positions with respect to their employment; (4) assurances of employment to employees of acquired mass transportation systems and priority of reemployment of employees terminated or laid off; and (5) paid training or returning programs. Such arrangements shall include provisions protecting individual employees against a worsening of their positions with respect to their employment which shall in no event provide benefits less than those established pursuant to section 5(2)(f) of the Act of February 4, 1887 (24 Stat. 379), as amended. The contract for the granting of any such assistance shall specify the terms and conditions of the protective arrangements.

Section 13c states that no employee shall have his (her) conditions of employment worsened as a result of federal assistance. This provision has been interpreted by UMTA and the Department of Labor to apply only to employees falling within UMTA's definition of "mass transportation". This includes employees of transit properties as well as employees of school bus operators, whether in the public or private sector.

Urban Mass Transportation Act of 1964, Section 3e

> No financial assistance shall be provided under this Act to any State or local public body or agency thereof for the purpose, directly or indirectly, of acquiring any interest in, or purchasing any facilities or other property of a private mass transportation company, or for the purpose of constructing, improving, or reconstructing any facilities or other property acquired (after the date of the enactment of this Act) from any such company, or for the purpose of providing by contract or otherwise for the operation of mass transportation facilities or equipment in competition with, or supplementary to, the service provided by an existing mass transportation company, unless (1) the Secretary finds that such assistance is essential to the program of projects required by section 8 of this Act, (2) the Secretary finds that such program, to the maximum extent feasible, provides for the participation of private mass transportation companies, (3) just and adequate compensation will be paid to such companies for acquisition of their franchises or property to the extent required by applicable State or local laws, and

(4) the Secretary of Labor certifies that such assistance complies with the requirements of section 13(c) of this Act.

Under these regulations, no private mass transportation company shall have its status worsened as a result of federal assistance. This includes private transit operators and school bus operators.

State Legislation and Regulations

Exclusivity - Legislation in some states expressly prohibits the transportation of pupils by any means except school bus.

Provision of State Funding - Typically, state assistance is available for the transportation of "eligible" pupils, (i.e., who live either beyond a certain distance from the school they attend or participate in a special state-funded educational program). However, in several states, this funding is available for the transportation of these pupils only on school buses. For example, Florida legislation disallows state financial support for pupils transported on public transit, while Texas allocates funds for contractual service only if it is more cost-effective than operating a school bus service.

Service Standards - Some states have passed legislation regulating minimum standards of service. For example, in Florida, state law requires that all pupils transported to and from school be guaranteed a seat (except during emergencies). Such regulations may be in conflict with federal laws regulating transit authorities or the policies established by the public transit system. For example, federal regulations do not allow the reservation of seats for specific users on a transit authorized route open to the general public.

Reduced Fare - Several states that do permit such use of public transit have also passed legislation requiring public transit operators to reduce the base fare for students and/or children.

2.3.2 Operational Aspects

The transportation of pupils on public transit usually begins with an agreement or contract between the local educational agency and the public transit operator. Depending on state regulations, the latter may enter into this agreement in the role of the local public transportation authority or as a contractor. Generally, this agreement includes one or more of the following components:

- number of pupils and/or trips to be served;
- level of payment/reimbursement;
- mode of payment/reimbursement;
- issuance of student passes; and
- provision of service.

The following sections examine each of these components based on actual case examples in Atlanta, Boston, Chicago, Pittsburgh, Sacramento, Seattle, and Toledo. A detailed description of each of these experiences is found in Chapter 4.

Number of Pupils and/or Trips to be Served - The number of pupils and/or trips to be served on public transit is usually specified in the agreement for two reasons: 1) to determine unit costs; and 2) to determine the necessity, nature, and extent of expanding service. A major determinant of the number of pupils transported is the proximity of students to a regular route. A transit authority may also be convinced to establish a new route if a sufficient number of school trips may be generated along the route. Such a route would still have to be published and open to the general public, but could operate at times expressly designed for school service.

Level of Payment/Reimbursement - The cost incurred by the LEA in using public transit for pupil transportation varies from site to site. Among the cases studied, the level of payment ranges from $0.20 to $2.60 per pupil per day. Besides the differences in base fares among the various sites studied, level of payment is primarily impacted by two factors. First, many transit systems have opted, or are required, to offer a reduced "youth" or "student" fare on their regular transit routes and tripper runs. (In this case, note that where the subsidized portion of the fare is not funded directly by the state, and where the fare charged to the LEA or student does not cover the actual cost of operation, it appears that Federal funding is being used to subsidize student transportation.) Second, the type of service contracted may impact level of payment. Generally, provision of pupil transportation by some means other than on regular routes may increase the cost of the LEA.

Method of Payment/Reimbursement - The method used to pay (or reimburse) the transit authority for providing pupil transportation may be classified as either prepayment or postpayment. The most common arrangement is to pay for the total cost of service in advance. If passes are used, LEA's may simply be invoiced per pass issued. Alternatively, LEA's may purchase scrip tickets or tokens from the transit authority and distribute them to the appropriate pupils.

Prepayment systems primarily rely upon estimates of projected use. In contrast, postpayment systems are based upon estimates of actual use. One method of determining actual use is to perform periodic headcounts. Another method is to estimate use according to fluctuations in school attendance.

Issuance of Student Passes - As discussed in the preceding section, some of the agreements made between the local educational agency and the public transit operator include the issuance of student passes. In examining the various examples, some significant differences were identified both in the issuance of the pass and in the pass itself.

First, there are passes that merely identify a pupil as eligible to ride public transit at a specified reduced fare. This type of pass may be used in conjunction with scrip tickets or tokens.

Second, there are passes that cover the fare, i.e., bearers of the pass are permitted to ride free. The terms of use, however, vary from site to site. For example, most of these passes may only be used between certain hours. In one case studied, however, the pass may be used at other times (weekday evenings and weekends) with a nominal fare. This is especially noteworthy in that the LEA appears to be subsidizing non-school travel. In other cases, these passes are limited to use only between a certain stop and school on the route specified.

Service Provision - In entering into an agreement with an LEA for the transportation of pupils, it is understood that the public transit operator will provide the additional capacity to accommodate the influx of pupils. This increase in demand is generally met by providing tripper service (as previously defined). In most cases, this involves the scheduling of additional buses over regular routes during the am and pm peak on school days. However, if the demand is not adequately met by existing route alignments, it may be necessary to design new routes or modify existing routes accordingly. Tripper buses are usually distinguished from regular buses by some identifying marking such as "SPECIAL" symbol. Moreover, the one common characteristic among tripper buses is that they almost exclusively serve pupils. While federal legislation forbids public operators receiving or benefiting from federal funding from excluding non-pupil patrons, these users generally do not patronize tripper buses apparently because they simply prefer not to ride with a busload of children.

2.3.3 Summary

There are a number of examples across the U.S. in which LEA's arrange with public transit authorities to provide home-to-school transportation. Only seven of these studies could be investigated within the scope of this study; therefore, not many generalizations can be made regarding the approaches taken in these services. Common attributes of most of the systems studies include: 1) the use of tripper routes (often not corresponding to other general public routes; 2) near exclusive use of tripper services by school children, and 3) the issuance of student identification passes; 4) charging LEA's for transportation based on the transit systems fare structure (rather than the cost of providing the extra tripper routes) thereby utilizing federal (UMTA) and other state and/or local funds for subsidizing school transportation. Additional details on the seven case studies are presented in Chapter 4.

CHAPTER 3

ISSUES IN COORDINATING PUPIL AND PUBLIC TRANSPORTATION

While the coordination of pupil and public transportation through improved utilization of school bus and/or transit fleets appears at first glance to hold significant potential, there are several problems of an institutional and operational nature that limit that potential. The purpose of this chapter is to examine these issues.

Many studies pertaining to coordination strategies have been performed to date, including three overviews and several site-specific feasibility studies (see Table 3-1). While a number of these efforts are now outdated, they do identify several barriers that still may impact coordination strategies. A brief review of these studies is included in the next section. The following two sections identify the primary institutional and operational constraints, repectively.

3.1 Review of Pertinent Studies

Three major studies have focused on the potential of utilizing school buses for non-pupil transportation. The first, a paper by Alex Eckmann (6), identified school buses as a vast underutilized source of transportation, despite their abundance and widespread distribution. Eckmann also identified privately owned school buses as offering a greater potential for non-pupil transportaton than publicly owned school buses because of the many state regulations which constrain the latter. Finally, he identified insurance, vehicle availability, vehicle design and lack of local support as major limitations and noted the variance in cost by type of service and setting.

The second overview was a study by Marrianne Wolf (31). It was concluded in this study that, due to the limited use of

Table 3-1

Summary of Pupil/Public Transportation Coordination Studies

Author/Source and Reference	Site	Date	Includes Commentary On:	
			Non-Pupil Use of School Buses	Pupil Use of Public Transit
I Overviews				
1. Eckmann (6)		1976	X	
2. Harris (13)		1979	X	
3. Wolf (31)		1977	X	
II. Feasibility Studies				
1. Barton-Aschman (1)	Twin Cities, MN	1975	X	X
2. Cooper (3)	Arlington, TX	1978	X	
3. Cooperman (4)	Dade Co., FL	1978		X
4. Ernst & Ernst (7)	Ohio	1971		X
5. Governor's Task Force (11)	Rural Pennsylvania	1974	X	
6. Green (12)	Belmont Co., OH	1978	X	
7. Green (12)	Fresno Co., CA	1978	X	
8. Lancaster (62)	Benton/Franklin Cos., WA	1980	X	
9. Lancaster (62)	Grant/Lincoln/Adams Cos., WA	1980	X	
10. Lancaster (62)	Grays Harbor Co., WA	1980		X
11. Multisystems (18)	Arlington, TX	1979	X	
12. Robertson (61)	Brampton, Ontario	1979	X	
13. Sears (57)	Seattle, WA	1980	X	
14. Simpson & Curtain (24)	Erie, PA	1974		X
15. W.C. Gilman (28)	Northeastern, IL	1975	X	
16. WMRPC (29)	Western Michigan	1976	X	
17. Wilbur Smith (30)	Arlington Co., VA	1974	X	

school bues, the return from the capital investment was not maximized. Moreover, Wolf recommends various uses of school buses to optimize that investment, including elderly and handicapped transportation, transportation for community groups, and general service transportation where none exists. Finally, she concludes that the restrictions upon such use are more severe than necessary and that these restrictions should be modified to enable economically efficient services.

The third overview, a study by Lorraine Harris, (13), focused on the potential use of school buses in the event of an emergency. While this study reiterated the major constraints outlined by Eckmann, it did serve to illustrate that school buses could provide or supplement public transit when the demand for such service temporarily exceeds the supply due to an emergency situation.

While most of these conclusions are still valid, many of the institutional and operational constraints upon which they were based have since changed. An updated list of these barriers and respective implications is presented in the next two sections. The following paragraphs discuss several site-specific feasibility studies which have investigated the coordination of pupil and public transportation in greater detail.

A study, performed for Arlington Co., Virginia, (Wilbur-Smith, (30)) examined the potential of using publicly-owned school buses for non-pupil transportation. It was concluded that it would be feasible to use these vehicles for transportation to county-run human service agency programs, especially because vehicle and driver availability conformed to the times in which these trips would be taken. It was also found that such use would be advantageous in terms of cost where it would otherwise take three or more automobiles to provide such service. In addition, the existing administrative and scheduling capabilities of the LEA were considered to be adequate to accommodate the additional demand. (Note: this study culminated in the service described in Chapter 4.)

Another study, performed for the Northeastern Illinois Planning Commission (W.C. Gilman (28)), was undertaken to assess the efficiency of utilizing the local school bus fleet for non-pupil transportation. It was concluded that a vast resource of underutilized school buses did exist in the six-county region (20-30% of total fleet during the midday period). The basic services identified as most appropriate for such use were contract services to human service agencies in areas with no existing public transit. The study also identified the elderly, the poor, the young, and the single-auto households as the most appropriate markets. Finally, the study suggests that an extensive marketing and enterpreneurial effort be undertaken in order to match the supply and demand.

The purpose of another study, performed for the Twin Cities Area (Minnesota) Metropolitan Transit Commission (Barton-Aschman (1)) was to examine the feasiblity of integrating the pupil and public transportaton systems as a low-capital alternative. The study recommended that the integration of these two services was not feasible, nor advantageous under normal conditions. With regard to student use of public transit, the study concluded the major impediment was the conflict between the school service and coverage needs and the service provided by work trip/CBD-oriented public transit lines. It noted that:

> "the potential for significant utilization of public transit for school trips is not great in the suburban areas, where route coverage is coarser grained and where route orientation diverges significantly from school locations."[1]

The study also pointed that where transit route spacing is finer grained (e.g., in central city areas), the proximity of transit routes to school locations narrows and hence, the

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1 Barton-Aschman (1) p. 26

potential of public transit utilization for school transportation increases. However, the study also concluded that: 1) in general, school locations were not well served by transit routes; 2) any use of public transit to serve both students and non-students at the same time would require major modifications that would adversely affect regular patronage; and 3) use of public transit vehicles for pupil transportation should be limited to tripper service. In addition, the study concluded that school bus costs compared favorably with the actual cost of public transit operation.

This study also suggested that the use of school buses for general public transit under normal conditions was not advisable because of design limitations and adverse institutional constraints. However, it did recommend that during an energy shortfall, school hours should be staggered and policies modified to enable the use of school buses for general public transit. Finally, it concluded that use of school buses was also appropriate under normal conditions for specialized transportation during the off-peak.

A study was undertaken for the North Central Texas Council of Governments to assess the potential of using school buses as an energy conservation and contingency mechaniscm in Arlington, Texas (Multisystems (18)). Services considered included: 1) fixed-route transit on modified school bus routes; 2) park and ride services; and 3) demand-activated/subscription contract service to human service agencies. The analysis indicated that the use of publicly-owned school buses was not advantageous under normal conditions, primarily because the energy and mobility-related benefits did not outweight the cost. However, it was also concluded that the use of school buses was very appropriate during an energy emergency as a means of temporarily providing (or supplementing) public transit.

A similar study was undertaken by the Seattle (Washington) Metro in December 1979 to assess the feasibility of utilizing the local school bus fleet to supplement existing transit in the event of an emergency (Sears (57)). The study concluded that school buses represented the greatest untapped pool of transportation equipment in the metropolitan region, and the best alternative in a crisis situation. It further identified lack of fareboxes, poor vehicle accessiblity, and limitted time availability of school bus vehicle as the principal constraints. Finally, it suggested that the most appropriate use of school buses under such conditions would be as circulating feeder routes to the public transit system. This study led to inclusion of this concept in the regional transit authority's energy contingency plan and subsequently to negotiations and contracts with public and private school bus operators for temporary use of vehicles in the event of an energy emergency.

A study was performed in 1978 for the Ohio Mid-Eastern Government Association to examine the feasibility of using publicly-owned school buses to supplement public transit in rural areas of Belmont County, Ohio (Green (12)). It was concluded that: 1) county residents in selected areas could support additional public transit service; 2) it would be feasible to use school buses during the off-peak for this purpose; 3) that such a service should be implemented through a phased pilot or demonstration project; and 4) both fixed-route and actuated/subscription service were viable service types.

A similar study was undertaken earlier in 1978 to examine the feasibility of employing publicly-owned school buses to provide off-peak rural public transportation in Fresno County, California (Green (12)). It was concluded that the absence of vehicle availability, the dearth of small (Type II) vehicles, and the restrictive legislative climate severely limited the extent to which these vehicles could be used for this purpose. It was also concluded that, given these constraints, the elderly would be the appropriate target population.

A third study, assessing the potential of using school buses to augment rural public transit, was undertaken by the West Michigan Regional Planning Commission (WMRPC (29)). The study identified the vehicle design and unfavorable legislative climate as major obstacles to non-pupil use fo school buses. It concluded that: 1) the comingling of pupils and non-pupils on school buses is infeasible; and 2) the home-to-work trip is an inappropriate use of school buses.

Another study, performed for the State of Pennsylvania, examined the potential of school buses as rural public transportation service (Governor's Task Force on Rural Transportation (11)). The study focused on the costs of such a service, relative to the use of other possible vehicles, including car, van, small transit bus, medium transit bus, and large transit bus. It was concluded that the school bus was one of the most favorable alternatives when compared on a total cost per seat-mile basis. This study culminated in the establishment of a regional transportaion authority which now operates 15 fixed routes and 55 flexible routes, utilizing contracted school bus-type vehicles.

Finally, an informal study was undertaken in 1979 to ascertain the feasibility of allowing the general public to utilize surplus capacity on existing school bus routes in Brampton, Ontario (Robertson (61)). The study concluded that there was a demand for public transit that could be accomodated by the existing school bus route alignments and surplus capacity. The service design was proposed to the LEA, which indicated that it would cooperate if the service resulted in: 1) no route modifications; 2) no pupil standees; and 3) no additional costs to the LEA. However, because it was determined that non-pupil patronage of the school buses would increase insurance costs substantially and that these costs could not be met through outside funding sources, the project was dropped.

Three site-specific studies which considered the feasibility of merging pupil transportation into the public transit system were also examined. One study, undertaken in 1979 for Dade County, Florida (Cooperman (14)), recommended against joint utilization of public transit because: 1) seats for students could not be guaranteed (in violation of state requirements); 2) school buses could be operated less expensively; 3) substantial differences existed between the labor contracts of transit and school bus operators; and 4) current transit service would have to be altered radically to meet the transportation need of pupils.

Another study, performed for the Ohio Department of Highways (Ernst & Ernst (7)), also guarded against such integration of services, highlighting the cost per sudent transprorted on public transit is potentially twice the cost per student transported by school bus.

However, the third study, undertaken for the Erie (Pennsylvania) Metropolitan Transit Commission (Simpson & Curtin (24)), recommended expanding transit routes in suburban regions of the regions of the county through coordinated school/general public service. This study concluded that the merging of these services is both operationally and financially feasible, noting the absence of obstacles as well as the potential savings to the participating school districts.

Finally, in the State of Washington, there are three state-funded efforts which are currently studying the feasibility of "consolidation, cooperation or coordination" of public transit systems with pupil transportation (Lanchester 62)). These efforts were prompted by a recently-passed bill that increased the level of state subsidy of pupil transportation to 90% of actual cost. To reduce that cost, the State made available funding to study such coordination strategies.

Two of these efforts, led by Council of Governments for Benton and Franklin Counties in central Washington, are focusing upon the feasibility of using locally-owned school buses to provide public transit in their respective areas.

The third effort, conducted by the Gray Harbor (County) Regional Planning Agency, is studying the feasibility of utilizing the Gray Harbor Transit Authorities resources in order to eliminate duplicative school bus service among the county's 13 school districts (all but one of which operate their own school bus fleet). At present, all three studies are in the data collection/preliminary analysis phase.

To summarize the more important conclusions of these feasibility studies. The following common observations have been made:

- Three of the studies have noted that the use of school buses to provide or supplement public transit is appropriate during an energy emergency, but is inappropriate under normal conditions.

- Two of the studies concluded that use of school buses was an appropriate means of providing rural public transit. Two other studies reached the opposite conclusion.

- Three of the studies specified off-peak specialized service as an appropriate use of idle school buses.

Other interesting conclusions in favor of school bus use for non-pupil transportation included:

- the ability of the LEA to operate a specialized services;

- the appropriateness of fixed-route transit, flexible-route transit, demand-responsive transit, and contract/subscription services as viable service types utilizing school bus vehicles; and

- that 20-30% of total school bus supply is available during the midday.

Some of the other conclusions opposed to such use included:

- o that insurance costs may be prohibitively expensive;

- o that vehicle design and availability may severely limit the type of service provided; and

- o that integration of pupil transportation and public transit is inappropriate because of the dissimilar demands and functions.

Among the four (completed) studies that specifically addressed the utilization of public transit for pupil transportation, most of the common observations were adverse to such use.

- o Three concluded that use of regular transit routes, in general, would not provide an adequate level of school service because of the dissimilarities inherent between the two types of service and that any adjustments to better accommodate the student demand would detract from the level of service provided to the public.

- o Two noted that the level of safety would probably decrease as acturial insurance data has shown that school buses are involved in fewer accidents than transit buses.

- o Three specified that it was more expensive to operate a transit bus than a school bus, primarily because of the higher wage rates.

On the positive side, however, the following conclusions were in favor of such use.

- o Two studies purported that the provision of tripper service was an appropriate use for <u>idle</u> transit buses in terms of level of service and overall vehicle utilization.

- o One study recommended the joint utilization of transit buses by students and non-students as a means of expanding public transit to suburban areas where the respective trip patterns were similar and where the volume of <u>joint</u> demand was measured to be sufficient to support a route.

The remainder of this chapter summarizes the institutional and operational issues identified in these studies and adds additional information to update or expand upon this base.

3.2 Institutional Constraints

As a result of legislation from various sources, there are a number of institutional constraints which place strict limits on the potential form in which home-to-school and general transit service may be coordinated. Some of these constraints (e.g., Federal legislation) uniformly apply throughout the country, whereas state and local legislation and policies vary from site to site. Since it is not within the scope of this project to survey regulations down to the local level, this section deals only with federal and state legislation. It should be noted that, while these laws act as barriers at the present time, many of them have been changed in some areas over the past few years. Even in areas where strong restrictions to potential coordination exists, the existing barriers may be modified through political action.

3.2.1 Federal Regulations and Legislation

USDOT Highway Safety Standard No. 17 - This standard may serve to limit the non-pupil use of school buses in several ways. First, it specifies certain modifications to the vehicle (i.e., concealment of "School Bus" markings and deactivation of warning system) when used for non-pupil transportation. This type of vehicle modification is minimal and should not significantly impact the manner in which school buses are used. However, the required yellow color, to a small degree, may adversely affect prospective use. Seating specifications are established for the transportation and safety of pupils, not adults. Although there is no regulation which prohibits seating to be set further apart, many operators are likely to retain the standard seating design. The resulting discomfort for adults may also prove to be disincentive. Since this regulation prohibits standees on school buses, some services in which load factors above one are expected will be prohibited.

Section 504 - The current interpretation of this regulation indicates that it is applicable to the non-pupil use of school buses when federal funds are used to support the service.

However, as technology and manufacturing have not kept pace with the time schedule specified in these regulations, waivers of varying duration have been granted to operators on a case by case basis. Based on these precedents, Section 504 should not be an insurmountable impediment to the use of school buses for non-pupil transportation. The importance of this issue will depend largely on the future actions taken by the federal government. There has been discussion recently indicating that this regulation may be modified to allow for local options as to how to make the transit system accessible to the handicapped. If this change is implemented, it will not be necessary for all transit service vehicles to be lift-equipped; therefore, this regulation will not impede the use of school buses for general public transit.

<u>1978 Excise Tax Bill</u> - Since this law is not retroactive, a school bus purchased prior to November 9, 1978 by a private contractor can <u>only</u> be used for pupil transportation as long as the affidavit binding the vehicle to such use is valid. However, the number of school buses that are still bound by such an affidavit is not significant. Moreover, by November 9, 1981, all affidavits will have expired.

