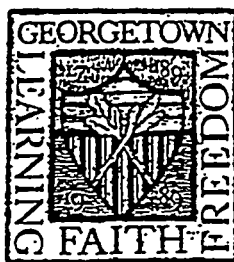


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BUS INDUSTRY MARKET STUDY

Report--Task 3.2
Fuel Cell/Battery Powered Bus System
CONTRACT DE-AC08-87NV10649.A014

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Office of Transportation Systems,
Electric & Hybrid Propulsion Division

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I. INTRODUCTION

In support of the commercialization of fuel cells for transportation, Georgetown University, as a part of the DOE/DOT Fuel Cell Transit Bus Program, conducted a market study to determine the inventory of passenger buses in service as of December, 1991, the number of buses delivered in 1991 and an estimate of the number of buses to be delivered in 1992. Short term and long term market projections of deliveries were also made. The study was performed under DOE contract DE-AC08-87NV10649.A014.

Data was collected according to type of bus and the field was divided into the following categories which are defined later in the report:

- o transit buses
- o school buses
- o commercial non-transit buses
- o intercity buses

The findings of this study will be presented with various tables of data collected from identified sources as well as narrative analysis based upon interviews conducted during the survey. From the outset, it must be stated that available data in these four categories varies from area-to-area and Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) provide 1990 transit and non-transit data with informal projections available in certain areas for 1991. The American Public Transit Association (APTA) provided 1990/1991 transit bus data. Broad industry wide figures were dependent primarily upon much less formal data collection from individual manufacturers sharing current and projected bus delivery statistics. There is no centralized source of comprehensive data for the bus industry. For example, the American Bus Association, the United Bus Owners of America and the National School Transportation Association do not maintain bus delivery or manufacturing statistics for their members. Research organizations such as R.L. Polk and Wards Automotive do not compile statistics in these specific areas; but Bobit Publishing's *School Bus Fleet Magazine* comprehensively tracks school bus figures and *National Bus Trader* follows the intercity bus industry.

The Federal government operates with an approximate 18 month time lag in the publication

of its transit figures as well as vehicle registration data. The APTA fleet inventory information is published within 6 months of the previous year and the transit fact book is available several months later. Information available for school buses contains both 1990 and 1991 figures. Therefore, this report will present the most current material available dependent upon the source of the data.

During the early stages of research it became clear there were several unique and overriding factors influencing the current and future trends in bus sales for all categories. The state of the economy, the newly passed Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the regulations of the Clean Air Act Amendments of 1990 (CAAA) and compliance with the Americans with Disabilities Act (ADA) have broadly affected the bus market. To a lesser extent, the federal requirement of a standardized Commercial Driver's License for all vehicles 15 passengers and over has impacted the smaller bus industry. Analysis of these influences will be done within individual category discussions.

CURRENT TOTAL BUS FLEETS

	<u>FLEET</u>
Transit	57,754
School	392,000
Intercity	25,000
Federal	4,551
Commercial/Non-transit*	<u>148,695</u>
Total (est)	<u>628,000</u>
* Includes airport, rental car co. and univ. shuttles.	
SOURCE: Federal Highway Administration	

FIGURE 1

The analysis of the total bus fleet contains data from an 18 month period. Results are shown in Figure 1. Using the 1990 *Highway Statistics*, the estimated fleet size in the categories covered during this period is 628,000 buses. Overall, it grew 0.3 percent from 1989. The total public transit fleet figure, 57,754, came from 1991 APTA reports. The largest segment of the bus fleet -- school buses -- both private and public -- were calculated

by *School Bus Fleet Magazine* at 392,000 using the latest data available from the 89/90 school year. While exact data is unavailable, Intercity buses were estimated at 25,000 vehicles. The commercial non-transit bus sector was calculated at 148,695 -- numbers during individual interviews. According to *Highway Statistics*, there are 4,551 federal buses (Bureau of Prisons, DOT shuttles, non-military, etc.). Military buses are not included in this survey.