<u>UMTA Act of 1964, Section 13c</u> - If federal funding is allocated to finance a prospective demonstration project or an ongoing service, this statute may prove to be a severe obstacle. Under Section 13c, public transit drivers are likely seek to prevent the use of school buses (and their drivers) either to augment regular public transit service (under normal conditions) or even to provide a new service.

Based on actual experience, Section 13c may not be invoked during a severe emergency, if the emergency conditions (and therefore the non-pupil use of school buses) are not prolonged. However, if such use of school buses and drivers were to continue for an extended period, transit labor may protest under Section 13c.

Open Seating - In most states where use of public transit to transport pupils is permitted, pupils stand (if all seats are occupied) as a matter of course, i.e., no special access to seats is provided to anyone. However, some states require that all pupils transported be ensured a seat. (Federal Highway Safety Standard No. 17 stipulates that all pupils must be seated when in transit, but this only applies to school bus operations). Consequently, in these states, concurrent, joint use of the public transit system by pupils and non-pupils would might necessitate increasing capacity during peak hours which would further increase the difference in number of transit vehicles required between peak and offpeak periods.

3.2.2 State Legislation and Regulations

State laws regulating the non-pupil use of school buses vary by state, vehicle ownership (public or private), and condition (normal or emergency). For example, Table 3-2 indicates a wide spectrum of state policies pertaining to the use of publicly owned school buses under normal conditions.

There is a possibility that the seventeen states which restrict use of publicly owned school buses for non-pupil purposes would eliminate such such restrictions during an emergency. For example, one of these states, New Mexico, has actually passed legislation permitting the general use of publicly owned school buses for public transit under emergency conditions providing: 1) there is a need (i.e., where existing carriers cannot accommodate the demand); 2) such use will not complete with existing carriers; and 3) such use will not interfere with pupil transportation (i.e., pupil and public transportation are not concurrently provided by the same vehicle). Under New Mexico's Emergency Transportation Act, the State Board of Education and the State Corporation Commission jointly act upon these provisions and together draw up the terms of the contract.

Table 3-2

State Legislation Governing Non-pupil Use of Publiclt Owned School Buses

Status of Legislation	Number	States
Allow non-pupil use of school buses	(10)	DE, DC, HA, MA, MN, MT, NV, OR, RI, SD
Delegate use decision to local education authorities		
• publicly owned buses are school property to be used as school district desires	(3)	AL, AR, TN
• absence of governing legislation	(2)	CA, ND
• local educational authority has option to decide use	(9)	AK, AZ, CT, MD, NH, UT, TX, VT, WY
Allow restricted non-pupil use of school buses		
• use by elderly - sometimes limited by area, destination, or purpose	(8)	CO, ID, IN, KS, NE, NY, WA, WV
• contracts with governmental agencies and/or non-profit organizations to transport elderly and handicapped	(9)	FL, GA, IA, KY*, ME, MI, NJ, NM, VA
Prohibit non-pupil use of school buses		
• explicitly prohibited by legislation	(3)	MO, OH, SC
• narrow interpretation of legislation	(5)	IL, NC, OK, PA, WI
• absense of governing legislation disallows unspecified use	(2)	LA, MS

* January 1980; does not apply to emergency conditions

** The Kentucky DOT is authorized to sponsor projects demonstrating the general non-pupil use of school.

Source: Reynolds (66)

Even the ten states that prohibit non-pupil use of publicly owned school buses under normal conditions (Table 3-2) may be expected to relax such legislation under emergency conditions based on these precedents: 1) the Governors of Florida and Pennsylvania both have exercised their powers to permit general use of publicly owned school buses during emergencies in their respective states; and 2) the State of Mississippi has passed legislation permitting the use of publicly owned school buses to transport persons to evacuation shelters during natural or man-made emergencies.

With regard to privately-owned school buses, there appears to be no state law precluding their use for non-pupil purposes under normal or emergency conditions. This is particularly significant in states where non-pupil use of publicly owned school buses is prohibited or restricted and in states where pupil transportation is predominantly served by privately owned school buses.

In many states, however, there are state regulations which places conditions on the right of LEA's to contract for services from a private operator. This often results in a dearth of privately-owned school buses which, when coupled with restrictive legislation limiting or prohibiting the non-pupil use of publicly owned school buses, severely limits vehicle supply.

There are other state laws that effectively limit the use of school buses for non-pupil transportation. For example, most states require that such use does not interfere with pupil transportation. This relegates such use to offpeak hours (unless school schedules can be changed). In other cases, state and local financial support rests upon compliance with service standards that may be jeopardized by a change in the school service provided.

Non-pupil use of school buses may also be impacted by state passenger carrier regulations. Depending on the type of service and support, many states require certification from the Public Utilities Commission. These requirements vary from state to state. More than likely, there will be no difficulty in obtaining the necessary authorization if the service will not compete with existing operations. In addition, school buses used for non-pupil purposes must comply with state safety, vehicle, and licensing regulations for passenger carriers. Such compliance is important only if these requlations, initially established by the state for transit buses, differ significantly from comparable regulations established by the state educational authority for school buses.

With the exception of state laws that expressly prohibit pupil transportation on public transit, the types of legislation that are likely to have the most significant impact upon such uses deal with funding. In some cases, receipt of state financial assistance is conditioned upon the exclusive use of school buses to transport students. The use of public transit may result in the provision of less (or even no) state aid for school transportation. Under such conditions, it is unlikely the school district would want to join into such a system unless the operational costs were significantly lower.

In addition, other legislation which sets minimum service standards can restrict such forms of coordination. For example, if state law requires that there be no standees on the school transportation service (as is required at the federal level when school buses are used), it may not be cost-effective to use public transit if the public service is running near enough to capacity to require additional buses when students are carried and standees are eliminated.

3.3 Operational Issues

There are numerous operational factors which impact the feasible designs of coordinated student/general public transit services. These include:

- o physical specification of school buses
- o vehicle availability, and
- o cost.

The impacts of these issues are presented below.

3.3.1 Vehicle Design

A major impediment to using school buses for non-pupil transportation is the physical design of the bus. The standard school bus is built on a truck chassis with a front-end engine. This design places certain limitations on maneuverability in restricted areas. Specifically, it is more difficult to negotiate a busy street and pull into and out of mid-block stops with a school bus than with a transit bus. These limitations present an inconvenience to riders and a general traffic hazard when used in conventional fixed-route service.[1]

As indicated in Table 3-3, the physical specifications of an average school bus are smaller than a transit bus, making riding less comfortable for adults, if not a physical impossibility for some elderly and handicapped users. For example, school bus aisles are required to be at least 12 inches wide, whereas aisles in a transit bus are 18 to 20 inches wide. The school bus seat is not as comfortable as the transit bus seat, nor is there as much room. In a school bus, there is a 25 inch pitch from the front of the seat to the back of the seat immediately in front as compared to the 30 inch seat pitch in a transit bus. Consequently, school buses generally offer inadequate leg room to the adult. The headroom on most school buses ranges between 72 to 74 inches, whereas transit bus headroom averages 80 inches. Step height of the school bus ranges from 12-16 inches, which compares favorably to the transit bus. However, in both cases, the step height is difficult for the elderly and the disabled to negotiate (step heights beyond seven inches will place stresses on both elderly and disabled users). The number of steps to reach floor level

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[1] For school bus operations, the operational safety procedures (warning lights and laws requiring traffic in both directions to stop) and the special considerations used in choosing bus stop locations, alleviate the potential problems resulting from the vehicle design.

Table 3-3

A Comparison of School Bus and Transit Bus Physical Specificiations

	School Bus	Transit Bus	Minimum Specifications for Elderly and Handicapped
Aisle Width	12"	18-20"	19" (32" for wheelchairs)
Seat Width	39"	36"	40"
Seat Pitch	28"	30"	27"
Headroom	72-74"	78"	72"
Step Height	12-16"	12-14"	7"
Door Arrangement	Front	Front, rear	Front, rear
Seat Capacity	66 Children (44 Adults)		45-50 Adults

Source: Cooper (3)

also is a problem for these users. Because of the relatively narrow aisles and the one door access arrangement of the school bus, non-pupil passengers are also likely to experience considerable difficulty and inconvenience in entering and leaving the bus.

Another shortcoming of the vehicle design is that school buses are not equipped with fareboxes. If school buses are to be used for public transit (for which there is a user charge), either fare boxes must be installed or an alternative system of fare collection must be effected. In Seattle, Metro's energy contingency plan includes the use of publicly and privately owned school buses to be fitted with temporary fareboxes. The plan calls for the buses, to be used for neighborhood feeder service, to rendezvous at a specified point where the fare boxes would be emptied. If fareboxes cannot be obtained quickly or do not fit, alternative fare collection options include:

1) prepaid transit passes good for unlimited ridership;

2) prepaid ticket coupons with one "punchout" or one ticket good for one ride;

3) exact fare to the driver in exchange for a receipt; or

4) the use of a "bucket" to collect fares at a control point; the fares are then transfered to another vehicle.

The first two options are appropriate for a service which is expected to be offered for a prolonged period. The last option (successfully used in Dade County, Florida) is appropriate as a temporary fare collection system. The third option can be used under either circumstance.

No similar issues regarding the acceptability of vehicle design are encountered with respect to using conventional transit vehicles to transport students.

3.3.2 Vehicle Availability

Under normal conditions, the availability of school buses is limited since the vehicles are in use during peak hours (and, in most states, co-mingling of pupils and non-pupils is not permitted). Accordingly, the following blocks of time are the periods in which school buses are most likely to be available for other purposes (listed in descending order of likely availablility):

1) summer

2) weekends - all day

3) weekdays - after 6:00 pm

4) weekdays - between 9:00 - 11:00 am and 12:30 - 2:30 pm

5) weekdays - between 11:00 am - 12:30 pm

One means of enhancing the availability of school buses when they are needed most (peak hours) is to effect a school schedule change. While this is unlikely under normal conditions due to local institutional constraints, it is reasonable to assume that these constraints could be relaxed during a severe emergency.

On most public transit services, peak hours fall between 6:00 AM and 9:00 AM and between 3:00 PM and 6:30 PM. In the morning, the peak is virtually coincedent with school bus usage, while in the afternoon there is less of a direct overlap. It must be noted, however, that not all transit properties exhibit this conventional peaking pattern. In many smaller urban areas, especially where transit does not directly serve a significant number of work sites outside the service area, maximum ridership is noted during midday periods. In such locations, there is an increased potential for providing school transportation on public transit more efficiently than using separate systems.

3.3.3 Cost

A major consideration in evaluating the feasibility of coordinated services is the difference in cost structure in the school bus and public transit industries. Table 3-4 illustrates some of the basic differences between the two cost structures. Note that, on average, the operating costs of public transit are much higher than those of school bus. Given this difference, one would expect it to be very difficult to improve the cost-effectiveness of a service by supplanting school bus operations with public transit service. This is not to imply that there are no circumstances where such an action could produce savings. Indeed, it was noted earlier that some school bus driver wages may be as high as transit operations. Under such conditions, the differences in the basic cost structure are likely to be much smaller. Also, if the students can be placed on existing public transit routes without the need for additional resources along these routes, a savings results.

One must also consider the impact on costs of allowing the general public to use school buses. Placing the public on school buses could have significant effects on the cost of maintenance, labor, vehicle replacement, and insurance.

Table 3-4

Capital and Operating Costs Per Mile of School Bus and Transit Bus Operations (in 1977 dollars)

Cost Category	School Bus	Convential Transit Bus
Operating Costs	0.58	0.93
labor[1]		
fuel		
administration		
insurance		
licensing		
Maintenance Costs	0.16	0.20
labor[2]		
parts		
Construction Costs	0.24	0.71[3]
depreciation & finance		
Total Costs	0.98	1.84

[1] includes driver wages, dispatcher wages, vacation pay, employee benefits.

[2] includes maintenance wages.

[3] includes cost of roadways estimated by HUFSAM.

Source: Reynolds (66), System Design Concepts, Inc. (Transit Bus Costs) (32B).

Additional use of school buses will require additional maintenance expenditures. Vehicles which are used more frequently will wear out more quickly, but may be able to provide more total vehicle miles than expected over a normal lifetime. It is uncertain whether the added wear and tear on the vehicle will increase or decrease capital cost per mile. In any event, the expenditures required to modify vehicles for non-pupil uses should not be borne by the LEA.

Because the insurance premiums issued on school bus operations generally cover only pupil transportation, the use of school buses for non-pupil transportation requires additional coverage. Since this is a relatively new concept, a rigid set of rules has not been established by the insurance industry; consequently, insurance for non-pupil use of school buses has been issued on a case-by-case basis. To date, insurance companies have underwritten such policies by:

1) incorporating non-pupil use of school buses in the premium;

2) attaching a rider to the school bus premium; or

3) requiring a separate premium for non-pupil transportation.

Current insurance rates for non-pupil use of school buses are between those of school bus and transit vehicle insurance. Since insurance premiums on public transit are as much as ten times as costly as premiums for regular pupil transportation, insurance costs for non-pupil use of school buses may be prohibitively expensive.

In part, the high premiums for non-pupil use of school buses may result from the lack of experience on which to base the rates. The rates could be reduced in the future once a sufficient actuarial history is developed. One can look to the case of vanpools for a precedent of this occuring. Initially, liability insurance rates for vanpools were nearly as high as those for common carriers. To reduce these rates, vanpool proponents (in addition to lobbying successfully for deregulation of vanpools) purported that:

1) in the event of an accident, vanpool participants would be less likely to claim damages from a fellow worker and pooler than from an institution (i.e., a transit authority); and

2) a vanpool is a lower risk than a private auto because of the driver training and preventative maintenance programs that are initiated by the sponsoring employer.

Subsequently, the Insurance Services Office (ISO) lowered insurance rates for vanpools to the car/carpool level, but only temporarily until actuarial data on vanpools was collected. (As it turned out, these rates were never raised because the actuarial data substantiated the lower rates).

This type of strategy could be employed to lower liability insurance rates for non-pupil use of school buses. Based on the above precedent, the following arguments could be made:

1) Two reasons for the low rates of school buses are the safety records of school bus drivers and the traffic regulations regarding school buses. Since school bus drivers will probably not deviate significantly from their normal driving habits and because most motorists will continue to use caution when negotiating around a school bus, it may be argued that the risk associated with the non-pupil use of school buses is closer to school buses than public transit.

2) According to the National School Transportation Association, the preventive maintenance program employed by most school bus operators is significantly more advanced than the maintenance programs of transit operators. This would seem to indicate that there is much less chance of a school bus having an accident as a result of a mechanical failure than is the case with a public transit bus.

3) The most promising (likely) non-pupil uses of school buses will take place at times when, and/or areas where, there are relatively few cars on the route traveled.

4) Damages as a result of an accident are less likely to be claimed against an LEA than against a transit authority.

With these arguments as support, propronents could request the insurance industry (the ISO) to reduce temporarily the liability insurance rates for using school buses for non-pupil transportation to a level nearer the use of school buses exclusively for pupil transportation until actuarial data is collected.

3.4 Summary

This chapter has identified a number of factors which might act to reduce the desirability and feasibility of coordinating student and general public transportation. A number of barriers to coordination exist in the form of Federal and state legislation which limit the use of school and transit buses, place standards on operating characteristics, and set funding criteria. At the Federal level, regulations affect vehicle design, school bus markings, labor usage, and seating. States regulate school buses by specifying what service must be provided, who may ride, how vehicles may be used. States also may restrict the use of public transit for the provision of required home-to-school transportation services.

While legislative barriers may be removed by actions of a political body and may not be considered insurmountable, operational aspects of public and pupil transportation services which might restrict coordination may be more difficult to alleviate. The physical design of the school bus, in terms of its comfort for adults and its maneuverability in traffic is one area of concern. The similarity in school bus and public transit ridership peaking characteristics, especially in the morning, may greatly diminish the opportunities to use the fleets in a coordinated manner. Finally, monetary considerations, such as the difference in the costs to operate school bus and public transit service and the added cost of insurance for school buses carrying the general public, will play a part in determining what forms of coorination may prove desirable.

In the next chapter, a set of coordinated public and pupil transportation operations are presented and examined to determine how some of these issues have been resolved.

CHAPTER 4

CASE STUDIES

There are numerous examples throughout the country where pupil and public transportation have been coordinated. This chapter presents selected cases where school buses are used for non-pupil transportation and where public transit is used for pupil transportation. Note that this chapter is not exhaustive in identifying all such services; surely, there are many more examples that were not identified because of the limited scope of study. However, the case studies presented in this chapter, collectively, are representative of the current efforts and illustrate the manner in which the constraints identified in the preceding chapter can be resolved. Moreover, they illustrate several coordination strategies along with the many benefits and disadvantages that may be encountered.

4.1 Non-Pupil Use of School Buses

This section reviews past and present experiences involving the use of school buses for non-pupil transportation. Included are seventeen services which cover a broad range of potential applications for school buses. These include services open to all members of the public and those limited to special market segments (e.g., the elderly and handicapped), services sponsored by municipalities, social service agencies, and private companies and organizations, and operations under typical conditions and in response to emergency situations. Table 4-1 presents a summary of these case studies.

In addition to the seventeen services described in detail, a number of operations employing school bus-type vehicles not used in pupil transportation programs were encountered. A brief discussion of relevant conclusions which can be derived from these cases is presented. However, since uncoordinated uses of school buses involve few of the issues of interest, detailed descriptions are not provided.

Table 4-1

Non-Pupil Use of School Buses: Case Studies

	CONDITION, USE, AND SITE	DURATION	RESPONSIBLE ORGANIZATION [1]	VEHICLE OWNER & OPERATOR	SERVICE TYPE	TYPE OF EXPERIENCES	ISSUES RESOLVED/CONCLUSIONS
Normal Conditions	GENERAL PUBLIC TRANSPORTATION						
	1. Aliquippa, PA (40)	1976 - Present	GATA	Private Carrier	Fixed Route	Provision of public transit oriented to steel mill	Service promulgated by company to provide better transit to mill; school bus use appropriate to offpeak commuting.
	2. Concord (32, 35)	1973 - Present	Town	School Dept.	Fixed Route	Provision of fare-free public transit	Service primarily enhances mobility of elderly and autoless at minimal cost to town.
	3. Klamath Falls, OR (3, 6, 12, 13, 15, 27, 31)	5/72 - 9/73	KART	School District	Fixed Route	State/federal demonstration testing school bus use for public transit in service area	Local mobility increased, especially among young & elderly; school district profitted. Project discontinued due to lack of funding.
	4. Las Cruces, NM (22)	3/80 - 6/80	Town	Private Carrier	Fixed Route	Local demonstration testing school bus to provide general public transit on Saturdays	Local mobility increased; extensive marketing generated ridership that greatly exceeded projected demand.
	5. Morehead, KY (3, 25)	12/77 - Present	MAT	School Board	Fixed Route	State demonstration testing nonpupil use of school buses	Local mobility increased; School Board profits from leasing bus; local support; service continued after demo with local funding.
	EMPLOYER-SPONSORED TRANSPORTATION						
	6. East Chicago, IN (46)	12/78 - Present	Inland Steel Corporation	Private Carrier	Shuttle Service	Provision of transportation between plant and parking lot	Service grew out of several vanpools; decreased costs of using school buses instead of transit coaches outweighs relative discomfort.

[1] The Organization which promulgates and is responsible for the non-school transportation of it constituents.

Table 4-1

Non-Pupil Use of School Buses: Case Studies
(Continued)

CONDITION, USE, AND SITE	DURATION	RESPONSIBLE ORGANIZATION	VEHICLE OWNER & OPERATOR	SERVICE TYPE	TYPE OF EXPERIENCES	ISSUES RESOLVED/CONCLUSIONS
Normal Conditions						
ELDERLY AND HANDICAPPED TRANSPORTATION						
7. Aliquippa, PA (40)	1978 - Present	GATA	Private Carrier	Contract	Transport elderly to shopping malls	Local mobility of elderly increased at minimal expense; private carrier profits from contract.
8. Arlington Co., VA (3, 6, 13, 30, 31)	1974 - Present	County and City	School Board	Contract	Transport young & elderly to county social, recreational and nuitritian programs	School Board profits from leasing buses. County/City organizations save money by using less expensive service.
9. Cape May Co., NJ (10, 17, 47)	1972 - Present	County	School Board	Contract	Transport E&H to shopping, medical care, and social service programs	Local mobility increased; service utilizes only accessible school buses.
10. Hancock Co., TN (17, 36)	3/77 - 3/80	County	Private Carrier	Contract	State demonstration testing use of school buses to transport elderly to nuitrition programs	Service is critical to effectiveness of nuitrition program. However, demand for fixed-route general public transportation is scarce.
11. Johnson Co., KS (44)	1973 - Present	Johnson Co. Mental Retardation Center	Private Carrier	Contract	Transport mentally handicapped to shelter workshop programs, recreational activities and employment opportunities	Local mobility of agency clients increased; private carrier profits from contracts; county agency saves money by using inexpensive service.
12. Latah Co., ID (16, 17, 49)	1975 - Present	NCIAAA	School Districts	Contract	Transport E&H to shopping medical care, recreation, and meals	Local mobility increased; school districts profit from leasing buses.
13. Rhode Island (3, 6, 10, 13, 27, 31)	1970 - Present	State Division on Aging	Private Carrier	Charter/contract	Transport elderly to shopping, medical care, recreation, and meals	Vehicle availability not a constraint; private carrier profits despite high insurance costs.
14. Ryegate, MT (34)	9/72 - Present	Ryegate Senior Citizens	Private Carrier	Contract	Transport elderly to general life support services	Local mobility increased; private carrier profits from leasing buses; continuation of service with Title III funds.

Table 4-1

Non-Pupil Use of School Buses: Case Studies
(Continued)

	CONDITION, USE, AND SITE	DURATION	RESPONSIBLE ORGANIZATION	VEHICLE OWNER & OPERATOR	SERVICE TYPE	TYPE OF EXPERIENCES	ISSUES RESOLVED/CONCLUSIONS
Emergency Conditions	GENERAL PUBLIC TRANSPORTATION						
	15. Boston, MA (2, 5, 13, 14, 38)	2/78	Municipalities; MIT	Private Carriers	Express commuter service and shuttle service	Provision of commuter service and neighborhood shopping service during blizzard	Transit service using school buses was supported during emergency despite discomfort.
	16. Dade Co., FL (13, 26)	7/79	MTA	School Board	Express commuter service	Augment transit fleet during energy shortage	Successful as a short-term alternative; several problems likely to develop with prolonged use.
	17. Lake Placid, NY (33)	2/80	U.S. Olympic Organizing Committee	School District	Suttle Service	Supplement provision of transportation between parking lots and Olympic sites during "transit" emergency	Special legislation passed in 1978 permits contract of publicly owned school buses by Olympic Organizing Committee.

4.1.1 General Public Transportation

The following case studies illustrate the use of school buses in the provision of general transit services. These services are operated under normal conditions.

Aliquippa, PA

Aliquippa, Pennsylvania is a small city of 22,000 located 15 miles down the Ohio River from Pittsburgh. The focal point of this community is a steel mill which employs over 10,000 workers, half of which also live in Aliquippa.

In 1976, several community leaders formed the Greater Aliquippa Transit Authority (GATA) to provide public transit oriented to the steel mill[1]. Since then, the GATA has contracted with a private school bus operator to provide the service with idle school buses. This is possible primarily because the commuting periods of the steelworkers do not coincide with the times of pupil transportation.

Currently, between the hours of 6-7 am, 2-3 pm, and 10-11 pm, fourteen school buses are dispersed over seven routes which terminate at the steel mill. Daily ridership is averaging about 1260, or 30 per run. 95% of the passengers work at the steel mill. This represents a 24% market penetration. The fare is 50¢, although most regular riders purchase a 20-ticket book at $9.00 (45¢/trip). User revenue is set to cover the cost of service.

After the fourteen school buses have completed their runs in the morning and afternoon, they are used for pupil transporttation. (From 9:00 am until noon, some are used to transport senior citizens to shopping malls, a service that is also contracted by the GATA. This service will be discussed later.)

This service provided by GATA is an excellent example of a case in which a transit authority has identified a need in the community which is temporally compatible with existing pupil

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[1] Source: Glum (40)

transportation. It shows that the available school bus resources can be adequately exploited without the need for any changes in existing travel and work patterns. In addition, while such a service in Pennsylvania can utilize only privately owned school buses, it may be possible to use publicly owned school buses as well where institutional and regulatory constraints are more favorable. A final issue which is suggested here is the appropriateness of the school bus as a potential resource for subscription or buspool service for off-peak commuters.

Concord, MA

Concord, Massachusetts is a small, suburban town of 17,500 located 15 miles northwest of Boston. A large portion of the population is elderly. Until 1973, the only intra-community public transportation consisted of a taxi service. However, even with senior citizen discounts, this service was prohibitively expensive to most elderly residents. Consequently, for many, there was no means of getting about town. In response to this general lack of mobility (which was compounded by the fuel embargo of 1973) and spurred by the requests of several senior citizens, the transportation manager of the town's school department designed a free-fare, intra-community, public transit service utilizing publicly-owned school buses during the offpeak[1]. The design was brought before the town selectmen and approved. Service commenced in September 1973.

The service operates three days a week on Monday, Wednesday, and Friday between 9:00 am and 1:30 pm and consists of six loop routes connecting various neighborhoods with the town center and shopping areas. Two of the school department's school buses are used to provide this service, each making one run on three of the routes daily. Moreover, these buses are coordinated such that they rendezvous at three designated points to enable transfers. While the school buses used are

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[1] Sources: The Boston Globe (32); Curran (35)

much larger than needed (each has a capacity of 56 adults). They also have only three steps, enabling seniors to board the bus more easily than they can on smaller school buses.

No fare is charged. This was included in the design to avoid state regulations pertaining to vehicles-for-hire. It is also a way of repaying the elderly for the school taxes that they continue to pay. Moreover, no Federal or state financial support is sought because the budget is affordable and the town does not wish to relinquish any local control or bend to outside constraints. The town picks up the tab, appropriating enough funding to cover the cost incurred by the school department for use of the vehicles, fuel, maintenance, and drivers' wages. Initially, the marginal annual cost of operating the service was $8600. Since then, this cost has increased 40%. At current ridership levels, the cost per trip is approximately 25¢. Ridership has grown from 200 per day to 300 per day over the past seven years. During the school year, the composition of patronage is largely elderly, while during the summer, many youths also ride the vehicles. Annual vehicle mileage, based on 149 operating days per year, is approximately 11,000.

This experience provides a noteworthy example of a case in which an unmet need for intra-community transportation, especially among the elderly, is successfully met by using publicly owned school buses during the midday.

Klamath Falls, OR

Klamath Falls, a city of 36,000 in southern Oregon, was the site of an 1972 UMTA demonstration testing the use of available school buses for public transit[1]. This site was selected primarily because of local interest and a lack of public transportation.

A non-profit corporation, KART, was established as the responsible organization. During the 1972-1973 school year,

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[1] Source: KART (15)

KART provided fixed-route transit service between 9:00 am and 1:30 pm, and 4:30 pm and 6:30 pm, using a single school bus leased from an LEA at 40¢ per mile. During the following summer months, KART expanded its service to two buses that operated between 7:00 am and 7:00 pm. Besides a 25¢ fare, other revenue included funding from UMTA, the state, local governments, business associations, and human service agencies. Ridership during the school year averaged 33 trips per day, and increased to 110 trips per day during the summer.

While the project was discontinued due to lack of local funding, it was significant in demonstrating non-pupil use of school buses that would otherwise be idle. Moreover, the demonstration also reflected the importance of local support, not only in terms of funding, but also in terms of planning and operating a viable system. In addition, the success of the summer service appears to indicate that use of school buses to provide general public transit has a better chance of success if provided throughout the day rather than only during off-peak hours.

Las Cruces, NM

In 1980, Las Cruces, New Mexico, a city of 51,000 with no public transit service, undertook a 13-week project testing the feasibility of using school buses to provide general public transit on Saturdays[1]. The project, promulgated by a private school bus operator, was approved by the city commission as a means of improving general mobility.

Service, consisting of five loop routes operating on 30-minute headways between 8:30 am and 6:30 pm., commenced on March 22, 1980. Each of the routes terminates at a downtown shopping mall and three of them serve the campus of New Mexico State University. The base adult fare is 50¢, while senior citizens, children, and students pay only half-fare. Operating costs are totally absorbed by the school bus operator. The

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1 Sources: Passenger Transport (22); Crews (65)

only financial support from the city went to an extensive marketing campaign which preceded the commencement of service. This effort included distribution of route schedules, and multi-media exposure. Ridership on the first Saturday was 1250, representing well over twice the ridership projected. Since then, however, Saturday ridership has averaged between 550-600.

This example is significant for several reasons. First, this project represents a case where a transit-less community has successfully made use of available school buses to improve general mobility, if for only one day a week. Second, it demonstrates the use of school buses to provide public transit as a viable, cost-effective alternative to major, capital expenditures. Third, this type of project can be replicated in similar sites as either a fully-developed system or as the first phase of a staged implementation.

Morehead, KY

In 1976, Kentucky passed a law providing for and partially funding projects demonstrating the use of school buses for general public transportation. Subsequently, the community of Morehead, a small college town of 8,150 permanent residents, applied to operate a fixed-route transit system using local publicly owned school buses[1]. Approval of the site was based on: 1) the identification of an unmet need for public transportation that exceeded the capability of the local taxi operator, and 2) the support of the LEA in offering the use of available school buses to meet this demand.

Morehead Area Transit (MAT) service began on December 1, 1977, with the LEA responsible for daily operation. The service consisted of a single school bus operating between 7:30 am and 4:30 pm on one-hour headways over an eight mile loop connecting the central business district, the hospital, public housing projects, and Morehead State University. The service

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[1] Source: Siria (25)

also operated on Saturdays between 9:30 am and 2:30 pm. The base fare was 25¢. During the course of the year-long demonstration, daily ridership increased from 6 to 50.

At the end of the project period, the city, the LEA, the university, business groups, and human service agencies all reaffirmed their support for the service. Currently, local funding is used to finance the service. For use and service of the bus, the city pays the LEA 15¢ per mile. (The driver is on the city payroll.) The city also reimburses the LEA $1100 annually for liability insurance. In addition, the route has been expanded to 12.5 miles to serve a new shopping mall. Total daily mileage is 92 on weekdays and 54 on Saturdays. While the base fare has remained the same, a special 40-ticket coupon book is now available to senior citizens at $4.00 per book. Each ticket is good for unlimited ridership on the day it is used. Despite these service changes, ridership has remained level since the end of the demonstration. Consequently, MAT has applied for federal funding to purchase a transit coach to replace the school bus in hope of attracting new ridership.

The Morehead experience illustrates that using idle school buses does offer one solution to the provision of needed public transit. Moreover, this example further substantiates that local support is very important to the feasibility of such a project. Finally, it serves as a valuable precedent to other states that currently prohibit or restrict non-pupil use of publicly owned school buses.

4.1.2 Employer-Sponsored Transportation

The following case study illustrates the use of a school bus under contract to a private organization for the transportation of employees.

East Chicago, IN - Inland Steel Corporation

The Inland Steel Corporation plant in East Chicago, Indiana employees between 23,000 and 24,000 workers. Due to poor transit service, the vast majority of these employees rely on the automobile for commuting. Since December 1978, the combination of road construction and building construction has decreased on-site parking capacity while increasing traffic congestion. To alleviate this problem, Inland Steel chose to make use of an existing, remote parking lot to accommodate the displaced demand. Because the location of the parking lot is beyond a comfortable walking distance, a school bus operator was contracted to provide shuttle service between the lot and the plant at the end of each of the three daily shifts[1]. After the morning and afternoon shuttle service is completed, the school bus is used for pupil transportation.

This service successfully demonstrates the use of available school buses to provide a park and ride shuttle service when the parking area is beyond walking distance from the final destination. This case example is also significant in that, because of the odd shift hours and the short distances vehicles travel on the shuttle service, the regular use of the school bus (for pupil transportation) is not adversely affected. Moreover, the example represents, as a strategy for alleviating the demand for on-site parking. It should also be noted that this type of school bus use has other applications, e.g., in providing shuttle service to spread-out college campuses or industrial parks.

4.1.3 Elderly and Handicapped Transportation

Despite the apparent disadvantages of the design of school buses, a number of the transportation systems across the country use school buses to serve the needs of the elderly and handicapped. The following case studies illustrate the use of school buses for this type of service.

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[1] Source: Postma (46)

Aliquippa, PA

Earlier in this section a case example was presented, discussing the use of fourteen school buses to provide fixed-route transit in Aliquippa, Pennsylvania. This service, operated by the Greater Aliquippa Transit Authority with school buses leased from a private contractor, is provided during three one-hour periods (6-7 am, 2-3 pm, and 10-11 pm) on weekdays. After the first two periods, the school buses are used to provide pupil transportation. From 9:00 am till noon, the GATA uses one of the school buses to provide a senior shopping shuttle service[1]. This school bus connects several residential concentrations of senior citizens with three different shopping areas, making two runs daily. No fare is charged; the service is entirely supported by Federal (OAA title III), State (Pennsylvania Lottery), and local (county) funding. Since its inception in 1978, ridership has averaged 47 passenger-trips per day.

This case study illustrates three important user and service characteristics: 1) the willingness of the elderly to overlook vehicle discomfort when the alternative may be the provision of no transportation at all; 2) the attractiveness of a free fare system on attracting ridership, especially since this user group may not be able to afford a taxi to get around; and 3) the temporal compatability of student, general public, and elderly travel times.

Arlington County, VA

In Arlington County, Virginia, population 175,000, available school buses, owned by the LEA, are contracted for by the county to provide elderly transportation. Currently, two school buses are used on a regular basis to provide transportation to a county nutritional program[2]. Daily ridership on these trips averages between 25 and 30. Under the

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1 Source: Glum (40)

2 Source: Allen (64)

terms of the contract, the county is billed for the use of the school bus (at 37¢ per vehicle-mile) and for the driver's services (at $7.36 per hour). Federal funding under OAA Title VII is used to provide this service. School buses are also utilized by the county to transport groups of seniors to social and recreational activities. It is rare when more than one school bus is used at one time for this purpose. There are generally no more than ten of these trips made each month.

The Arlington County experience demonstrates that group (many-to-one) trips are a viable use for available school buses, especially since they represent an increase in revenue to the LEA (or private contractor) and a less costly alternative vehicle for the county (or human service agency) than purchasing additional.

<u>Cape May County, NJ</u>

Cape May is the southernmost, least populated (64,000) county in New Jersey. Local public transit is provided but only during the resort season (May to September). Limited taxi service is also available throughout the year.

Twenty-nine percent of the permanent population of Cape May are senior citizens, many of whose transportation needs are unmet, especially during the off-season. In response, the county established a countywide social service transportation system for elderly, low-income, and handicapped persons in 1974 (Government Accounting Office, 1977). Operating on weekdays from 8:00 am to 4:30 pm, this service provides fixed-route transit with five school bus-type vehicles and 24-hour advance-reservation demand-response and subscription service with five vans. While the base fleet of vehicles is owned by the county, a lift-equipped school bus owned by an LEA is occasionally used when the demand for such service exceeds supply and if the school bus is available[1]. The name of the

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[1] Source: Salveson (<u>47</u>).

service, "Fare-Free", denotes that no fare is charged. Federal funding under OAA Title III, Title VII, and Title XX is used to support the system.

It is important to note that school bus operators can provide not only a source of vehicles for conventional fixed route services but also may be able to provide small van-like buses which are accessible to the handicapped.

Hancock County, TN

Hancock County is a poor, rural area in the northeastern section of Tennessee. It has been estimated that, of the 6700 persons living there, between 50 and 60% are on some public assistance. In June 1975, the county applied to the Tennessee DOT to conduct a three-year, Section 147 demonstration project testing the use of school buses to provide rural public transit[1]. Service, consisting of two fixed routes each making only one run per day, began in 1976. A local school bus operator was contracted with to operate the service utilizing two school buses that otherwise would be idle when not transporting pupils. Ridership over the first six months was extremely low; as a result, a decision was made to change one of the fixed-routes to a subscription service providing transportation to the county nutritional program. No fare was collected on either route. Federal funding under Section 147 and OAA Title VII and matching state funding was used to finance the service. Ridership on the nutrition route has averaged about five per day, while ridership on the public transit route has been even less.

At the end of the demonstration period, the project was continued (through June 1981) with Section 18 funding. Because the ridership remained very low, the general public transit service was dropped; both buses are now used to provide only

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[1] Sources: Davis (36)

subscription service (one of the buses continues to provide transportation to nutritional programs; the other is used to serve primarily medical and life-sustaining trips).

Johnson County, KS

Johnson County, Kansas (population of 221,000) is located directly southwest of the Kansas City SMSA. Most of the population is concentrated in the northeast sector of the county, while the rest of the county is quite rural. There are five public transit routes which serve Johnson County; however, all of them are located in the northeast sector and primarily serve trips bound for Kansas City. Consequently, there is a lack of intra-county public transportation.

Since 1973, the Johnson County Mental Retardation Center has contracted with a private school bus operator to provide transportation to its clients[1]. Three types of services are provided. The first utilizes five school buses (three of which are equipped with lifts) to transport clients between their homes and the Center's shelter workshop program on weekdays. Ridership on this service is currently averaging about 100 round trips per day. The second type of service utilizes one or two school buses for recreational trips. Generally, one to two weekday trips are made each week and one weekend trip is made each month. Ridership on weekday recreational trips averages 35 while ridership on weekend trips averages 60. The third service utilitizes two school buses to provide a subscription commuter service for agency clients with jobs. A fare of $1.50 (paid in face-value scrip) is charged for this service. Ridership on this service is currently averaging 30 round trips per day. The county is billed for the use of the vehicles (at 70-80¢ per mile) and for the use of the driver (at $4.57 per hour). In addition to the scrip revenue, Federal (Section V) and State funding is used to finance the service.

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[1] Source: Meyers (44)

Latah County, ID

Latah County, population 25,000, is located in a rural, mountainous region in north central Idaho. Approximately half the population is concentrated in the city of Moscow on the county's (and state's) western border. The rest of the county is sparsely populated. Approximately 15% of the county population is elderly.

While there is a local taxi service in Moscow, the travel demand of the elderly and handicapped rural population, until 1975, remained unmet. At this time, the Area Council on Aging approached and subsequently contracted with five LEA's for use of their school buses in order to accommodate this need (Lotze, 1975)[1]. This avenue was pursued for two reasons: 1) the school bus fleet represented the only existing resource that could adequately provide service; and 2) senior citizen groups had previously made use of available school hours for recreational trips.

Service commenced in 1975 on a regularly-scheduled twice-a-month basis along two designated routes, 90 miles and 112 miles in round trip length. The service is provided between 8:45 am and 3:00 pm with 36 (adult) passenger school buses able to hold up to 36 adults. No fare is charged. The Area Council on Aging is billed monthly by the LEA's for the use of the school buses (at 40-50¢ per mile) and for the services of the driver (at $3.00-4.00 per hour).

The Latah County experience provides an example of a case (and a valuable precedent) where the insurance obstacle of obtaining coverage for the use of school buses for non-pupil transportation was overcome. Specifically, the insurance LEA's insurance underwrites added riders to the original policies, resulting in only a small increase in cost. (Adding a rider to

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[1] Other source: Wisenor (49)

an LEA's existing policy cost an additional $50 per year per vehicle whereas writing a separate policy would have cost $1600 annually.) Four out of the five LEA's assumed this cost, while the fifth included the cost in the mileage charge.

Rhode Island

Rhode Island is one of many states in which the bulk of pupil transportation is provided on privately owned school buses (Cooper (3)). For the past ten years, the largest school bus operator has also provided non-pupil transportation to the elderly throughout the state, utilizing school buses that otherwise would be idle during the offpeak. Basically, this involves contractual or charter service provided to senior centers, elderly housing projects, and other human service agencies primarily for social and recreational purposes. The billing rate is $18.00-$25.00 per day plus 30¢ per mile for use of the school bus and $2.25 to $3.50 per hour for the driver's services. State and local funding has been earmarked for this purpose.

Ryegate, MT

Ryegate, Montana, population 300, is a small rural town in the middle of the state. The nearest medical care and shopping area is located in Harlowtown, over thirty miles from Ryegate. No public transportation existed in this area until June 1972 when the Ryegate Senior Citizens received a federal grant to transport elderly for certain social and other services[1]. Service began four months later utilizing two available school buses leased from a private contractor. For use of the school bus and driver, the contractor charges 70¢ per mile. Basically, once or twice a week, when the school buses are not being used for pupil transportation, service is provided between the senior center to Harlowtown. Ridership is

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[1] Source: Coleman (34)

currently averaging about 18 per day, with most trips for medical purposes. No fare is charged. The service is supported by Federal funding under OAA Title III.

4.1.4 Responses to Emergency Conditions

Many restrictions to the non-pupil use of school buses that are in effect under normal conditions are likely to be relaxed during an emergency to accommodate the increased demand for public transportation. The following four case examples illustrate how school buses have been used to alleviate general mobility problems respectively resulting from a blizzard, an energy shortage, a transit shortage, and a flood.

Boston, MA

On Monday, February 6, 1978, a major snowstorm struck the Boston area, dumping over 30 inches of snow in a 24-hour period. The resulting disruption of all transportation service forced the governor to ban all but emergency vehicles from most streets and highways. While most of the major roads were cleared by the following Monday, the ban on non-essential private cars remained in effect, impacting nearly 350,000 who normally drove to work. Two efforts were directed toward accommodating this sudden increase in demand for public transit[1]. First, employers and employees voluntarily staggered working hours to temporally spread out the peak demand. Second, 30 suburban communities contracted with school bus operators to provide express commuter, feeder, and intra-community service. Moreover, several universities, notably MIT, contracted for school bus service for faculty, students, and employers to whom public transit was not accessible[2].

This experience is significant for several reasons. First, because work hours were staggered, the same school buses could

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[1] Source: Husock (14)

[2] Source: DiIorio (5)

be used for both pupil and non-pupil transportation without co-mingling. Second, because a state of emergency was declared, school buses could be used to augment existing public transit since all pertinent public utility regulations were temporarily suspended for the duration of the emergency. Third, school buses represent a resource that potentially can be used by private commuters to provide buspool service when there is a sudden lack of transit.

Dade County, FL

In June 1979 during the nationwide gasoline shortfall, Dade County, Florida's gasoline supplies were temporarily cut off by a trucker's blockade of the area's deepwater service port. Within a few days, both the governor and county manager declared a state of emergency. The county's transit system, Metrobus, which typically carries 200,000 weekday passengers incurred a sudden influx of approximately 45,000 extra riders. To accommodate this increase in demand, the Metropolitan Transit Authority (MTA) negotiated with the County School Board for the use of nine school buses and their drivers to augment public transit[1]. The fact that a state of emergency was in effect was key in that these negotiations could proceed without prior approval of either the Metrobus drivers' union or the school bus driver's union. The school buses were used primarily on express routes because these routes experienced the worst over-crowding. During the morning and afternoon peaks, school buses followed behind regular scheduled Metrobuses, thereby adding extra capacity. Fares were collected by passing around a bucket at a designated point on the line-haul segment of the route and then transferring the collected fares to a waiting Wells Fargo truck. Under the agreement, the MTA guaranteed to replace the used fuel, and pay the LEA 50¢ per mile for the use of the school bus and $6.85 per hour for the driver's services.

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1 Source: LaPlant (32A)

After 3½ days, the nine school buses collectively traveled 2400 miles over 190 hours carrying an average of 22 passengers per trip (1150 total). Operating costs due the LEA for this period came to approximately $2,500 while insurance alone was $7,500.[1] While costs totaled approximately $10,000, farebox revenue generated only $825.[2]

It may be concluded that the <u>temporary</u> use of school buses to augment public transit was a successful means of accommodating the sudden increase in demand. In fact, as part of its Energy Contingency Plan, the MTA is presently negotiating with the County School Board for use of its school buses to provide public transit should a fuel shortage reoccur. The Dade County experience also points out a number of major detriments to the use of school buses under normal situations. The insurance costs in this case were exhorbitant (amounting to three times all other operating costs), due to the minimum premium required by the school board's insurance carrier. Such costs may be difficult to accept even in the event of an emergency and this issue should be resolved more favorably in the design of the Contingency Plan. Other major problems, which were only avoided due to the emergency situation included labor issues, driver availability, and the difficulty of providing an acceptable fare collection system.

<u>Lake Placid, NY</u>

In February 1980, the Winter Olympic games were held in the town of Lake Placid, a small town in upstate New York. The United States Olympic Organizing Committee (USOOC) negotiated with a Canadian carrier to provide the bulk of transit required to transport the crowds among the various sites. When this

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1 MTA negotiated with the School Board's insurance carrier for a special binder of $150,000 excess coverage above the $100,000 single limit coverage required by the state. The cost of this binder included $4500 deposit and a $3000 minimum premium.

2 Fare was not collected on five of the nine school buses because supervisors were diverted to other emergencies.

company pulled out at the last minute, a severe transit shortage resulted. In response, a state of emergency was declared by the governor. Fortunately, the New York State Legislature had had the foresight to pass special legislation in 1978 permitting the USOOC to contract with LEA's for the use of their school buses if needed for the Games. (Under normal conditions, non-pupil use of publicly owned school buses is restricted in New York to the transportation of the elderly and handicapped.) Consequently, in addition to using several transit coaches from the transit system in Albany, the USOOC contracted with several nearby LEAs for the use of their school buses to provide service between remote parking lots and the events[1]. (Because these LEAs had rearranged their vacation schedules to coincide with the Olymics, the school buses were idle.)

The Lake Placid experience is noteworthy in that the Winter Games not only created a need for tailored transit services, they were also the reason there was a fleet of school buses available to provide these services. While this is a unique situation, it does illustrate that school buses can be used as a primary or secondary source of vehicles to accommodate a temporary increase in demand for transit services that often is associated with large events (e.g., World's Fairs, political conventions, professional athletic contests). This applicability is especially appropriate when transportation for these events does not conflict with pupil transportation.

4.1.5 Conclusions

The experiences highlighted in the preceding case studies suggest the following basic conclusions:

1. School buses can be used for non-pupil transportation. In fact, the success of these experiences under normal and emergency conditions suggests that school buses should be considered as

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1 Source: Ahola (33)

a viable transportation resource, as long as the use for which they are considered does not interfere with their main purpose.

2. It appears that the use of school buses (for non-pupil transportation) is more common in providing service to specific market segments (e.g., the elderly and handicapped) than to the general public. This is not surprising because the travel needs of these market segments are relatively more complimentary to those of pupils. In addition, the legislative climate on the state level is less restrictive to use of publicly-owned school buses for E&H transportation than for the general public transportation.

3. Where school buses are used for general public transportation (under normal conditions), that use is generally spatially and/or temporally limited because it may not interfere with the provision of school transportation. This suggests that there may be only a few circumstances in which the use of school buses for public transit may be advantageous in terms of both cost and service efficiency.

4. It also appears that the non-pupil use of school buses is more prevalent in rural areas than in urban areas. This can be explained by the differences in vehicle supply. In urban areas, most of the demand for public transportation is accommodated by transit and taxi operations. In contrast, the only supply of large passenger vehicles in many rural areas is the school bus fleet. Furthermore, rural area residents are willing to accept lower levels of service, since they may currently have no service at all.

The case studies also suggest several key factors that appear to play a major role in shaping the operational and organization components of using school buses for non-pupil transportation.

1. The vast majority of services provided involved a private contractor as the service operator. Although the vehicles are sometimes owned by the LEA, labor is provided by some other organization. The major exception to this rule is in service offered specifically to the elderly and handicapped. LEA's have shown a greater willingness to involve their own staff on such projects.

2. In many cases, funding from non-local sources is necessary to act as a catalyst to get a service started. Many of the systems described above are either funded totally through Federal programs or at least partially through state demonstration grants. Where a private company or organization perceives a strong need for themselves or their employees, they are often willing to design and organize such a service.

3. While one would expect supplemental school bus service to be most successful in rural and suburban areas with no existing transit, there are several examples of systems operating within a transit authority's service area. These services in general do not compete with operations the transit authority is willing to provide, but complement the transit services.

Virtually all of the case studies demonstrate that many potential barriers to non-pupil use of school buses can be overcome through proper planning. Moreover, these experiences suggest that several of the potential constraints are inconsequential if there is sufficient need for transportation.

1. Although restrictive legislation exists in many states, these laws limit the use of publicly-owned school buses. Several of these case studies demonstrate that contracting with a private school bus operator is a viable alternative. In addition, one of the case studies (Morehead) is an example where the use of publicly-owned school buses for public transit resulted from successful lobbying efforts to change restrictive legislation. In this case, the avenue that was achieved was a state demonstration.

2. While no surveys are available to indicate directly that potential users are not dissuaded from using school buses due to their physical design, the number of successful school bus services to the general public indicates this may not be a severe problem, especially when seating on vehicles is modified for adults. On the other hand, this concern may have been a factor in the decision of some services to replace school buses with conventional transit vehicles.

3. Although vehicle availability during school transportation times is a significant barrier, all of these case studies demonstrate how a specific need for mobility among both the general public and subgroups can be fulfilled with idle school buses at other times.

4. While the cost of providing additional transportation in some cases is substantial, many of these services illustrate that the use of school buses is less expensive than other more conventional approaches. (Specific financial benefits are discussed further below). Moreover, in several cases, Federal and state funding alloviated many of these costs. On the other hand, in other cases, the entire operation was localized as the marginal costs of additional service were preceived as affordable.

In contrast, some of these case studies suggest problems that may be difficult to overcome.

1. Where no outside funding is available, the increased insurance costs which are associated with non-pupil use of school buses, may deter communities from providng additional service at all.

2. In areas where such a service is perceived as competing with that operated by the local transit union, the threat of labor problems may preclude the use of school buses for public transit.

Finally, these case studies illustrate the potential benefits and drawbacks that may accrue to the various actors. For each entity, the alternative to which the school bus use(s) is contrasted is the most likely conventional option.

1. The LEA and private operators benefit from net revenue. Instead of leaving the available school buses sit idle, additional marginal use of these buses is likely to return more revenue than the marginal cost of providing the service.

2. A newly-created Transit Authority benefits from minimizing capital costs. In several of our case studies, the transit authority opted to use idle school buses rather than purchasing new transit coaches and building new maintenance facilities.

3. The Community at large or subgroups thereof (depending on the user group that the operation is designed to serve) benefits from increased mobility, during normal conditions and/or in the case of an emergency, where the option is the provision of no public transportation at all.

4. It may be financially advantageous for human service agencies, especially those which are responsible for or which desire to initiate the regular transportation of large groups of clients between two different points, to contract for the use of school buses for this purpose instead of purchasing, leasing or contracting a number of smaller vehicles.

5. it also may be financially advantageous for private employers, whose on-site parking space is temporarily congested to use school buses to provide shuttle service between off-site parking and the work-site instead of purchasing or leasing a vehicle or implementing a ride-sharing program.

4.2 Use of Public Transit for Pupil Transportation

This section reviews past and present experiences where public transit is partially or solely used for pupil transportation. Because a nationwide survey is beyond the scope of this study, seven cases representing different types of areas, populations, and services, are examined. The cases involve pupil use of public transit in Atlanta, Boston, Chicago, Pittsburgh, Sacramento, Seattle, and Toledo. In addition, as a point of reference, one example of student/general public transportation in Europe - in Malmo, Sweden, is also examined. Table 4-2 presents a summary of the characteristics of each of the cases.

4.2.1 Atlanta, GA

The Atlanta School District does not own or operate school buses. Instead, pupils are transported by two means: private school bus operators under contract, and the Metropolitan Atlanta Regional Transportation Authority (MARTA). Currently, 49 yellow school buses are contracted for the school district's desegregation program. These buses carry 2,800 pupils each

Table 4-2

Use of Public Transit to Transport Pupils: Case Studies

SCHOOL DISTRICT	NO. OF PUPILS TRANSPORTED DAILY ON PUBLIC TRANSIT (% OF TOTAL) PUPILS TRANSPORTED)	NO. OF PUPIL TRIPS PER DAY ON:		SCHOOL DISTRICT COST OF SERVICE PER PUPIL PER DAY ON:		REIMBURSEMENT MECHANISMS
		REGULAR TRANSIT BUSES	TRIPPER OR SPECIAL BUSES	PUBLIC TRANSIT	SCHOOL BUSES	
ATLANTA, GA (51, 59)	30,000 (91.4%)	29,250	25,750 (248 am) (315 pm)	$0.20	$1.34	Pupils pay 15¢ fare; MARTA invoices school district for remaining cost (10¢ per pupil trip) based on counts; cost funded by district.
BOSTON, MA (53, 58)	7,000 (21.8%)			0.20	1.00	Half-fare passes available at no cost; tickets purchased at 10¢ each; cost funded by state.
CHICAGO, IL (56)	8,700 (32.6%)	14,800	2,600 (28)	0.60 (2.60)	2.50-12.50	Tokens purchased from CTA at 30¢ each; cost funded by state; returned tokens submitted to state for partial reimbursement.
PITTSBURGH, PA (55, 60)	9,000 (25.0%)		(41)	0.96	1.18	PAT invoices school district $18.15 per month per pass; cost funded by state and district.
SACRAMENTO, CA (54)	5,500 (61.1%)		(54)	0.27	1.10	RTD invoices school district 50¢ per pass issued plus 30¢ per day per pass times 90% of pass-holders; cost funded by state.
SEATTLE, WA (50, 57)	5,600 (31.1%)	2,200	9,000 (148)	1.00 (1.33)	2.00-7.50	Metro invoices school district ($1.00 per day per pass); total cost for trippers based on guaranteed ridership; cost funded by state and district.
TOLEDO, OH (52)	20,000 (67.8%)	40,000	- -	0.37	N/A	Total cost based on guaranteed ridership. State funds ($60 per pass) passed on from school district to TARTA.

school day. In contrast, approximately 30,000 pupils are using MARTA to and from school.

The Atlanta School District has a contract agreement with MARTA for the transportation of these pupils. Pupils using MARTA to and from school pay a reduced fare of 15¢. On two consecutive days in the fall and spring, a head count of pupils is undertaken by MARTA drivers. These are used to compute an average number of pupil trips per day; the School District is then billed for the remaining portion of each trip (10¢), based on an 180-day school year. Currently, approximately 55,000 pupil trips are made on MARTA to and from school each day. While state assistance is available for reimbursing the cost of school trips made by pupils living 1.5 or more miles from the school they attend, the school district is not taking advantage of this. However, state funding is expected to be obtained for these trips starting in 1981. This funding is especially needed for the desegregation program, since the yellow school bus service now costs 67¢ per trip in contrast to the cost <u>to the LEA</u> of pupil transportation on MARTA at 10¢ per trip.

For more than fifteen years, MARTA (and, prior to its inception, the Atlanta Transit System) has augmented its regular routes with tripper service in the two county service area comprising greater Atlanta. This service consists of placing additional buses on regular routes during the A.M. and P.M. peak of each school day to handle the influx of demand. Some of these buses deviate from the regular routes to drop off and pick up pupils at their schools. Currently, 29,250 pupil trips are made each day on regular routes. In comparison, 248 tripper buses in the morning and 315 tripper buses in the afternoon serve approximately 25,750 pupil trips daily.

4.2.2 Boston, MA

Under Massachusetts law, a public transit authority is required to offer a special student half fare[1]. In

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1 Sources: Taylor (58)

compliance, the Massachusetts Bay Transportation Authority (MBTA) sends to approximately 300 public, private, and parochial schools throughout the Boston metropolitan area the number of "student badges" requested by each school[1]. The schools to which the student badges are sent are then responsible for issuing them to the pupils who use the MBTA for school transportation. A total of 77,500 student badges were distributed to students in 1980. A pupil who bears a student badge when riding the MBTA between 6:00am and 5:00pm on school days is required to pay only half fare.

Pupils use the MBTA for school transportation in the following ways:

1. use of regular transit to travel directly between home and school;
2. use of special buses to travel directly between home and school; and
3. use of regular transit as a feeder service to school bus routes.

There is also a state law which allocates state funds to reimburse the transportation of public school pupils who live 1.5 or more miles from the school they attend. (Local public school districts may also transport other pupils living closer to school; however, the cost is reimbursed with local funding.) For example, the Boston School Department pre-pays the student half-fare for eligible pupils using the MBTA by purchasing pink tickets (called "card checks") at 10¢ each. These tickets are then issued to the school board, which is then responsible for distributing the tickets to the eligible pupils. The mechanism for ticket distribution varies by school. Hence, pupils bearing student badges may submit one these tickets as fare. When these pupils ride the MBTA to and from school, the driver or station attendants collect one or two tickets (depending on what the full fare is on that transit line) and destroys them. One abuse of this system, however, is that sometimes the tickets are not destroyed and are reused by "ineligible"

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[1] Source: Gilbert (<u>53</u>)

students. The MBTA has responded to this problem by periodically changing the color of the tickets. In the Boston public schools, about 7,000 pupils receive these tickets (in contrast to 25,000 pupils who ride on contracted yellow school buses). Of the 7,000 pupils who use the MBTA, 6,300 ride on regular routes and special routes directly to and from school, while 700 ride the regular routes to transfer onto school buses. Currently, it is costing the school board 20-40¢ per day per pupil transported on the MBTA in contrast to approximately $1.00 per day per pupil transported by school bus.

To handle the demand of pupil transportation, the MBTA provides tripper service. First, during the morning and afternoon peaks on school days, more buses are placed into service on the regular routes most commonly used for pupil transportation. These buses are called "Special" or "S" buses. Second, some peak hour routes have been established to service in areas where pupil transportation is not sufficiently served by regular routes.

In November 1980, a state-wide legislative referendum was passed in Massachusetts lowering property taxes. Thge resulting decrease in local revenue led to several cuts in MBTA service. One of the service eliminated was the set of "S" buses.

4.2.3 Chicago, IL

In Chicago, the school district utilizes contracted yellow school buses, "chartered" Chicago Transit Authority (CTA) transit buses, and regular CTA routes to transport approximately 26,700 pupils to and from school[1]. State financial assistance is available for the transportation of the following pupils: 1) pupils living outside the catchment of the school they attend; and 2) pupils participating in state authorized and funded educational programs.

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[1] Source: Rudd (56)

Catchment areas range from 1.5-mile radii for most elementary schools up to 3.0-mile radii for some high schools. Most of the regular students who do live outside their schools catchment area are transported by contracted yellow school buses. In fact, 778 school buses transport approximately 11,600 pupils each school day. (Those regular students who are not eligible may purchase a CTA student half-fare card at $2.00. This card entitles him/her to use the CTA at a 30¢ half-fare on school days from 6:00 am to 8:00 pm throughout the school year.)

An additional 15,100 pupils participate in state authorized and funded educational programs that include school transportation. Approximately 9600 pupils are currently involved in the school district's desegregation program, of whom 6400 are transported on 276 yellow school buses; 1300 are transported on 28 "chartered" CTA buses; and 1900 are transported on regular CTA routes. While the "chartered" routes were specifically contracted for by the school district for this purpose, these buses, in effect, are providing tripper service in that they are open to the general public. In addition, 5500 pupils who participate in special educational programs are transported on regular CTA routes.

At the beginning of each school year, school principals submit to the school district a request for funds to cover the cost of purchasing CTA half fare cards and half fare tokens that are used by the eligible pupils on the regular CTA routes. The amount of funding distributed to each school varies based on the number of trips these pupils make and attendance. The CTA card at $2.00 enables the card holder to pay half-fare for trips to and from school. Each token costs 30¢ and may be used, in conjunction with the card, to pay the remaining half-fare. The cards and tokens are purchased from the CTA and then distributed to the appropriate pupils.

The cost to the school district of service per day per pupil transported on regular CTA routes, hence, was approximately 60¢. In comparison, the "chartered" CTA buses, which primarily were routed from school to school as part of the desegregation program, cost the school district $2.60 per day per pupil. Depending on the particular vehicle used and service provided, the contract costs for yellow school buses ranged from $2.50 to $12.50 per day per pupil.

In August 1979, an appeals court ruled that the CTA was forbidden to pick up students at their neighborhood school and transport them to the school they attend in buses purchased with Urban Mass Transportation grants. However, because the bids had already been made and because this ruling was appealed to a higher court, the Chicago Board of Education was allowed to continue "chartering" CTA buses for the desegragation program during the 1979-1980 school year. Subsequently, the U.S. Supreme Court upheld this decision by denying review. As a result, the school transportation of the students participating in this program during the following year was bid for by and awarded to school bus contractors. The significance of this ruling is that it is consistent with Federal regulations which disallow contracted tripper service, i.e., while a public transit operator benefiting from Federal funding can operate tripper service, it cannot compete for regular school transportation as a contractor (see 2.3.1 - Tripper Service and Incidental Charter Bus Operations).

4.2.4 Pittsburgh, PA

The Pittsburgh Board of Education is responsible for the transportation of all eligible pupils to public and non-public schools in the City of Pittsburgh and of eligible pupils residing within city limits to public schools within a ten mile radius of Pittsburgh[1]. In Pennsylvania, eligible pupils include elementary pupils (K-8) who live 1.5 or more miles from the school they attend and high school pupils (9-12) who live at least 2.0 miles from school. For over twenty-five years,

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[1] Source: Yount (60)

the school board has made a verbal agreement with P¼ort Authority of Allegheny County (PAT) to transport eligible pupils to and from school.

As specified in this agreement, the school board first determines how many eligible pupils in each school are able to use PAT for school transportation and submits that number to the various principals. The principals then request that number of student passes from PAT, for which the school board is invoiced $18.15 per student pass. This cost is based upon a weighted average of 30¢ child half fares (6-11 years) and 60¢ adult full fares, assuming a 180-day school year and two trips per day. Consequently, it is costing the school board 96¢ per pupil per day or 48¢ per pupil per trip (in contrast to $1.18 per pupil per day transported on school buses under contract). Both state and local funds are used with the state's share covering approximately 25% of the cost.

The monthly passes are then issued to the eligible pupils. Pupils with passes may ride PAT free between 6:00am and 7:00pm on school days and at other times may ride PAT for 10¢. In 1980, approximately 9000 pupils under the school board's auspices received passes (in contrast to 21,000 pupils who ride contracted school buses). Approximately 5700 of the pupils using PAT were public school pupils; the remainder were private and parochial school pupils.

To meet the influx of pupils riding PAT each school day, 41 tripper buses make trips along regular routes during the A.M. and P.M. peaks, deviating, if necessary, to drop off and pick up children at the various schools. The establishment of trippers begins at the local school level. If the principal recognizes that a significant number of pupils attending that school live in a certain area and use PAT for school transportation, the principal is responsible for submitting a request to PAT for tripper service from that area. It is then up to PAT to accept or reject the request[1].

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[1] Source: Madlock (55)

4.2.5 Sacramento, CA

The Sacramento Unified School District, up until 1980 made use of their own yellow school buses and the Regional Transit District (RTD) for pupil transportation[1]. With the passing of Proposition 13 (which decreased local revenues), the subsidization of pupils using the RTD to and from school has been stopped. This system however was quite successful and unique in its mechanism for reimbursement.

Prior to each school year, the school district identified all the pupils eligible for free school transportation. Junior high school pupils living two or more miles from the school they attend and high school pupils living 2.5 or more miles from the school they attend were eligible. At the beginning of the school year, the RTD sent representatives to the various schools and issued photo identification passes to eligible pupils who wanted to use the RTD for school transportation. During 1979, approximately 5500 pupils were issued passes. These annual RTD passes were valid on school days only from 7:00am to 4:30pm. The school district was then invoiced 50¢ for each pass issued (to cover administrative costs) and was invoiced monthly for the use of the pass. The monthly use was defined as 85%-95% of the number of pass holders (depending on attendance) times a 30¢ half-fare per pupil per day. This worked out to approximately 27¢ per pupil per day. (In comparison, it costs the school $1.10 per pupil per day for the 3500 pupils transported by yellow school buses.) To accommodate the influx of pupils riding public transit, the RTD placed 54 tripper buses over 38 routes into service during the A.M. and P.M. peak. In most cases, these tripper buses would not deviate from the regular route alignment.

With the reduction of local funding due to Proposition 13, however, the Sacramento Unified School District chose not to reimburse pupil transportation on public transit. The RTD

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[1] Source: Haycox (54)

still offers the 30¢ student half fare and most of the 5500 pupils who previously rode the RTD to and from school continue to do so.

4.2.6 Seattle, WA

The Seattle Public School District is responsible for the transportation of public school pupils who live two or more miles from the school they attend. Of the 21,000 pupils who are eligible, 18,000 are transported by the school district. To transport these students, the school district contracts with both Associated Bus, a private school bus operator, and with the Seattle Metro, the local public transit authority[1]. Associated Bus currently provides 375 yellow school buses that transport approximately 12,400 pupils daily. The Metro, in contrast, is under contract to run 148 tripper routes which are planned jointly by the Metro and the School District to serve primarily pupil transportation[2].

At the beginning of each school year, eligible students wishing to use one of the Metro's tripper routes to and from school request a tripper pass from the school district. The name, address, route number, and school of each applicant is printed on the pass which is then issued to the pupil. Consequently, the pass is valid only for transportation to and from that school on that route. The contract between the school district and the Metro guarantees a ridership of at least 40 pupils per tripper run; the Metro then invoices the school district at $1.00 per pupil per day (at the regular 1-zone fare of 50¢/trip) times 40 pupils per bus times 148 buses. In actuality, these tripper buses average about 30 pupils per trip or a total of 4500 pupils per day. Hence, the actual cost of each tripper bus is $1.33 per pupil per day. (In contrast, the cost per day per pupil transported on yellow school buses averages $2.63.)

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[1] Source: Anderson (50)

[2] Source: Sears (57)

Some pupils who wish to participate in the school district's voluntary desegregation program or who travel to a different school during school hours for special classes may request a regular student Metro pass. This pass entitles the pupil to ride any regular route between 6:30am and 6:30pm on school days. Approximately 1100 pupils are currently using the Metro with this pass, for which the Metro also invoices the school district $1.00 per pupil per day (effective May 24, 1980) on a monthly basis. Hence, nearly 5600 pupils ride the Metro to and from school daily.

4.2.7 Toledo, OH

During the 1960's the Toledo Board of Education negotiated an agreement with the local public transit company to transport pupils to and from school. When this company evolved into Toledo Area Regional Transit Authority (TARTA) in 1971, the Board of Education chose to continue this method of transporting pupils primarily because it was less expensive than operating or contracting a yellow school bus service. Hence, the Board negotiated with TARTA at this time to carry approximately 20,000 pupils daily.[1] To facilitate this program, computer software was developed to identify the pupils eligible to be transported, i.e., students who live more than one mile from the school they attend. At the beginning of each school year, TARTA passes are distributed by the school district to the eligible pupils who wish to use TARTA for pupil transportation. With the pass, pupils may ride TARTA from 6:00am to 4:00pm without paying a fare. State funding at $60 per year per pupil transported on public transit is then passed on to TARTA based upon the number of eligible pupils. The current contract made in 1976 is based on 22,500 eligible pupils; however, with declining enrollment, only 20,000 passes were distributed in the 1979-1980 school year. Hence, actual cost to the school board is 37.5¢ per pupil per day. The school board saves money by using public transit for pupil

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[1] Source: Eastman (52)

transportation because, in Ohio, state reimbursement is $60 per year per pupil transported on public transit, in contrast to $52 per year per pupil transported on school buses.

Use of public transit with the pass system also complements several school board programs. For example, over 1000 of the 20,000 pupils now using TARTA participate in the school board's voluntary desegregation program. In addition, passholders who participate in the student cooperative work program are free to use TARTA to travel during the school day to their respective jobs.

4.2.8 Malmo, Sweden

While consolidated student/general public transportation are relatively uncommon in the United States, such services are the norm for the densely populated regions of Sweden.[1] In the Malmo region in the southern part of Sweden, approximately 9,000 home-to-school trips are made on an average weekday on the community-operated transit system. This represents 45% of the public transit ridership. In addition to the regular route transit service, some students are transported by separate school buses and taxis in areas where the public transit service cannot accommodate the student travel needs.

Data collected on 40 non-urban routes in this system illustrate the magnitude of the student transportation provided and its peaking characteristics. As summarized in Table 4-3, morning peaks for students and non-students are nearly contiguous, while the afternoon peak periods coincide only to a small degree. It should be noted that these peak travel times are very similar to peak vehicle demand times for school buses and public transit in the United States (Barton-Aschman (1)). Figure 4-1 illustrates the dramatic difference on total boardings between the A.M. and P.M. peaks. Assuming similar levels of productivity during peak hours, at least 55% more buses would be needed between 7:00-7:30 A.M. than during the

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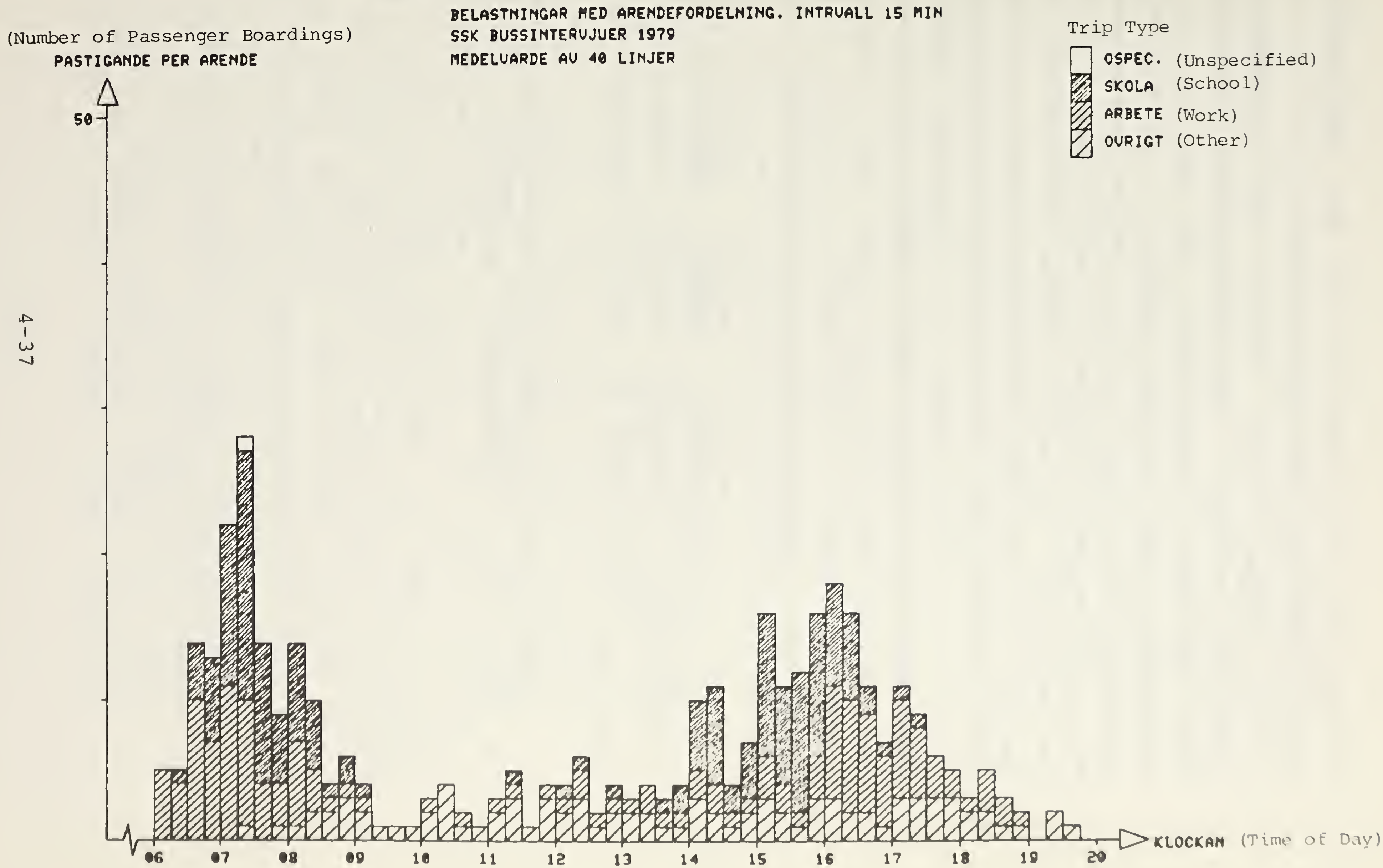
[1] Sources: Donna Meyer (63), Vesterlund (67)

Figure 4-1

Average Passenger Boardings Per Vehicle by Time of Day

for 40 Non-Urban Routes near Malmo, Sweden



afternoon peak time because the A.M. peak half hours of both pupil and non-pupil travel are concurrent.

This suggests that, despite the commitment to a consolidated service, a significant potential savings is not being realized. Specifically the reduction in fleet requirements which could be achieved if the peak ridership periods did not coincide, is lost. One may speculate that this failure to reduce the peaking of ridership may be inherent in the nature of the activity system or that the potential benefits of coordinating the transportation service are not sufficient to justify altering conventional school hours. If this is so, the ability to effectively reduce fleet requirements (in the U.S. as well as Sweden) is in doubt.

Table 4-3

Peak Travel Periods in Malmo, Sweden

	am peak period	am peak ½ hour	pm peak period	pm peak ½ hour
Student travel	6:30-8:30	7:00-7:30	2:00-4:30	3:30-4:00
Non-student travel	6:00-8:30	7:00-7:30	3:45-6:00	4:00-4:30

Another interesting aspect of this case study is the manner in which pupil transportation is funded. The national government covers the cost of pupil transportation via user-side subsidies. Every three months, a check is sent to parents to cover the cost of educating their children under the age of 16. Older children attending high school receive their check directly. If the student must take public transit to school, the cost of transit passes is included in the amount of the check. Even at the university level, this cost is subsidized; however, college students must first apply to the government for financial aid.

4.2.9 Conclusions

These case studies illustrate that there are many examples of transporting students on public transit systems. These experience suggest the following basic conclusion - that where public transit and school buses are providing duplicative service and where the combined ridership on these two services can be accommodated by one of the services, it is advantageous to both the transit authority and the LEA to merge the services. Given that, in this situation, legislative and institutional constraints preclude using a school bus to transport the combined ridership, pupil use of public transit is the likely solution.

The case studies also suggest several service and demand characteristics that appear to significantly impact the operational aspects of using public transit for pupil transportation. These characteristics, in general, qualify the potential of the scenario described in the preceding paragraph.

1. Student travel patterns are not typically well served by public transit routes designed for the general public. This is especially true in areas where route coverage is sparse and routes are oriented toward major work and shopping sites.

2. Because of the regular transit service and student travel patterns between most transit properties which are requested to provide service for school, students implement tripper services. These runs usually have somewhat altered routes and are made at special times.

Virtually all of these experiences also demonstrate that some of the potential barriers of pupil use of public transit can be overcome. Moreover, these experiences suggest that certain perceived constraints may be inconsequential if the benefits that accrue from a merger are substantial enough.

1. One of the major problems more frequently purported by parents is safety. While there is a valid argument that pupils riding in school buses are less prone to accidents than pupils riding transit coaches (because of traffic and safety laws that pertain to school buses but do not pertain to transit coaches), the experiences

included in the case studies illustrate that using public transit for school transportation is a common phenomena in many cities and that the decrease in safety may not be as dramatic as surmised.

2. One of the case studies demonstrated that the dissimilarity between transit routes and student travel patterns may be overcome by using transit routes as feeder service to school bus routes or visa versa. This type of arrangement represents a compromise to the safety problem while serving to eliminate the duplication of service.

3. Another case study demonstrates how a shift of student travel time (to split the coinciding morning travel peaks of commuters and students) could dramatically lower the number of transit vehicles required to carry both sets of users. Moreover, the shifting of school schedules (to create the dichotomy of travel periods) has been demonstrated during past energy emergencies.

However, some of the case studies suggest problems that may be difficult to overcome.

1. State legislation, requiring that all students transported to school with public funds be guaranteed a seat, precludes the use of public transit for this purpose.

2. The Chicago case sets a precedent prohibiting contracts for tripper service. This may have a significant impact upon the future implementation of tripper service where the number of students that would ride these buses (i.e., and thus set revenue to the transit property) cannot be guaranteed.

Finally, these experiences illustrate the potential benefits that may accrue to the various actors from transporting pupils on public transit.

1. The LEA benefits from reduced transit costs, not only because the number of school buses is likely to be reduced, but because the cost to the LEA per student transported is, in every case studied, less than the cost per student transported by school bus.

2. The transit properties can also benefit financially if the additional riders merely increase the patronage on services. Moreover, most properties claim that tripper services can operate at little or no extra cost.

3. The community at large benefits from not having to support two full transportation systems. In addition, if the additional transit users do not require the provision of additional service, fare increases may be prolonged. However, if extra trips are being made (presumably for tripper service) during peak hours, this implies that there is a reduction in service provided to the public, i.e., additional public service could be operated with the vehicles used for tripper service.

4. Because it is a common practice among transit properties to base charges to the LEA on the basic fare structure of the system, the Federal government may be subsidizing these transit properties for the transportation of the general public more than is called for. This practice implies that part of the subsidy is being provided to the schools by the Federal government via the transit properties. Furthermore, this subsidy often leads to services (i.e., tripper services) that may not be cost-effective from the perspective of the properties.

5. To some extent, states that subsidize transit properties are also affected in this manner. However, the marginal funding which may be required to operate additional services for students may be less than the funding otherwise given to the state schools (or used directly) to purchase and operate or contract for school buses. Hence, there is a trade-off.

CHAPTER 5

ANALYSIS OF POSSIBLE COORDINATION STRATEGIES

The case studies, presented in the previous chapter, illustrate that the coordination of pupil and public transportation is feasible and desirable under certain circumstances. These examples, however, do not provide a sufficient base of experience upon which to identify a reasonable set of designs which warrant further examination and demonstration. The case studies do not cover all possible coordination strategies; nor is it clear that they represent the best design possible given local service goals and operating constraints. This chapter provides an analysis of the potential benefits of coordination and identifies strategies which might be employed to achieve them. The analysis results in a small number of possible coordination strategies which appear to be the most desirable.

In order to narrow down the set of possible strategies into those which hold the greatest promise, a three step process is followed. First, specific benefits are identified and broken down into some basic components. For each component, an estimate of the potential magnitude of benefits is determined under various circumstances. Based on this investigation, possible service concepts which can best achieve the specified benefit are introduced. Finally, the drawbacks and institutional barriers to implementing such strategies are identified and a subjective trade-off is made to evaluate the value of the service concept. These concepts are then compared in an attempt to identify those which may be of most interest to a variety of localities.

5.1 Benefits of Coordination

The primary benefit resulting from the coordination of school and public transportation programs is an increase in the efficiency of the operations and, thus, reduced costs. The cost structure of combined services might be reduced by a decrease in capital expenditures for vehicles and equipment, by the elimination of some operating costs of duplicative services, or by the consolidation of underutilized administrative, support, and other overhead resources. A secondary benefit, improved mobility, may be achieved as a direct result of these cost savings. Since reduced costs allow the total transportation budget to go farther, the amount of service may be increased. Furthermore, coordination may allow a constrained number of vehicle to serve additional demands. Finally, coordination may result in a more equitable distribution of benefits if new services are designed to reach markets which support existing operations but do not benefit from them.

5.1.1 Monetary Savings

Since the majority of costs for both public transit and school bus service is related to the operation of the vehicle, (in terms of driver wages and benefits, fuel, and repairs), the biggest savings can be achieved through the elimination of vehicle miles of travel. Using national averages, $0.58 can be saved for each mile of school bus travel eliminated; transit service operating cost per vehicle mile averages $0.93. Actual savings in a particular location will depend on the site specific cost structure. Differences from the national average are very likely to result from differences in wage rates. In addition, work rules for both school and public bus drivers will affect the marginal cost of operating each vehicle. Note that work rules may cause savings to be above or below the average cost per mile.

Coordination strategies may also reduce operating costs as a result of service being shifted from a higher to a lower cost operator. In general, this would occur if a service operated by a public transit authority were turned over to the school bus operator. The magnitude of the savings resulting would be expected to average approximately $0.35 per vehicle mile, based on national averages. If no change is made in the type of vehicle used, the non-labor costs would remain constant; thus,reducing the potential savings to that resulting from a reduction in driver hours paid. If driver wages are low, or work rules result in only minimal reductions in the number of driver hours eliminated, the magnitude of this benefit would be reduced a great deal. On average, however, driver pay represents over 40% of variable costs, therefore, significant benefits are expected even if the same vehicles are used.

Another major cost saving can be achieved through a reduction in the fleet size required to operate a combination of services. Such a reduction in the number of vehicles owned and operated may be achieved when separate fleets, operating services which exhibit peaking characteristics which are not coincident, are combined into a single fleet. Likewise, the use of existing vehicles to provide a new service also eliminates potential increases in vehicle ownership costs. On average, the costs of owning, insuring and licensing a school bus runs approximately $2750 per year (varying by state and size of vehicle). The true cost of owning a transit coach is not as well documented. Since most such vehicles are bought using federal capital assistance and are not accounted as a depreciation expense, no standard is available. If, however one assumes a 15 year lifespan of a transit coach with an initial price of $100,000 and an interest rate of 10%, depreciation and opportunity cost of the fleet add up to an average annual cost of $11,300 per vehicle.

The coordination of administrative and other support (especially repair) services may result in additional monetary savings. On average, school bus administrative and repair costs represent 9% and 16.5% of the total school transportation budget, respectively.[1] Administrative and repair cost represent 11% and 18% of the typical bus transit operating budget, respectively.[1] Given these figures, if the school

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[1] Repair figures include labor and parts costs; much of which would be expected to continue even if shops were combined. Such costs have been included in the estimation of savings resulting from operating cost reduction.

bus support services could be performed by a transit authority, without any increase in labor, somewhat over 16.6% of the school transportation budget might be saved. (One would expect only minimal reductions in the cost of repair parts, representing 9.9% of the transportation budget; therefore, the full cost of school bus support could not be eliminated.) Unfortunately, it is unlikely that even these savings could be achieved, especially if actual services remain separate. A major impedinent to combining repair functions results from differences in the types of vehicles used. Since school busesare commonly gasoline powered and transit coaches use diesel fuel, a combined service is likely to require not only separate parts inventories for the two fleets but also different mechanics for each vehicle type. As a result, little benefit would be anticipated at this level. With respect to administrative services, the differences in goals of an LEA and transit authority would be expected to deter coordination. Strong concerns for student safety by the LEA and the resulting desire for direct control over school bus services make it unlikely that a transit authority could take over a consolidated administration. Furthermore, the only case in which administrative and repair services are likely to be combined is in concert with some other coordination of services. For this reason, strategies specifically designed to achieve this benefit will not be presented. Approaches to achieve other goals should involve consideration of these benefits.

5.1.2 Mobility Improvement

The coordination of student and public transportation services might also produce some improvement in the mobility within a community for three reasons. First, a reduction in the costs of service may mean that more service can be provided within existing budget constraints. Second, a community may be willing to provide a service with a low cost coordinated operation but be unwilling to operate it if a higher cost provider must be used. Third, an operator, who does not have vehicles available with which to run a needed service, may be able to take advantage of an alternative vehicle fleet which is not fully utilized at the time he is short of vehicles. Two types of mobility benefits which might occur include: 1) persons being able to make trips they would not otherwise have made, and 2) a shift of modes to transit from less energy efficient (eg. driving alone) or less convenient (eg. being driven) modes.

The magnitude of any mobility benefits from a coordinated service will depend entirely on the quality of the service design. Services which are initiated in response to a sudden and significant increase in the need for transit services (such as in an energy shortage) will obviously produce the greatest benefits. Furthermore, under such circumstances, one would expect a large portion of the ridership generated to be made by persons who would not (or could not) have made the trip otherwise. Under normal conditions, the level of ridership is not likely to be as great, but as the Concord case study illustrated, a well designed free-fare service in a community of 17,500 can attract 300 riders per day using only two vehicles.

5.1.3 Equity Considerations

In addition to the direct monetary and mobility benefits which can result from the coordination of school bus and general public transportation, some arrangements may result in the less tangible benefit of better distribution of the benefits from available services. Equity considerations can be applied to coordination strategies employing both school bus and public transit vehicles.

In general, school transportation is funded by the local community through property taxes, sales taxes, or other changes which apply to all members of the community, and by state funds which also originate from general sources. Given this funding structure, school bus operations are financed not just by those members of the community who receive a direct benefit but also by many who do not have children in the school system. Several specific segments of the community, such as the elderly, are notably impacted by this inequity. The situation may be further compounded if few other municipal services are provided to these elements of the community. One method by which this inequity can be at least partially alleviated is through the provision of services targeted at these markets using the school buses. This was part of the motivation in the Concord, Massachusetts case study. Although such services are not likely to fully compensate for the inequities in school funding, they can represent a meaningful approach to improving perceptions such groups have toward the school system.

5.2 Promising Service Configurations

Each of the benefits, discussed in the previous section, may be achieved under certain conditions using a variety of system designs. The following discussion presents the most common circumstances in which the benefits can most likely be obtained and those designs which appear most appropriate to meet the desired goals. In addition, some factors which may serve as barriers to the implementaton of such plans are presented.

No discussion will be included on the potential of consolidating administrative and other overhead resources, as previously indicated. There will also be no further elaboration on achieving equity benefits, since no more detail can be provided with respect to these alternatives than has already been discussed.

5.2.1 Reducing Operating Expenses Through Consolidation

If duplicative fixed route service exists between two separate transportation service, it may be possible to eliminate a portion of the operating costs through consolidation of routes. For example, if ridership levels on similar public transit and student routes are sufficiently low (probably averaging somewhat less than half the potential capacity at peak loading points), it may be possible to entirely eliminate one of the routes by modifying the continuing route to serve both sets of demands.

Based on the cost structure of school and public transit, elimination of a public transit run and modification of a school bus route to serve the public would be expected to generate larger savings than if the public transit vehicle were retained. (The school bus could also be used throughout its off-peak hours.) This may not be true, however, in the few communities where the school bus cost structure is higher than that for public transit or if the elimination of the public transit route cannot be translated into a reduction in driver hours paid by the transit authority. Additional costs might be incurred as a result of necessary modifications to the school bus seating arrangements in order to enhance adult comfort, and the installation of fare collection equipment.

The strategy in which the public transit vehicle is eliminated is limited by a number of institutional constraints, including: 1) state laws that prohibit the co-mingling of pupils and non-pupils on school buses; 2) state laws that prohibit any use of school buses that interferes with pupil transportation; 3) state laws that prohibit non-pupil use of publicly owned school buses; and 4) federal regulations that disallow pupil standees on school buses. Other adverse state legislation includes the potential revocation of state funding for pupil transportation if the existing system is modified significantly. In addition, there may also be potential labor problems. The feasibility of this alternative is also limited by the potential loss of public transit ridership resulting from the physical design of the school bus transit route, and the unwillingness of adults, especially elderly, to ride in a vehicle with predominantly student riders.

Although the elimination of some school bus services by serving the home-to-school demands with public transit is not likely to generate as large monetary benefits, such designs should face fewer barriers to implementation. As a result, in the few situations where this design is feasible, it is likely to be advantageous. The conditions necessary to support the design include: 1) the existence of public transit routes which need only minor modifications to meet home-to-school demands; and 2) ridership on these routes which are low enough to allow the consolidation of the school travel. In most school districts, students are not expected to walk any significant distance to the bus stop to which they are assigned (in order to maintain student safety). The school bus route structure tends to be rather dense. In order to maintain this characteristic of home-to-school transportation, the public route structure should be equally dense or else significant route modifications would be required. This consideration is likely to limit the applications of this design to areas with substantial transit coverage. In addition, the condition that public routes are underutilized during the morning student peak period do not exist in many areas. Transit services which serve primarily shopping trips (which are made most frequently during midday periods) are likely to meet this criteria; hence, such designs are likely to be most appropriate on areas where work trips are not adequately served by transit. "Bedroom" communities (those in which most residents work in neighboring cities) with transit services geared toward intra-community trips appear to be most promising.

A potential drawback to supplanting school bus service with public transit is the possibility that such services might become the exclusive domain of the public transit operator in the future. Labor agreements may effectively eliminate the possibility of reinstituting school bus service operated by the school district or private contractor when subsequent changes in ridership characteristics eliminate the benefits achieved from coordination.

The broad range of institutional constraints, along with the low probability that duplicative transit and school bus services are operating at sufficiently low capacities, leads one to consider this form of school bus/public transit coordination of only secondary interest.

5.2.2 Strategies for Reducing Operating Cost Structure

In the majority of communities where the cost structure of school bus services is considerably less than that of public transit, the possibility exists of reducing operating costs of a service by using a school bus rather than a conventional transit coach. This option differs from that just described in that the school bus would operate the public and student services at separate times. Problems involving the concurrent use of vehicles by students and the general public would not be encountered.

In general, the separation of service only requires that the travel patterns of the student and public markets to be compatible. Some forms of public service which might be appropriate for this type of coordination include:

- tourist shuttles (winter and summer vacation),
- neighborhood jitneys (primarily midday and weekends),
- elderly and handicapped contract services (middays), and
- employer shuttle and subscription services (early morning, late afternoon).

In addition, other services could be operated by the school bus provider during the midday, on weekends, and in the summer, while conventional transit buses are used during school transportation peak periods. If the service requires a sufficiently small number of vehicles, it may be possible to operate the service throughout peak periods without a noticeable degradation of school transportation. It is unlikely that any off-peak service will require so many vehicles that the LEA's midday field trip service or flexibility to respond to special needs would be impaired.

The use of school buses to provide general public service would encounter a number of the other problems identified in the previous section. Specifically, the physical design of the vehicles and lack of fare boxes may cause problems. Furthermore, legislative barriers in some states which prohibit the use of school buses for non-pupil transportation and potential labor difficulties may block the successful implementation of this strategy.

5.2.3 Strategies for Eliminating Vehicle Ownership Costs

The strategies presented below are designed to reduce expenditures associated with vehicle ownership either by eliminating some vehicles in the existing fleet or by avoiding the need to obtain additional vehicles. In general, this would involve the use of the underutilized school bus fleet, but could involve the use of public transit resources as well. A major difference between these alternatives and those discussed earlier is that the operating costs would not change substantially. This results either because the same labor force continues to operate the vehicles or because the cost structures of the two sectors are essentially the same. Note that the type of vehicle used will have a relatively minor impact on the system operating costs.

One situation in which vehicle ownership costs might be avoided in this manner is in a community with no existing transit service (and which is not part of a transit authority) but which intends to implement some specialized off-peak (or possibly full day) service for a small population. If a school bus fleet exists within the community (and it is not fully utilized during off-peak hours), it is quite feasible to employ this resource rather than purchase new vehicles. If surplus school buses are not available during the peak service hours the service would have to be constrained to non-peak hours.

This service design holds a great deal of potential in terms of generating benefits without encountering severe operational or institutional barriers. Since no transit service exists in the community, the labor difficulties identified for other options will not be encountered. The primary problems are likely to be those associated with vehicle design and legislation restricting the use of the vehicles. It may be possible to avoid the vehicle design problem by using those vehicles in the fleet which are easily boarded (including large capacity buses which have lower steps and more aisle room or smaller vehicles some of which may be equipped with wheelchair lifts). Such vehicles are not likely to be readily available during normal transit peak hours.

Another situation in which the cost of acquiring additional transit coaches can be avoided, or at least postponed, is in the case where proposed new transit services are being provided on a test basis. If the transit authority has no alternative use for vehicles assigned to the demonstration, a decision not to continue the demonstration would mean the additional vehicles operating the route during the test period would no longer be needed. By using vehicles from the school bus fleet, the capital outlay associated with the testing of the service is eliminated. (Only fare collection equipment would need to be purchased and installed in the vehicles).

The primary disadvantage of this use of school buses is that the physical design of the vehicle may constrain demand somewhat. The only other problem which might be encountered is the lack of available vehicle during school travel peak periods. Again, the availability of surplus buses in the student service fleet would eliminate this problem.

Similar alternatives in which school bus acquisitions are avoided by using vehicles within the public transit fleet can also be considered. Two important issues should be noted with respect to these applications. First, there is much less opportunity to employ such a strategy with respect to the school transportation program. These programs remain relatively constant and few anticipate the provision of new services. This is especially true since the rapid expansion of school bus service in the mid-1970's has begun to slow down. Second, it is unlikely that most heavily unionized federally subsidized transit authorities could allocate vehicles to another operator on a temporary or permanent basis due to institutional and legislative barriers. It is illegal for a transit authority to lease out vehicles it has purchased in part with Federal capital grants. Furthermore, labor could be expected to block any use of transit authority vehicles if they were not to be driven by members of their bargaining unit. Increased operating expenses associated with the use of transit drivers can be expected to offset any vehicle acquisition cost savings.

5.2.4 Strategies for Improving Mobility

There are a number of strategies for coordinating school and public transportation which result in improved mobility for either the general public or special market segments. These result from the provision of new or improved transit services which would not otherwise be implemented. There are two likely situations in which coordination would play such an important role: 1) if the cost of operating the service in a conventional manner are beyond what the community is willing to pay; and 2) if the resources to provide service in a conventional manner are not available and cannot be obtained within the time frame appropriate for the desired service.

In some communities, the potential demand which could be generated by a transit service is not sufficient to justify the costs of operations. As a result, in many rural areas, small towns, and suburban communities, there exists a small, but significant, unmet need for transit services. In rural areas and other communities with no transit services, the demand may be great enough to justify direct operating costs of service but not large enough when overhead and administrative costs are added in. For communities in which the transit authority is the sole provider, the demand may simply not justify the high cost structure associated with conventional public transit[1]. In both of these cases, the use of existing school buses may reduce the cost of service to the point at which the community is willing to support them.

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[1] This condition is illustrated throughout the country by the use of private contractors to provide new suburban community fixed-route and demand-responsive services in areas also served by transit authority.

The types of services which are most likely to generate mobility benefits using school buses are those which are targeted at specific markets during midday, evening, and weekend periods. Since most school buses are large, carrying 66 passengers or more, the most common service design which might be used is a midday fixed-route service going between shopping and residential areas. In addition, smaller vehicles might be useful to operate demand-responsive services for the elderly and handicapped.

Constraints and difficulties which may restrict the success of such an alternative include vehicle design, state regulations prohibiting the use of school buses (in a few locations), and labor problems. Of these, the labor difficulties may be the most difficult to resolve. Experiences from the use of private contractors in some areas, however, indicates that, if they feels the alternative is no service, transit labor may be willing to allow the school bus operator to provide service. This resolution of labor issues must be investigated on a site by site basis.

The generation of mobility benefits is likely to be even greater in a scenario where there is a sudden or short-term increase in the demand for transit services beyond that which can be handled by the transit authority. Such large increases in demand commonly result from emergency conditions which eliminate resident's ability to use their automobiles. Energy shortages and weather conditions are the most common emergency situations with these results. In addition to these circumstances, other short-term activities, such as the Olympics in Lake Placid, New York, result in a similar need for increased transit service. In response to such a need, school buses are often the only source which can adequately respond to the situation.

During emergency situations, the need to avoid disrupting school transportation services becomes less compelling than it is under normal circumstances. Because the requirements for service is often so great among the general public, school districts have shown themselves willing to modify their operations in order to make vehicles available during peak public transit usage periods. These school district actions include the modification of school hours (sometimes cancelling school) and the modifications of school bus routes to carry more students per bus (by increasing ride times). Several examples in which school districts modified their operations for these reasons were documented in the previous chapter.

There is less opportunity to use public transit to serve students and improve mobility through coordination. The nature of school travel is too stable and controlled to exhibit short term increases in demand. The major condition in which transit might be used to handle additional student demand is when a school district substantially reduces the amount of service it is providing (e.g., for funding reasons or school closings). In this case, the transit service could pick up some of the excess demand by modifying its routes. Note, however, that such strategy is not substantially different from the standard practices of transit operators. In fact, there is no real coordination being practiced in this case. The transit property is simply reacting independently to a perceived need.

5.3 Summary

There are a variety of coordination strategies which appear to be beneficial and could be implemented without encountering overwhelming institutional and operational barriers. These options primarily involve the use of school buses in the provision of public services, but there are also some situations in which public transit may be able to more effectively supply home-to-school transportation.

The primary benefits which may be generated from the coordination of these two sectors include:

1) cost reduction,
2) mobility, and
3) equity.

The cost reductions can be achieved by consolidating duplicative services, by reducing the basic cost structure to provide service, and by avoiding the costs associated with vehicle acquisition and ownership. Of these monetary benefits, consolidation of services is likely to have the greatest impact and vehicle acquisition savings the least; however, the opportunities to reduce vehicle acquisition costs are probably greatest while the possibility of consolidating service is slim. Mobility improvements may occur either when the use of public transit to operate a proposed service is prohibitively expensive but the costs of service using school buses are appropriate, or when a sudden or short term increase in demand exceeds the capabilities of the transit system to respond. Benefits resulting from improved equity occur when service is provided for a market segment which pays a substantial portion of the operating costs is currently receiving no service. This benefit may apply to persons who pay school taxes, but do not have children in the school system, and to those who support transit but do not find service suits their needs.

The most promising and widely applicable service designs for coordinating student and public transportation services involve the use of school buses to provide public transit. The most beneficial alternatives involve the use of school buses as a supplementary vehicle source to respond to sudden and/or short term increases in the demand for public transit. Conditions in which such designs would be applicable include the development of emergency situations (e.g., energy shortage, natural disaster, abnormal weather), temporary transit coach shortages resulting from excessive breakdowns of the fleet, or special activities (e.g., sporting events, fairs, etc.) which draw a significant number of persons from outside the area. Such service design might be applicable in any area which allows such use of school buses, ranging from large metropolitan areas with stable transit operations to rural or suburban areas with no alternative public transportation.

A second promising design using school buses involves the operation of services specifically designed for segments of the public whose travel patterns are complementary to home-to-school trips. These designs might be used to meet the needs of shopping trips, tourist travel, or the elderly. In each of these cases, travel is likely to occur during middays, weekends, summers, and other vacation periods when school buses are usually sitting idle. Such designs are most likely to succeed in areas with no existing transit services (small towns and rural areas) or in communities with only limited transit (suburban areas). The existence of a public transit authority serving a community is likely to be a major barrier to the implementation of such designs, however, due to the potential for labor problems.

A final design which appears worthy of further consideration is the use of school buses as a supplementary source of vehicles, even when no emergency situation exists. The use of school buses to meet temporary service designs, such as if a transit route were being tested on the road prior to a commitment being made to continue operations, may prove to increase the flexibility of transit operators and avoid some vehicle acquisition costs. These alternative designs could involve the operation of supplementary vehicles by the transit drivers.

There are fewer promising designs for the use of transit coaches in coordinated service. The most beneficial is the consolidation of student transportation into existing transit services. This design can prove effective if one or more transit routes closely parallel the school bus routes and these routes are operating at sufficiently low capacity to handle the student demand with only small modifications in route alignment. Such a design appears to be most appropriate where the public transit route structure is dense enough to adequately cover student residential locations and where transit peaking characteristics are unusual and times of maximum riderships on the two services do not occur simultaneously. The general nature of public transit implies there will be few areas suited to these conditions. Furthermore, institutional and legislative barriers may make it difficult to implement this approach in many areas.

Finally, a design in which public transit coaches are employed to serve demand for home-to-school travel which are not met by school bus operations may be considered. Such designs might be directed toward students not eligible to receive school- provided transportation or those who no longer receive services due to cutbacks in school provided services. Although these systems would involve the use of public transit to serve student demands, they should not really be considered a coordinated designs. In fact, the design can be more accurately viewed as an independent response of the public transit provider employing common practices to serve the needs of the community.

Note that, to some extent, the designs presented here have been tested and examined with some success. Further testing of these options should aid in the determination of conditions which make them successful and aid in eliminating some institutional barriers and expanding their use throughout the country.

CHAPTER 6

SUMMARY AND CONCLUSIONS

As of 1978, there were 391,000 school buses and 64,000 public transit coaches in operation in the United States. In general, both of these vehicle fleets appear to be fully utilized for only small portions of the day. As a result, the coordination of these two systems has been suggested as a method of reducing costs and providing better service.

The results of this study indicate that such coordination is indeed desirable under some, but not all, conditions. The primary benefits which may be achieved include: 1) reduced costs resulting from more efficient use of resources (vehicles, and labor); 2) improved mobility for the general public or special market segments; and 3) a more equitable use of funds generated to operate public transit and school district operations.

Although it may be advantageous to coordinate the operations of these two transportation services, such coordination is usually not easy to accomplish. Barriers to coordination fall into two broad categories: 1) legislative, regulatory, and institutional restrictions; and 2) operational characteristics.

The regulatory and institutional barriers to coordinating public and school transportation service come from three primary sources: Federal laws, state laws, and the concerns of the local educational agency.

Federal laws and regulations include restrictions on the ability of federally supported transit authorities to operate school bus service. This is not to say that students cannot ride a transit route to school, but that routes must be open to the general public and not carry designations such as "school bus" or "school special." Furthermore, this regulation states that the bus may only pickup and discharge students at a regular service stop. Federal law, specifically Section 13c of the Urban Mass Transportation Act of 1964, also creates the potential for labor problems in the coordination of pupil and non-pupil transportation. Labor problems are likely to be encountered with any system design which transfers the operation of a service from the public transit authority to a school bus operator. Difficulties may also be anticipated if a new service, which would normally be operated by the transit authority, is provided using school buses. In most cases, such barriers will be difficult to avoid or resolve; however, labor constraints should not be as serious if emergency conditions exist or if transit authority employees realize that a proposed service will not be operated at all if the transit authority cost structure is applied.

State laws and regulations primarily affect the transportation of students but also regulate the use of vehicles owned by school districts. State regulations vary widely from one state to the next, specifying aspects of school bus operations such as who must be provided service, what type of vehicles are to be used, who must operate the service, and how school buses may be used. Approximately half of the states now either restrict the use of publicly-owned school buses from other uses or limit their non-school services by specifying who they may be used for and what sort of organization can contract with the school district for service. However, it should be noted that such regulations can be changed. Over the past several years, a number of states have loosened restrictions on the use of school buses. This trend points toward an increased ability to provide coordinated services.

Barriers introduced by local school districts come primarily from a very strong concern for the safety of their students. In many cases, this concern results in an unwillingness of the school transportation department to become involved in coordinated efforts. Objections from the school districts of any system can be expected in cases which impact existing school bus operations, (such as the mixing students and general public on school buses), and in cases where the school district loses direct control over the provision of services.

From an operational standpoint, there are several factors which inhibit the ability to coordinate transit and school bus services. The most important operational consideration is that both school and public transit services tend to have peak ridership during the same time periods. As a result, in many locations, all available vehicles are in use during some portion of the day. In addition, three aspects of school bus operations restrict the ability to use these vehicles in public service. School buses are generally designed to accommodate children, not adults. A common school bus lacks sufficient leg room and aisle space for the comfort of adults. (Despite these apparent disadvantages, the general public has shown a willingness to ride transit services provided with school buses.) No fare collection facilities exist in school buses; therefore, some modifications might be needed for any service in which money is collected on the bus. Some school bus operators who have tried to operate services open to the public have found obtaining necessary insurance too expensive to justify. Finally, the significant difference between the school bus cost structure and that of the public transit operator indicates that there will be few situations in which it will be cost-effective (in terms of total cost of the operation) to use a transit authority to provide school bus service. Only if the marginal cost of carrying the additional load is much lower than the average operating costs, will such a design make sense.

None of these barriers eliminate the potential for achieving the benefits for coordinating these two sectors. There are numerous examples of public use of school buses and pupil use of public transit currently operating in the United States. Public use of school buses indicates that small scale ongoing public services and larger scale use of school buses in response to emergency situations are viable. The use of public transit to provide for home-to-school transport is actually common among most transit operators. Although these examples prove the viability of certain forms of coordination under a few circumstances, they do not encompass the full range of potentially promising system designs.

There are several designs which appear to be promising in those areas where legislation and regulations do not restrict their implementation. Three basic designs which have been identified in this study as being beneficial and applicable to many areas including:

1) the use of school buses as a supplementary source of vehicles by a transit operator;

2) the provision of services for certain market segments which exhibit temporal ridership characteristics which are complementary to student travel using school buses; and

3) the consolidation of student routes into existing public transit fixed routes (modifed as necessary).

School buses can be used as a supplementary source of vehicles by a transit authority, in order 1) to respond to sudden or short-term increases in demand; 2) to make up for significant vehicle shortages resulting from breakdowns; 3) to test a new service; or 4) to provide for times in which there is a long wait to delivery of new vehicles. Sudden increases in demand are likely to occur as a result of emergency conditions such as a fuel shortfall or bad weather. (Note that in such cases many institutional and regulatory barriers may be alleviated.) In these cases, the school bus fleet is likely to be the only source of vehicles which can readily respond to the great need for public transit opportunities by the population. Special activities (such as sporting events, fairs, etc.) and seasonally related demand for public transit may also result in the need for supplementary vehicles. Although the benefits on such occasions are likely not be be as great as during an emergency, this use of school buses should also generate substantial mobility benefits. Finally, school buses might be used as a supplementary vehicle source to operate a proposed new route to test the potential demand. The use of a school bus may alleviate the need for a transit authority to commit itself to acquiring the additional vehicles needed to operate the test route before a decision on its continued operation has been made.

School buses might also be used to provide special public services which do not interface with the existing student services. Some of the service types which might be appropriate include:

1) tourist shuttles (during winter and summer vacations),

2) neighborhood jitney and shopping services (middays and weekends),

3) employer shuttle and subscription (early mornings and later afternoon), and

4) elderly and handicapped contract service (midday).

These designs for temporally complementary school bus services are especially well suited to rural areas, small communities, and suburban areas which have no or very little public transit service. Such areas are likely to have a greater need for a low-cost alternative to conventional public transit and should not encounter labor problems which could block successful service implementation.

The most promising coordination strategy involving the use of public transit to serve students is in those areas which have significantly underutilized routes during student travel peak periods. If a transit system exhibits peak public ridership during the midday hours, which is sometimes noted on systems which primarily serve shopping trips, it may be possible to modify routes slightly to serve the schools during peak periods. This application can result in a direct reduction in costs to the school district without increasing expenses on the public transit operation.

Although the examination of case studies and the analysis of benefits performed in this report indicate that the designs presented above should yield net benefits, they do not provide sufficient information upon which to estimate the impacts of specific designs in given settings. In particular, the experiences with school bus/transit coordination have not been subject to systematic evaluation. Several issues remain which have not been entirely resolved, including: 1) the willingness of the general public to ride on school buses and how the vehicle type impacts demand; 2) the marginal cost of home-to-school service operated by a transit authority; and 3) the characteristics of those markets with temporal travel characteristics compatible with pupil transportation. A demonstration or set of demonstrations with a formal evaluation should yield insight on these and related issues. This type of information could provide critical input to the process of establishing guidelines and altering regulations to promote the implementation of beneficial coordinated service designs.

CHAPTER 7

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APPENDIX A

HIGHWAY SAFETY PROGRAM STANDARD NO. 17

Pupil Transportation Safety

I. *Scope.* This standard establishes minimum requirements for a State highway safety program for pupil transportation safety; including the identification, operation, and maintenance of schoolbuses; training of personnel; and administration.

II. *Purpose.* The purpose of this standard is to reduce, to the greatest extent possible, the danger of death or injury to schoolchildren while they are being transported to and from school.

III. *Definitions.* "Type I school vehicle" means any motor vehicle with motive power, except a trailer, used to carry more than 16 pupils to and from school. This definition includes vehicles that are at any time used to carry schoolchildren and school personnel exclusively, and does not include vehicles that only carry schoolchildren along with other passengers as part of the operations of a common carrier.

"Type II school vehicle" means any motor vehicle used to carry 16 or less pupils to or from school. This does not include private motor vehicles used to carry members of the owner's household.

IV. *Requirements.* Each State, in cooperation with its school districts and its political subdivisions, shall have a comprehensive pupil transportation safety program to assure that school vehicles are operated and maintained so as to achieve the highest possible level of safety.

A. *Administration.* 1. There shall be a single State agency having primary administrative responsibility for pupil transportation, and employing at least one full-time professional to carry out its responsibilities for pupil transportation.

2. The responsible State agency shall develop an operating system for collecting and reporting information needed to improve the safety of school vehicle operations, in accordance with Safety Program Standard No. 10, "Traffic Records," § 204.4.

B. *Identification and equipment of school vehicles.* Each State shall establish and maintain compliance with the following requirements for identification and equipment of school vehicles. The use of stop arms is at the option of the State.

1. Type I school vehicles shall:

a. Be identified with the words, "School Bus," printed in letters not less than 8 inches high, located between the warning signal lamps as high as possible without impairing visibility of the lettering from both front and rear, and have no other lettering on the front or rear of the vehicle;

b. Be painted National School Bus Glossy Yellow, in accordance with the colorimetric specification of Federal Standard No. 595a, Color 13432, except that the hood shall be either that color or lusterless black, matching Federal Standard No. 595a, Color 37038;

c. Have bumpers of glossy black, matching Federal Standard No. 595a, Color 17038; unless, for increased night visibility, they are covered with a retroflective material.

d. Be equipped with a system of signal lamps that conforms to the schoolbus requirements of Federal Motor Vehicle Safety Standard 108, 49 CFR 571.21; and

e. Have a system of mirrors that will give the seated driver a view of the roadway to each side of the bus, and of the area immediately in front of the front bumper, in accordance with the following procedure:

When a rod, 30 inches long, is placed upright on the ground at any point along a traverse line 1 foot forward of the forwardmost point of a schoolbus, and extending the width of the bus, at least 7½ inches of the length of the rod shall be visible to the driver, either by direct view or by means of an indirect visibility svstem.

2. Type I school vehicles that are operated by a privately or publicly owned local transit system, and used for regular common carrier transit route service as well as special school route service, shall meet all of the requirements of this standard, except as follows:

a. Such vehicles need not be painted yellow and black as required by paragraphs 1(b) and 1(c) of this section.

b. In lieu of the requirements of paragraph 1(a) of this section, such vehicles shall, while transporting children to and from school, be equipped with temporary signs, located conspicuously on the front and back of the vehicle. The sign on the front shall have the words "School Bus" printed in black letters not less than 6 inches high, on a background of national school bus glossy yellow, as specified in paragraph 1(b) of this section. The sign on the rear shall be at least 10 square feet in size and shall be painted national school bus glossy yellow, as specified in paragraph 1(b) of this section, and have the words "School Bus" printed in black letters not less than 8 inches high. Both the 6-inch and 8-inch letters shall be Series "D" as specified in the Standard Alphabets—Federal Highway Administration, 1966.

c. Where such vehicles are used only in places where use of warning signal lamps is prohibited, they need not be equipped with the signal lamps required by paragraph 1(d) of this section.

3. Any school vehicle meeting the identification requirements of 1.a-d above that is permanently converted for use wholly for purposes other than transporting pupils to or from school shall be painted a color other than National School Bus Glossy Yellow, and shall have the stop arms, and equipment required by section IV.B.1.d, removed.

4. Type I school vehicles being operated on a public highway and transporting primarily passengers other than school pupils shall have the words, "School Bus," covered, removed, or otherwise concealed, and the stop arms and equipment required by section IV.B.1.d shall not be operable through the usual controls.

5. a. Type II school vehicles shall either:

(1) Comply with all the requirements for Type I school vehicles; or

(2) Be of a color other than National School Bus Glossy Yellow, have none of the equipment specified in IV.B.1.d, and not have the words, "School Bus," in any location on the exterior of the vehicle, or in any interior location visible to a motorist.

b. The State shall establish conditions under which one or the other of the above two specifications for Type II vehicles shall apply.

C. *Operation*. Each State shall establish and maintain compliance with the following requirements for operating school vehicles:

1. *Personnel*. a. Each State shall develop a plan for selecting, training, and supervising persons whose primary duties involve transporting school pupils, in order to assure that such persons will attain a high degree of competence in, and knowledge of, their duties.

b. Every person who drives a Type I or Type II school vehicle occupied by school pupils shall, as a minimum:

(1) Have a valid State driver's license to operate such a vehicle(s);

(2) Meet all special physical, mental, and moral requirements established by the State agency having primary responsibility for pupil transportation; and

(3) Be qualified as a driver under the Motor Carrier Safety Regulations of the Federal Highway Administration 49 CFR 391, if he or his employer is subject to those regulations.

2. *Pupil instruction*. At least twice during each school year, each pupil who is transported in a school vehicle shall be instructed in safe riding practices, and participate in emergency evacuation drills.

3. *Vehicle operation*. a. Each State shall develop plans for minimizing highway use hazards to school vehicle occupants, other highway users, pedestrians, and property, including but not limited to:

(1) Careful planning and annual review of routes for safety hazards;

(2) Planning routes to assure maximum use of buses, and avoid standees;

(3) Providing loading and unloading zones off the main traveled part of highways, wherever it is practicable to do so;

(4) Establishing restricted loading and unloading areas for schoolbuses at, or near schools;

(5) Requiring the driver of a vehicle meeting or overtaking a schoolbus that is stopped on a highway to take on or discharge pupils, and on which the red warning signals specified in IV.B.1.d are in operation, to stop his vehicle before it reaches the schoolbus and not proceed until the warning signals are deactivated; and

(6) Prohibiting, by legislation or regulation, operation of any vehicle displaying the words, "School Bus," unless it meets the equipment and identification requirements of this standard.

b. Use of flashing warning signal lamps while loading or unloading pupils shall be at the option of the State. Use of red warning signal lamps for any other purpose, and at any time other than when the school vehicle is stopped to load or discharge passengers shall be prohibited.

c. When vehicles are equipped with stop arms, such devices shall be operated only in conjunction with red signal lamps.

d. *Seating*. (1) Seating shall be provided that will permit each occupant to sit in a seat in a plan view lateral location, intended by the manufacturers to provide seating accommodation for a person at least as large as a 5th percentile adult female, as defined in 49 CFR 571.3.

(2) Bus routing and seating plans shall be coordinated so as to eliminate standees when a school vehicle is in motion.

(3) There shall be no auxiliary seating accommodations such as temporary or folding jump seats in school vehicles.

(4) Drivers of school vehicles equipped with lap belts shall be required to wear them whenever the vehicle is in motion.

(5) Passengers in Type II school vehicles equipped with lap belts shall be required to wear them whenever the vehicle is in motion.

D. *Vehicle maintenance*. Each State shall establish and maintain compliance with the following requirements for vehicle maintenance:

1. School vehicles shall be maintained in safe operating conditions through a systematic preventive maintenance program

2. All school vehicles shall be inspected at least semiannually, in accordance with Highway Safety Program Manual Vol. 1, published by the Department of Transportation January 1969. School vehicles subject to the Motor Carrier Safety Regulations of the Federal Highway Administration shall be inspected and maintained in accordance with those regulations (49 CFR Parts 393 and 396).

3. School vehicle drivers shall be required to perform daily pretrip inspections of their vehicles, and to report promptly and in writing any defects or deficiencies discovered that may affect the safety of the vehicle's operation or result in its mechanical breakdown. Pretrip inspection and condition reports for school vehicles subject to the Motor Carrier Safety Regulations of the Federal Highway Administration shall be performed in accordance with those regulations (49 CFR 392.7, 392.8, and 396.7).

V. *Program evaluation.* The pupil transportation safety program shall be evaluated at least annually by the State agency having primary administrative responsibility for pupil transportation. The National Highway Traffic Safety Administration shall be furnished a summary of each evaluation.

APPENDIX B

ASPECTS OF PUPIL TRANSPORTATION MENTIONED SPECIFICALLY IN THE LAWS OF THE STATES

APPENDIX B

ASPECTS OF PUPIL TRANSPORTATION MENTIONED SPECIFICALLY IN THE LAWS OF THE STATES

State	Who May or Must be Transported	Curricular and Extra-Curricular use of Buses	Allocating or Computing State funds	Special Tax Levy for Transportation	Standards for Buses	School Bus Inspections*	School Bus Maintenance	Standards for School Bus Drivers-Licensing	Training Program for School Bus Drivers	School Bus Routes and Route Standards	School Bus Operating Regulations	Speed Limit Specifically for School	Buses Stop at Railroad Crossings	Passing School Buses on the Highway	School Bus Purchase Procedures	Contracts for Transportation	Insurance or Liability	Records and Reports for Transportation	Registration of School Buses	Other Provisions
Alabama	X	-	X	-	X	-	-	X	-	-	X	-	X	X	X	X	X	X	X	-
Arizona	X	-	-	-	X	-	-	X	-	-	X	-	X	X	-	-	X	-	X	-
Arkansas	X	-	X	-	X	-	-	X	X	-	X	X	X	X	X	X	X	X	X	Exempts publicly owned buses from all taxation. Prohibits the use of former school buses which are still painted school bus chrome or have "School Bus" painted on them.
California	X	X	X	-	X	X	-	X	X	-	X	X	X	X	X	X	X	X	X	Restricts the load of a school bus to its seating capacity. Requires that a school bus sold to a person, firm, or group for purposes other than transportation of pupils be painted a color different from that prescribed by the State Board of Education for school buses.
Colorado	X	-	-	-	X	-	-	X	-	X	X	-	X	X	-	X	X	-	X	-
Connecticut	X	-	X	-	X	-	-	X	-	-	X	X	X	X	-	X	X	-	X	-
Delaware	-	-	X	-	X	-	-	X	-	X	X	-	-	X	-	-	X	-	X	Gives roads used by school buses first consideration for maintenance.

APPENDIX B

APSECTS OF PUPIL TRANSPORTATION MENTIONED SPECIFICALLY IN THE LAWS OF THE STATES (CONT.)

State	Who May or Must be Transported	Curricular and Extra-Curricular use of buses	Allocating or Computing State funds	Special Tax Levy for Transportation	Standards for Buses	School Bus Inspections	School Bus Maintenance'	Standards for School Bus Drivers-Liscensing	Training Program for School Bus Drivers	School Bus Routes and Route Standards	School Bus Operating Regulations	Speed Limit Specifically for School	Buses Stop at Railroad Crossings	Passing School Buses on the Highway	School Bus Purchase Procedures	Contracts for Transportation	Insurance or Liability	Records and Reports for Transportation	Registration of School Buses	Other Provisions
Florida	X	X	X	-	X	X	X	X	-	X	X	X	X	X	X	X	X	X	X	Municipal and county authorities are to report on road hazards.
Georgia	X	-	X	-	X	-	-	X	-	-	-	X	X	X	X	X	X	-	-	The State Board is authorized to establish a minimum salary schedule for bus drivers. Forbids State Department of Education members, county superintendents, and members of county boards of education to have any financial interest in procuring and operating me ns of facilities for school bus transportation or to sell school buses or other transportation equipment to the county board of education. Outlines transportation responsibilities or boards of trustees and county boards of education.
Idaho	X	X	X	-	X	X	X	X	-	X	X	-	X	X	X	X	X	X	X	Outlines transportation responsibilities or boards of trustees and county boards of education.

APPENDIX B

ASPECTS OF PUPIL TRANSPORTATION MENTIONED
SPECIFICALLY IN THE LAWS OF THE STATES (CONT.)

State	Who May or Must be Transported	Curricular and Extra-Curricular use of buses	Allocating or Computing State funds	Special Tax Levy for Transportation	Standards for Buses	School Bus Inspections*	School Bus Maintenance	Standards for School Bus Drivers-Liscensing	Training Program for School Bus Drivers	School Bus Routes and Route Standards	School Bus Operating Regulations	Speed Limit Specifically for School	Buses Stop at Railroad Crossings	Passing School Buses on the Highway	School Bus Purchase Procedures	Contracts for Transportation	Insurance or Liability	Records and Reports for Transportation	Registration of School Buses	Other Provisions
Illinois	X	-	X	-	X	-	-	X	-	X	X	-	X	X	X	X	X	X	X	-
Indiana	X	X	X	-	X	X	-	X	X	-	X	X	X	X	-	X	X	-	X	-
Iowa	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Define powers and duties of the State Department of Education, county boards, and local boards.
Kansas	X	X	X	X	X	-	-	X	-	X	X	X	X	X	-	X	X	-	X	-
Kentucky	X	-	-	-	X	-	-	X	-	-	X	-	X	X	-	-	X	-	X	-
Louisiana	X	-	X	-	X	-	-	X	-	-	X	X	X	X	-	X	X	-	X	-
Maine	X	-	X	-	X	-	-	X	-	-	X	X	X	X	-	X	X	-	X	-
Maryland	X	-	-	-	X	X	-	X	-	-	-	X	X	X	-	-	-	-	X	-
Massachusetts	X	-	X	-	X	X	-	X	-	-	X	X	X	X	-	X	X	-	X	-
Michigan	X	X	X	-	X	-	-	X	-	X	-	-	X	X	X	X	X	-	X	-
Mississippi	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	School boards may contract for snow removal on bus routes.
Missouri	X	-	X	-	X	X	-	X	-	-	X	-	X	X	-	-	-	-	X	-
Montana	X	-	X	X	X	-	-	X	X	X	X	-	X	X	X	X	X	X	X	Provides for appeal to the state superintendent in adjusting transportation controversies.
Nebraska	X	-	-	-	X	X	-	X	-	-	-	-	X	X	-	-	X	-	X	-
Nevada	X	X	-	X	X	-	X	X	-	-	X	X	X	X	-	X	X	-	X	Methods of holding elections transportation.
New Hampshire	X	-	-	-	X	X	-	X	-	-	X	-	X	X	-	-	X	-	X	-

APPENDIX B

ASPECTS OF PUPIL TRANSPORTATION MENTIONED SPECIFICALLY IN THE LAWS OF THE STATES (CONT.)

State	Who May or Must be Transported	Curricular and Extra-Curricular use of Buses	Allocating or Computing State funds	Special Tax Levy for Transportation	Standards for Buses	School Bus Inspections*	School Bus Maintenance	Standards for School Bus Drivers-Liscensing	Training Program for School Bus Drivers	School Bus routes and Route Standards	School Bus Operating Regulations	Speed Limit Specifically for School	Buses Stop at Railroad Crossings	Passing School Buses on the Highway	School Bus Purchase Procedures	Contracts for Transportation	Insurance or Liability	Records and Reports for Transportation	Registration of School Buses	Other Provisions
New Jersey	X	-	X	-	X	X	-	X	-	-	X	X	X	X	-	X	X	X	X	
New Mexico	X	-	X	X	X	-	-	X	-	X	X	X	X	X	X	X	-	X	X	The State Board of Education may set standards for any type of school transportation not covered by law.
New York	X	-	X	-	X	-	-	X	-	X	X	-	X	X	-	X	X	X	X	Provides for appeal to the state superintendent in adjusting transportation controversies.
North Carolina	X	X	X	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	The State or National Guard may use school buses under specified conditions. Provides for school bus monitors.
North Dakota	X	-	-	X	X	-	-	X	-	-	-	-	X	X	X	X	X	-	X	
Ohio	X	-	X	-	X	-	-	X	-	-	X	-	X	X	X	-	X	X	X	
Oklahoma	X	X	XX	-	X	-	X	X	X	X	X	X	X	X	X	-	X	-	-	The State Board is to fix the boundaries of district transportation areas. The State Board is authorized to purchase buses from a state revolving fund and lease them to school districts. Gasoline used by school buses is exempt from state taxes.
Oregon	X	X	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	X	X	-

APPENDIX B

ASPECTS OF PUPIL TRANSPORTATION MENTIONED SPECIFICALLY IN THE LAWS OF THE STATES (CONT.)

State	Who May of Must Be Transported	Curricular and Extra-Curricular use of Buses	Allocating or Computing State funds	Special Tax Levy for Transportation	Standards for Buses	School Bus Inspections *	School Bus Maintenance	Standards for School Bus Drivers-Liscensing	Training Program for School Bus Drivers	School Bus routes and Route Standards	School Bus Operating Regulations	Speed Limit Specifically for School	Buses Stop at Railroad Crossings	Passing School Buses on the Highway	School Bus Purchase Procedures	Contracts for Transportation	Insurance or Liability	Records and Reports for Transportation	Registration of School Buses	Other Provisions
Pennsylvania	X	X	X	-	X	X	-	X	-	X	X	X	X	X	X	X	X	-	X	Specifies the methods of computing distances for transportation.
Rhode Island	X	-	X	-	X	X	-	-	-	-	X	-	X	X	-	-	-	-	X	-
South Carolina	X	X	X	-	X	X	X	X	X	X	X	-	X	X	X	X	X	-	X	-
South Dakota	X	X	-	-	X	-	-	X	-	X	-	-	X	X	X	-	X	-	X	Forbids providing transportation as an inducement to attend school.
Tennessee	X	-	X	X	X	X	-	X	-	X	X	X	X	X	-	-	X	-	X	Prohibits fees for pupils transported at public expense.
Texas	X	X	X	-	X	-	X	X	-	X	X	-	X	X	X	X	-	-	X	-
Utah	X	-	X	-	X	X	-	X	-	X	X	-	X	X	-	-	-	-	X	-
Vermont	X	-	-	-	X	X	-	X	-	-	-	-	X	X	-	X	X	X	X	-
Virginia	X	-	X	X	X	-	-	X	-	-	X	X	X	X	-	-	X	-	X	Authorizes school bus route maintenance by the Department of Public Works.
Washington	X	X	X	-	X	X	-	X	-	X	X	X	X	X	-	-	X	-	X	-
West Virginia	X	X	X	-	-	-	-	X	-	-	-	-	X	X	-	X	X	X	X	Bus drivers are given certain authority over pupils.
Wisconsin	X	X	X	X	X	X	-	X	-	X	X	X	X	X	X	X	X	X	X	Forbids charging the cost of transportation to school to parents.
Wyoming	-	-	X	X	X	-	-	X	-	X	X	-	X	X	-	-	X	-	X	-

*Not checked when inspection laws apply to all vehicles in general

Source: E. Glenn Featherston, D.P. Culp, Pupil Transportation State and Local Programs, Harper and Row, Publishers, New York, 1965, pp.150-152.

APPENDIX C

STATE PROGRAMS FOR FINANCING PUPIL TRANSPORTATION

APPENDIX C

STATE PROGRAMS FOR FINANCING PUPIL TRANSPORTATION

State	Part of Found Program		Basis for State Allocation				Factors Used In the Determination of Local Entitlement						Special Provisions for Handicapped		Remarks
	Yes	No	Flat Grant	Percentage Grant	Actual or Approved Expenditure	Formula	Number of Students	Number of Vehicles	Mileage	Density	Road Conditions	Vehicle Depreciation	Yes	No	
Alabama	X		-	-	+	+	+	-	-	+	-	+	X		
Alaska		X	-	-	+	-	-	-	-	-	-			X	
Arizona															No Program.
Arkansas		X	-	-	-	+	+	-	-	+	-	+		X	State payment is equalized. State pays approximately 79 percent of actual transportation cost.
California		X	-	+	+	+	-	+	-	-	-	-	X		Median state expense per bus p us 25 percent is basis of entitlement.
Colorado		X	-	-	-	-	-	-	+	-	-	-	X		
Connecticut		X	-	+	+	-	-	-	-	-	-	-	X		State pays 50 percent of actual cost with certain limitations.
Delaware		X	-	-	+	-	-	-	-	-	-	-		X	State pays 100 percent of actual cost.
Florida	X		-	-	-	+	+	-	+	+	-	-	X		
Hawaii	X		-	+	-	-	-	-	-	-	-	-	n/a	n/a	Hawaii's entire educational program is fully state funded.
Idaho	X		-	+	+	-	-	-	-	-	-	-		X	Density is considered in the Foundation program. The transportation entitlement is equalized.

APPENDIX C

STATE PROGRAMS FOR FINANCING PUPIL TRANSPORTATION (CONT.)

State	Part of Found Program		Basis for State Allocation				Factors Used In the Determination of Local Entitlement						Special Provisions for Handicapped		Remarks
	Yes	No	Flat Grant	Percentage Grant	Actual or Approved Expenditure	Formula	Number of Students	Number of Vehicles	Mileage	Density	Road Conditions	Vehicle Depreciation	Yes	No	
Illinois		X	-	-	+	-	-	-	-	-	-	-		X	State payment is equalized by deduction of a qualifying amount based on district asessed valuation.
Indiana	X		-	-	-	+	+	-	-	+	-	-	X		District wealth factor is considered in state entitlement.
Iowa	X		-	+	-	-	-	-	-	-	-	-	X		
Kansas	X		-	+	+	+	+	-	-	+	-	-	X		State payment consists of percent of actual cost or an amount determined by density.
Kentucky	X		-	-	-	+	+	-	-	-	-	-		X	
Louisiana	X		-	-	-	+	-	-	-	-	-	-		X	State entitlement is based on bus driver operator salary and bus operating costs.
Maine	X		-	+	-	-	-	-	-	-	-	-	X		State entitlement based on equalized percentage grant.
Maryland		X	-	-	+	-	-	-	-	-	-	-		X	State pays 100 percent of approved costs which results in 90 percent payment of actual cost.
Massachusetts		X	-	-	+	-	-	-	-	-	-	-	X		State pays 100 percent of costs above $5.00 per pupil local contribution.
Michigan	X		-	+	+	-	-	-	-	-	-	-		X	State pays 73 percent of approved cost.

APPENDIX C

STATE PROGRAMS FOR FINANCING PUPIL TRANSPORTATION (CONT.)

State	Part of Found Program		Basis for State Allocation				Factors Used In the Determination of Local Entitlement						Special Provisions for Handicapped		Remarks
	Yes	No	Flat Grant	Percentage Grant	Actual or Approved Expenditure	Formula	Number of Students	Number of Vehicles	Mileage	Density	Road Conditions	Vehicle Depreciation	Yes	No	
Minnesota		X	-	+	-	-	-	-	-	-	-	-	X		State pays 80 percent of per pupil cost.
Mississippi	X		-	-	-	+	+	-	-	+	-	-		X	
Missouri	X		-	-	-	+	+	-	+	+	-	-		X	State pays full formula determined cost.
Montana		X	-	-	-	+	+	-	+	-	-	-	X		Bus capacity considered in state entitlement.
Nebraska	X		-	+	-	-	-	-	-	-	-	-		X	Each student transported counts as 1.25 students under state foundation plan.
Nevada	X		-	+	-	-	-	-	-	-	-	-		X	State entitlement is .60 of previous years total expenditure.'
New Hampshire															No Program.
New Jersey		X	-	+	+	-	-	-	-	-	-	-		X	State pays 75 percent of approved cost.
New Mexico		X	-	-	+	+	-	+	+	-	+	+		X	
New York	X		-	+	+	-	-	-	-	-	-	-		X	State pays 90 percent of approved cost.
North Carolina		X	-	-	+	-	-	-	-	-	-	-		X	Operating costs and newer replacemen buses are fully State funded.
North Dakota	X		-	-	-	+	-	-	+	-	-	-	X		State pays $.16 per bus mile round trip.

APPENDIX C

STATE PROGRAMS FOR FINANCING PUPIL TRANSPORTATION (CONT.)

State	Part of Found Program		Basis for State Allocation				Factors Used In the Determination of Local Entitlement						Special Provisions for Handicapped		Remarks
	Yes	No	Flat Grant	Percentage Grant	Actual or Approved Expenditure	Formula	Number of Students	Number of Vehicles	Mileage	Density	Road Conditions	Vehicle Depreciation	Yes	No	
Ohio		X	-	-	-	+	+	-	-	-	-	-		X	State payment includes a bus purchase subsidy which is equalized.
Oklahoma		X	-	+	-	+	+	-	-	+	-	-		X	State grants energency loans bus purchase.
Oregon		X	-	+	+	-	-	-	-	-	-	-		X	State pays 60 percent of approved cost.
Pennsylvania		X	-	-	+	+	-	-	-	-	-	+		X	
Rhode Island	X		-	-	-	-	-	-	-	-	-	-		X	
South Carolina		X	-	-	+	-	-	-	-	-	-	-	X		
South Dakota	X		-	+	-	+	-	-	+	-	-	-		X	State payment not to exceed $1.8 per mile.
Tennessee	X		-	-	-	+	+	-	-	-	-	-	X		State pays $10.00 per transported pupil. This amount is then equalized through the foundation plan.
Texas	X		-	-	-	+	+	-	+	-	+	-		X	
Utah	X		+	+	-	+	+	-	+	-	-	-		X	District may choose a percentage of flat grant for state allocation.
Vermont															No Program.
Virginia		X	-	-	-	+	+	+	+	-	-	-		X	
Washington		X	-	+	+	+	-	-	-	-	-	+		X	

APPENDIX C

STATE PROGRAMS FOR FINANCING PUPIL TRANSPORTATION (CONT.)

State	Part of Found Program		Basis for State Allocation				Factors Used In the Determination of Local Entitlement						Special Provisions for Handicapped		Remarks
	Yes	No	Flat Grant	Percentage Grant	Actual or Approved Expenditure	Formula	Number of Students	Number of Vehicles	Mileage	Density	Road Conditions	Vehicle Depreciation	Yes	No	
West Virginia	X		-	+	+	-	-	-	-	-	-	-		X	State payment limited to 133 percent of state average cost per mile.
Wisconsin		X	+	-	-	-	+	-	-	-	-	-	X		
Wyoming	X		-	+	+	-	-	-	-	-	-	+		X	
Totals	27	20	2	19	20	24	16	4	12	9	2	7	16	30	

Source: Thomas L. Johns, PUBLIC SCHOOL FINANCE PROGRAM, 1971-72, Washington, D.C., U.S., Department of Health, Education and Welfare, 1972.

APPENDIX D

TITLE 49 OF THE CODE OF FEDERAL REGULATIONS,
PART 605 - SCHOOL BUS OPERATIONS

TITLE 49 OF THE CODE OF FEDERAL REGULATIONS, PART 605 - SCHOOL BUS OPERATIONS (CONT.)

10. Data Processing Facilities
11. Revenue Collection and Processing Facilities
12. Other General Administration Facilities

DEPRECIATION AND AMORTIZATION

1. Transit Way and Transit Way Structures and Equipment
2. Passenger Stations
3. Passenger Parking Facilities
4. Passenger Revenue Vehicles
5. Service Vehicles
6. Operating Yards or Stations
7. Engine Houses, Car Shops and Garages
8. Power Generation and Distribution Facilities
9. Revenue Vehicle Movement Control Facilities
10. Data Processing Facilities
11. Revenue Collection and Processing Facilities
12. Other General Administration Facilities

PROPERTY RETIREMENT WRITE-OFFS

1. Property Retirement Write-Offs

INTEREST EXPENSE

1. Interest on Debt Obligations (net of interest capitalized)

OTHER TAXES

1. Federal Income Tax
2. State Income Tax
3. Property Tax
4. Vehicle Licensing and Registration Fees
5. Fuel and Lubricant Taxes
6. Other Taxes

EXPENSE TRANSFERS

1. Function Reclassifications
2. Expense Reclassifications
3. Capitalization of Nonoperating Costs

SUBSIDY PAYMENTS

1. Purchased Transportation Service

MARCH 29, 1976.

INFLATIONARY IMPACT STATEMENT

FINAL REGULATIONS

Charter Bus Operations

I certify that, in accordance with Executive Order 11821, dated November 27, 1974, and Departmental implementing instructions, and Inflationary Impact Statement is not required for the final regulations on Charter Bus Operations.

ROBERT E. PATRICELLI,
Urban Mass Transportation Administrator.

PART 605—SCHOOL BUS OPERATIONS

Subpart A—General

AUTHORITY: Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1601 *et seq.*); 23 U.S.C. 103(e)(4); 23 U.S.C. 142 (a) and (c); and 49 CFR 1.51.

SOURCE: 41 FR 14128, Apr. 1, 1976, unless otherwise noted.

Subpart A—General

§ 605.1 Purpose.

(a) The purpose of this part is to prescribe policies and procedures to implement section 109(a) of the National Mass Transportation Assistance

Act of 1974 (Pub. L. 93-503; November 26, 1974; 88 Stat. 1565). Section 109(a) adds a new section 3(g) to the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602(g)) and differs from section 164(b) of the Federal-Aid Highway Act of 1973 (49 U.S.C. 1602a(b)) in that section 3(g) applies to all grants for the construction or operation of mass transportation facilities and equipment under the Urban Mass Transportation Act, and is not limited to grants for the purchase of buses as is section 164(b).

(b) By the terms of section 3(g) no Federal financial assistance may be provided for the construction or operation of facilities and equipment for use in providing public mass transportation service to an applicant unless the applicant and the Administrator enter into an agreement that the applicant will not engage in school bus operations exclusively for the transportation of students and school personnel, in competition with private school bus operators.

§ 605.2 Scope.

These regulations apply to all recipients of financial assistance for the construction or operation of facilities and equipment for use in providing mass transportation under: (a) The Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1601 *et seq.*); (b) 23 U.S.C. 142 (a) and (c); and 23 U.S.C. 103 (e)(4).

§ 605.3 Definitions.

(a) Except as otherwise provided, terms defined in the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1604, 1608) are used in this part as so defined.

(b) For purposes of this part—

"The Acts" means the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1601 *et seq.*); 23 U.S.C. 142 (a) and (c); and 23 U.S.C. 103(e)(4).

"Administrator" means the Urban Mass Transportation Administrator or his designee.

"Adequate transportation" means transportation for students and school personnel which the Administrator determines conforms to applicable safety laws; is on time; poses a minimum of discipline problems; is not subject to fluctuating rates; and is operated efficiently and in harmony with state educational goals and programs.

"Agreement" means a contractual agreement required under section 3(g) of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602(g)).

"Applicant" means applicant for assistance under the Acts.

"Assistance" means Federal financial assistance for the purchase of buses and the construction or operation of facilities and equipment for use in providing mass transportation services under the Acts, but does not include research, development and demonstration projects funded under the Acts.

"Grant contract" means the contract between the Government and the grantee which states the terms and conditions for assistance under the Acts.

"Government" means the Government of the United States of America.

"Grantee" means a recipient of assistance under the Acts.

"Incidental" means the transportation of school students, personnel and equipment in charter bus operations during off peak hours which does not interfere with regularly scheduled service to the public (as defined in the Opinion of the Comptroller General of the United States, B160204, December 7, 1966, which is attached as Appendix A of this part).

"Interested party" means an individual, partnership, corporation, association or public or private organization that has a financial interest which is adversely affected by the act or acts of a grantee with respect to school bus operations.

"Reasonable Rates" means rates found by the Administration to be fair and equitable taking into consideration the local conditions which surround the area where the rate is in question.

"School bus operations" means transportation by bus exclusively for school students, personnel and equipment in Type I and Type II school vehicles as defined in Highway Safety Program Standard No. 17.

"Tripper service" means regularly scheduled mass transportation service

TITLE 49 OF THE CODE OF FEDERAL REGULATIONS, PART 605 - SCHOOL BUS OPERATIONS (CONT.)

which is open to the public, and which is designed or modified to accommodate the needs of school students and personnel, using various fare collections or subsidy systems. Buses used in tripper service must be clearly marked as open to the public and may not carry designations such as "school bus" or "school special". These buses may stop only at a grantee or operator's regular service stop. All routes traveled by tripper buses must be within a grantee's or operator's regular route service as indicated in their published route schedules.

"Urban area" means the entire area in which a local public body is authorized by appropriate local, State and Federal law to provide regularly scheduled mass transportation service. This includes all areas which are either: (a) Within an "urbanized area" as defined and fixed in accordance with 23 CFR Part 470, Subpart B; or (b) within an "urban area" or other built-up place as determined by the Secretary under section 12(c)(4) of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1608(c)(4)).

§ 605.4 Public hearing requirement.

Each applicant who engages or wishes to engage in school bus operations shall afford an adequate opportunity for the public to consider such operations at the time the applicant conducts public hearings to consider the economic, social or environmental effects of its requested Federal financial assistance under section 3(d) of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602(d)).

Subpart B—School Bus Agreements

§ 605.10 Purpose.

The purpose of this subpart is to formulate procedures for the development of an agreement concerning school bus operations.

§ 605.11 Exemptions.

A grantee or applicant may not engage in school bus operations in competition with private school bus operators unless it demonstrates to the satisfaction of the Administrator as follows:

(a) That it operates a school system in its urban area and also operates a separate and exclusive school bus program for that school system; or

(b) That private school bus operators in the urban area are unable to provide adequate transportation, at a reasonable rate, and in conformance with applicable safety standards; or

(c) That it is a state or local public body or agency thereof (or a direct predecessor in interest which has acquired the function of so transporting schoolchildren and personnel along with facilities to be used therefor) who was so engaged in school bus operations:

(1) In the case of a grant involving the purchase of buses—anytime during the 12-month period immediately prior to August 13, 1973.

(2) In the case of a grant for construction or operating of facilities and equipment made pursuant to the UMT Act as amended (49 U.S.C. 1601 *et seq.*), anytime during the 12-month period immediately prior to November 26, 1974.

§ 605.12 Use of project equipment.

No grantee or operator of project equipment shall engage in school bus operations using buses, facilities or equipment funded under the Acts. A grantee or operator may, however, use such buses, facilities and equipment for the transportation of school students, personnel and equipment in incidental charter bus operations. Such use of project equipment is subject to Part 604 of Urban Mass Transportation Regulations.

§ 605.13 Tripper service.

The prohibition against the use of buses, facilities and equipment funded under the Acts shall not apply to tripper service.

§ 605.14 Agreement.

Except as provided in § 605.11 no assistance shall be provided under the Acts unless the applicant and the Administrator shall have first entered into a written agreement that the applicant will not engage in school bus operations exclusively for the trans-

portation of students and school personnel in competition with private school bus operators.

§ 605.15 Content of agreement.

(a) Every grantee who is not authorized by the Administrator under § 605.11 of this part to engage in school bus operations shall, as a condition of assistance, enter into a written agreement required by § 605.14 which shall contain the following provisions:

(1) The grantee and any operator of project equipment agrees that it will not engage in school bus operations in competition with private school bus operators.

(2) The grantee agrees that it will not engage in any practice which constitutes a means of avoiding the requirements of this agreement, Part 605 of the Urban Mass Transportation Regulations, or section 164(b) of the Federal-Aid Highway Act of 1973 (49 U.S.C. 1602a(b)).

(b) Every grantee who obtains authorization from the Administrator to engage in school bus operations under § 605.11 of this part shall, as a condition of assistance, enter into a written agreement required by § 605.14 of this part which contains the following provisions:

(1) The grantee agrees that neither it nor any operator of project equipment will engage in school bus operations in competition with private school bus operators except as provided herein.

(2) The grantee, or any operator of project equipment, agrees to promptly notify the Administrator of any changes in its operations which might jeopardize the continuation of an exemption under § 605.11.

(3) The grantee agrees that it will not engage in any practice which constitutes a means of avoiding the requirements of this agreement, Part 605 of the Urban Mass Transportation Administration regulations or section 164(b) of the Federal-Aid Highway Act of 1973 (49 U.S.C. 1602a(b)).

(4) The grantee agrees that the project facilities and equipment shall be used for the provision of mass transportation services within its urban area and that any other use of project facilities and equipment will be incidental to and shall not interfere with the use of such facilities and equipment in mass transportation service to the public.

§ 605.16 Notice.

(a) Each applicant who engages or wishes to engage in school bus operations shall include the following in its application:

(1) A statement that it has provided written notice to all private school bus operators operating in the urban area of its application for assistance and its proposed or existing school bus operations;

(2) A statement that it has published in a newspaper of general circulation in its urban area a notice of its application and its proposed or existing school bus operations;

(b) The notice required by paragraphs (a)(1) and (a)(2) of this section shall include the following information:

(1) A description of the area to be served by the applicant.

(2) An estimation of the number of each type of bus which will be employed on the proposed school bus operations, and the number of weekdays those buses will be available for school bus operations.

(3) A statement of the time, date, and place of public hearings required under section 3(d) of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602(d)), to be held on the application for assistance.

(4) A statement setting forth reasons the applicant feels it should be allowed to engage in school bus operations under § 605.11 of this part.

(c) Copies of the application for assistance and notice required by paragraph (a) of this shall be available for inspection during the regular business hours at the office of the applicant.

§ 605.17 Certification in lieu of notice.

If there are no private school bus operators operating in the applicant's urban area, the applicant may so certify in its application in lieu of meeting the requirements of § 605.16. This certification shall be accompanied by a statement that the applicant has published, in a newspaper of general circulation in its urban area, a notice stat-

APPENDIX D

TITLE 49 OF THE CODE OF FEDERAL REGULATIONS, PART 605- SCHOOL BUS OPERATIONS (CONT.)

ing that it has applied for assistance as provided under § 605.16(b) and that it has certified that there are no private school bus operators operating in its urban area. A copy of the notice as published shall be included.

§ 605.18 Comments by private school bus operators.

Private school bus operators may file written comments on an applicant's proposed or existing school bus operations at the time of the public hearing held pursuant to section 3(d) of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602(d)). The comments of private school bus operators must be submitted by the applicant to the Administrator together with the transcript of this public hearing.

§ 605.19 Approval of school bus operations.

(a) The Administrator will consider the comments filed by private school bus operators prior to making any findings regarding the applicant's proposed or existing school bus operations.

(b) After a showing by the applicant that it has complied with the requirements of 49 U.S.C. 1602(d) and this subpart, the Administrator may approve its school bus operations.

(c) If the Administrator finds that the applicant has not complied with the notice requirement of this part or otherwise finds that the applicant's proposed or existing school bus operations are unacceptable, he will so notify the applicant in writing, stating the reasons for his findings.

(d) Within 20 days after receiving notice of adverse findings from the Administrator, an applicant may file written objections to the Administrator's findings or submit a revised proposal for its school bus operations. If an applicant revises its proposed or existing school bus operations, it shall mail a copy of these revisions along with the findings of the administrator to private school bus operators required to be notified under § 605.16.

(e) Private school bus operators who receive notice under paragraph (d) of this section may within 20 days after receipt of notice file written comments on the proposed revisions with the Administrator. The Administrator will consider these comments prior to his approval of a proposed revision by the applicant.

(f) Upon receipt of notice of approval of its school bus operations, the applicant may enter into an agreement with the Administrator under § 605.14.

Subpart C—Modification of Prior Agreements and Amendment of Application for Assistance

§ 605.20 Modification of prior agreements.

(a) Any grantee which, prior to the adoption of this part, entered into an agreement required by section 164(b) of the Federal-Aid Highway Act of 1973 (49 U.S.C. 1602(a)(b)), or section 3(g) of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602(g)), who engages or wishes to engage in school bus operations in competition with private school bus operators, shall seek modification of that agreement in accordance with paragraphs (b)-(d) of this section.

(b) The grantee shall develop a statement setting forth in detail the reasons it feels it should be allowed to engage in school bus operations under § 605.11 of this part. A copy of the statement should be provided private school bus operators who provide service in the grantee's urban area.

(c) The grantee shall allow 30 days for persons receiving notice under this section to respond with written comments concerning its proposed or existing school bus operations.

(d) After receiving written comments, the grantee shall send his proposal with written comments thereon to the Administrator for his review under § 605.17.

§ 605.21 Amendment of applications for assistance.

Pending applications for assistance upon which public hearings have been held pursuant to section 3(d) of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602(d)), and applications which have been approved by the Administrator but for which no grant contract has been executed, shall be amended by the applicant to conform to this part by following the procedures of § 605.20(b)-(d).

Subpart D—Complaint Procedures and Remedies

§ 605.30 Filing a complaint.

Any interested party may file a complaint with the Administrator alleging a violation or violations of terms of an agreement entered into pursuant to § 605.14. A complaint must be in writing, must specify in detail the action claimed to violate the agreement, and must be accompanied by evidence sufficient to enable the Administrator to make a preliminary determination as to whether probable cause exists to believe that a violation of the agreement has taken place.

§ 605.31 Notification to the respondent.

On receipt of any complaint under § 605.30, or on his own motion if at any time he shall have reason to believe that a violation may have occurred, the Administrator will provide written notification to the grantee concerned (hereinafter called "the respondent") that a violation has probably occurred. The Administrator will inform the respondent of the conduct which constitutes a probable violation of the agreement.

§ 605.32 Accumulation of evidentiary material.

The Administrator will allow the respondent not more than 30 days to show cause, by submission of evidence, why no violation should be deemed to have occurred. A like period shall be allowed to the complainant, if any, during which he may submit evidence to rebut the evidence offered by the respondent. The Administrator may undertake such further investigation, as he may deem necessary, including, in his discretion, the holding of ar evidentiary hearing or hearings.

§ 605.33 Adjudication.

(a) After reviewing the results of such investigation, including hearing transcripts, if any, and all evidence submitted by the parties, the Administrator will make a written determination as to whether the respondent has engaged in school bus operations in violation of the terms of the agreement.

(b) If the Administrator determines that there has been a violation of the agreement, he will order such remedial measures as he may deem appropriate.

(c) The determination by the Administrator will include an analysis and explanation of his findings.

§ 605.34 Remedy where there has been a violation of the agreement.

If the Administrator determines, pursuant to this subpart, that there has been a violation of the terms of the agreement, he may bar a grantee or operator from the receipt of further financial assistance for mass transportation facilities and equipment.

§ 605.35 Judicial review.

The determination of the Administrator pursuant to this subpart shall be final and conclusive on all parties, but shall be subject to judicial review pursuant to Title 5 U.S.C. 701-706.

Subpart E—Reporting and Records

§ 605.40 Reports and information.

The Administrator may order any grantee or operator for the grantee, to file special or separate reports setting forth information relating to any transportation service rendered by such grantee or operator, in addition to any other reports required by this part.

APPENDIX A

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D.C., December 7, 1966.

DEAR MR. WILSON: The enclosure with your letter of October 4, 1966, concerns the legality of providing a grant under the Urban Mass Transportation Act of 1964 to the City of San Diego, (City), California. The problem involved arises in connection with the definition in subsection 9(d)(5) of the act, 49 U.S.C. 1608(d)(5), excluding charter or sightseeing service from the term "mass transportation."

It appears from the enclosure with your letter that the City originally included in its grant application a request for funds to purchase 8 buses designed for charter service. Subsequently the City amended its applica-

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tion by deleting a request for a portion of the funds attributable to the charter bus coaches. However, in addition to the 8 specially designed charter buses initially applied for, the City allegedly uses about 40 of its transit type buses to a substantial extent for charter-type services. In light of these factors surrounding the application by the City, the enclosure requests our opinion with regard to the legality of grants under the act as it applies to certain matters (in effect questions), which are numbered and quoted below and answered in the order presented.

Number one:

"The grant of funds to a City to purchase buses and equipment which are intended for substantial use in the general charter bus business as well as in the Mass Transportation type business."

The Urban Mass Transportation Act of 1964 does not authorize grants to assist in the purchase of buses or other equipment for any service other than urban mass transportation service. Section 3(a) of the act limits the range of eligible facilities and equipment to "* * * buses and other rolling stock, and other real or personal property needed for an efficient and coordinated mass transportation system." In turn, "mass transportation" is defined, in section 9(d)(5) of the act, specifically to exclude charter service. We are advised by the Department of Housing and Urban Development (HUD) that under these provisions, the Department has limited its grants to the purchase of buses of types suitable to meet the needs of the particular kind of urban mass transportation proposed to be furnished by the applicant."

HUD further advises that:

"One of the basic facts of urban mass transportation operations is that the need for rolling stock is far greater—during the morning and evening rush hours on weekdays than at any other time. For that reason, any system which has sufficient rolling stock to meet the weekday rush-hour needs of its customers must have a substantial amount of equipment standing idle at other times, as well as drivers and other personnel being paid when there is little for them to do. To relieve this inefficient and uneconomical situation, quite a number of cities have offered incidental charter service using this idle equipment and personnel during the hours when the same are not needed for regularly scheduled runs. Among the cities so doing are Cleveland, Pittsburgh, Alameda, Tacoma, Detroit and Dallas.

"Such service contributes to the success of urban mass transportation operations by bringing in additional revenues and providing full employment to drivers and other employees. It may in some cases even reduce the need for Federal capital grant assistance.

"We do not consider that there is any violation of either the letter or the spirit of the Act as a result of such incidental use of buses in charter service. To guard against abuses, every capital facilities grant contract made by this Department contains the following provisions:

"'Sec. 4. *Use of Project Facilities and Equipment*—The Public Body agrees that the Project facilities and equipment will be used for the provision of mass transportation service within its urban area for the period of the useful life of such facilities and equipment. . . . The Public Body further agrees that during the useful life of the Project facilities and equipment it will submit to HUD such financial statements and other data as may be deemed necessary to assure compliance with this Section.'"

It is our view that grants may be made to a city under section 3(a) of the act to purchase buses needed by the city for an efficient and coordinated mass transportation system, even though the city may intend to use such buses for charter use when the buses are not needed on regularly scheduled runs (i.e. for mass transportation purposes) and would otherwise be idle.

Number two:

"Whether a grant of such funds is proper if charter bus use is incidental to mass public transportation operations. If so, what is the definition of 'incidental use.'"

We are advised by HUD that under its legislative authority, it cannot and does not take charter service requirements into consideration in any way in evaluating the needs of a local mass transportation system for buses or other equipment.

HUD further advises that:

"However, as indicated above, we are of the opinion that any lawful use of project equipment which does not detract from or interfere with the urban mass transportation service for which the equipment is needed would be deemed an incidental use of such equipment, and that such use of project equipment is entirely permissible under our legislation. What uses are in fact incidental, under this test, can be determined only on a case-by-case basis."

In view of what we stated above in answer to the first question, the first part of question two is answered in the affirmative.

As to the second part of the question, in *Security National Insurance Co. v. Secuoyah Marina*, 246P.2d 830, "incident" is defined as meaning "that which appertains to something else which is primary." Thus, we cannot say HUD's definition of "incidental use" as set forth above is unreasonable. Under the act involved grants may be made to purchase buses only if the buses are needed for an efficient and coordinated mass transportation system. It would appear that if buses are purchased in order to meet this need, and are, in fact, used to meet such need, the use of such buses for charter service when not needed for mass transportation services would, in effect, be an "incidental use." Insofar as pertinent here. In our opinion such incidental use would not violate the provisions of the 1964 act.

Number three:

"The grant of funds for mass public transportation purposes to a City which has expressed an intent to engage in the general charter bus business when such funds would in effect constitute a subsidy to the City of its intended charter bus operations; i.e. freeing Municipal funds with which to purchase charter bus equipment."

Section 4(a) of the 1964 Act (49 U.S.C. 1603(a)) provides, in part, as follows:

"* * * The Administrator (now Secretary), on the basis of engineering studies, studies of economic feasibility, and data showing the nature and extent of expected utilization of the facilities and equipment, shall estimate what portion of the cost of a project to be assisted under section 1602 of this title cannot be reasonably financed from revenues—which portion shall hereinafter be called 'net project cost'. The Federal grant for such a project shall not exceed two-thirds of the net project cost. The remainder of the net project cost shall be provided, in cash, from sources other than Federal funds * * *."

It is clear from the legislative history of the act involved that the "revenues" to be considered are mass transportation system revenues including any revenues from incidental charter operations. There is nothing in the language of the act which requires HUD to take into account the status of the general funds of an applicant city in determining how much capital grant assistance to extend to that city.

It should be noted that in a sense nearly every capital grant to a city constitutes a partial subsidy of every activity of the city which is supported by tax revenues, since it frees tax revenues for such other uses.

Number four:

"With specific reference to the application of the City of San Diego for funds under its application to the Department of Housing and Urban Development dated June 2, 1966, whether the Act permits a grant to purchase equipment wherein 25 percent of such equipment will be used either exclusively or substantially in the operation of charter bus services."

As to the City of San Diego's grant application, we have been advised by HUD as follows:

"As explained above, the Act authorizes assistance only for facilities to be used in mass transportation service. We could not, therefore, assist San Diego in purchasing any equipment to be used 'exclusively' in the operation of charter bus service. Furthermore, as also explained above, assisted mass transportation equipment can be used only incidentally for such charter services.

"Whether equipment used 'substantially' in such service qualifies under this rule can be answered only in the light of the specifics of the San Diego situation * * * we have already, during our preliminary review of the City's application, disallowed about $150,000 of the proposed project cost which was allocated to the purchase of eight charter-type buses.

"The final application of the City of San Diego is presently under active consideration by this Department. In particular, we have requested the City to furnish additional information as to the nature and extent of the proposed use, if any, of project facilities and equipment in charter service, so that we can further evaluate the application under the criteria above set forth. We have also requested similar information from Mr. Fredrick J. Ruane, who has filed a taxpayers' suit (Superior Court for San Diego County Civil #297329) against the City, contesting its authority to engage in charter bus operations."

As indicated above, it is clear that under the act in question grants may not legally be made to purchase buses to be used "exclusively" in the operation of charter bus service. However, in view of the purposes of the act involved it is our opinion that a city which has purchased with grant funds buses needed for an efficient mass transportation system, is not precluded by the act from using such buses for charter service during idle or off-peak periods when the buses are not needed for regularly scheduled runs. As indicated above, such a use would appear to be an incidental use.

The fourth question is answered accordingly.

As requested, the correspondence enclosed with your letter is returned herewith.

Sincerely yours,

FRANK H. WEITZEL,
Assistant Comptroller General of the United States.

Enclosures:

The Honorable Bob Wilson, House of Representatives.

MARCH 29, 1976.

INFLATIONARY IMPACT STATEMENT

FINAL REGULATIONS ON SCHOOL BUS OPERATIONS

I certify that, in accordance with Executive Order 11821, dated November 27, 1974, and Departmental Implementing Instructions, an Inflationary Impact Statement is not required for final regulations on School Bus Operations.

Robert E. Patricelli,
Urban Mass Transportation
Administrator.

PART 609—TRANSPORTATION FOR ELDERLY AND HANDICAPPED PERSONS

Authority: Secs. 5 and 16, Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1604, 1612); sec. 165(b), Federal-Aid Highway Act of 1973, as amended (23 U.S.C. 142 nt.); sec. 504, Rehabilitation Act of 1973 (29 U.S.C. 794); 49 CFR 1.51.

Source: 41 FR 18239, Apr. 30, 1976, unless otherwise noted.

§ 609.1 Purpose.

The purpose of this part is to establish formally the requirements of the Urban Mass Transportation Administration (UMTA) on transportation for elderly and handicapped persons.

§ 609.3 Definitions.

As used herein:

"Elderly and handicapped persons" means those individuals who, by reason of illness, injury, age, congenital malfunction, or other permanent or temporary incapacity or disability, including those who are nonambulatory wheelchair-bound and those with semi-ambulatory capabilities, are unable without special facilities or special planning or design to utilize mass transportation facilities and services as effectively as persons who are not so affected.

§ 609.5 Applicability.

This part, which applies to projects approved by the Urban Mass Transportation Administrator on or after May 31, 1976, applies to all planning, capital, and operating assistance projects receiving Federal financial assistance under sections 3, 5, or 9 of the Urban Mass Transportation Act of 1964, as amended (49 U.S.C. 1602, 1604, or 1607a), and nonhighway public mass transportation projects receiving Federal financial assistance under: (1) Subsection (a) or (c) of section 142 of title 23, United States Code; and (2) paragraph (4) of subsection (e) of section 103, title 23, United States Code. However, under certain circumstances evident in §§ 609.13 through 609.21, the latter sections apply to fixed facilities and vehicles included in projects approved before May 31, 1976. Sections in this part on capital assistance applications, fixed facilities, and vehicles apply expressly to capital assistance projects receiving Federal financial assistance under any of the above statutes.

§ 609.7 Transportation planning in urbanized areas.

General requirements for transportation planning in urbanized areas are found in joint UMTA-Federal Highway Administration regulations (23 CFR Part 450 and 49 CFR Part 613). These regulations require the urban transportation planning process to include special efforts to plan public mass transportation facilities and services that can effectively be utilized by elderly and handicapped persons. UMTA and FHWA have added a supplementary statement on the special efforts requirement as an appendix to the joint planning regulations. Satisfactory special efforts in this area is an express condition (49 CFR 613.204) for UMTA project approvals required by 23 CFR 450.320, and UMTA has added a supplementary statement on that requirement as an appendix to 49 CFR Part 613.

§ 609.9 Transportation planning in nonurbanized areas.

Before a capital assistance project can be approved in a nonurbanized

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APPENDIX E

REPORT OF NEW TECHNOLOGY

A thorough review of the work performed under this contract has revealed no significant innovations, discoveries, or inventions at this time. In addition, all methodologies employed are available in the open literature. However, the findings in this document do represent new information and should prove useful throughout the United States in designing and evaluating future transportation demonstrations in general, and CBD fare-free transit service in particular.

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