II. TRANSIT BUSES

DEFINITIONS

PUBLIC TRANSIT SYSTEM

A system providing local or regional multiple-occupancy vehicle passenger service controlled or subsidized by any municipality, county, regional authority, or state. Passenger revenue service is provided on a repetitive, scheduled basis along a specific route with vehicles stopping to pick up and discharge passengers at specific locations.

TRANSIT BUS

A bus with front and center doors, normally with a rear-mounted diesel engine, low-back seating, fare-box, and without luggage compartments for use in urban frequent-stop service by a public transit system.

Procurement of transit buses by local authorities is subsidized by the Federal government as is the operating costs and transit infrastructure. Current Federal law provides for federal funding for acquisition of transit vehicles to be 75 -- 85% of the cost, with the remainder to be provided by state and local governments. This non-federal portion is composed primarily of dedicated local funding and fare revenue to a lesser extent. However, some projects are entirely funded at the local and state level, and many areas provide more than the minimum 15 -- 25% requirement. Thus, only about 58% of transit capital costs come from the federal government.

There are more than 5,000 transit systems in the United States. Of these, 1,580 are *public transit systems* and the remainder are *private systems*. Federal funding requires public transit systems in areas with populations over 50,000 (rural systems are excluded) to annually report

to the United States Department of Transportation, Federal Transit Administration (FTA) the status of their systems by providing financial and operating data. There are 518 public transit systems in this category. The American Public Transit Association (APTA), a membership organization of over 375 public transit systems, also collects data. Between 60 and 70 members of APTA are large, multi-county rural public transit systems; this additional data helps to complete a national picture of the urban as well as the rural transit bus fleets. As a result, this area of the bus industry is carefully documented and there is a high degree of accuracy in the overall statistical information available. However, there still remains a percentage of transit systems that go unreported and data continues to be open to additional interpretation.

The transit industry is currently in a state of flux due to the economy, local political constraints and federal regulations. Bus deliveries in 1991, and projections for 1992, show little growth. Manufacturers representatives also indicate the number of actual orders placed in 1991, were significantly depressed. These numbers will probably not be represented in near-term delivery statistics because individual factory capacity and output remains constant due to backlogs. There have been delays in procurement -- with contracts being literally held on desks of transit authority managers -- as one representative said: 'there are no bids on the street.' These internal, local political delays are one of several reasons for the prevailing postponements. In 1991, there were reduced transit services locally as a consequence of continued decrease in Federal operating subsidies. The downturn in the economy also continues to impact purchasing decisions; and some industry analysts expect the waiting period to continue until at least after the elections. Fleet size is remaining static -- with many of the new orders replacing aging vehicles. Some operators are keeping older buses in service longer. However, there should be slightly more flexibility now that recent changes in FTA regulations permit transit systems with prior federal approval to negotiate on bids for buses, instead of being forced to take the lowest bid. Cleaner fuel buses, manufacturing standards and expected life of vehicle are becoming as important as cost.

Clean Air Act Amendments of 1990 have also been a reason for local transit systems to carefully review their future purchases. Greater use of public transit is one of the key strategies under the CAAA to help reduce emissions by getting more passenger vehicles off the road through the use of public transit, and there are inherent costs transit authorities must absorb with this legislation. The CAAA also mandated alternative fuel requirements for urban buses. The major feature of the law allows the use of either 'clean diesel' or alternative fuel engines, provided that these engines meet Clean Air Act Amendments and

California's stringent 1993 0.1g/bhp-hr particulate matter emission standards. In 1994, proposed standards will be 0.05 or 0.07 g/bhp-hr. These laws will impose substantial costs on the transit industry -- millions of dollars have been spent within the transit supply industry to carry out these provisions. (In a recent nation-wide survey conducted by the Southern California Rapid Transit District, the conversion of the existing U.S. urban transit bus fleets to diesel particulate traps was estimated to cost \$522 million.) The National Energy Strategy legislation now in Congress proposes further alternative fuel mandates on the transit industry.

The Americans with Disabilities Act relies on transit to guarantee mobility for people who have disabilities. In October, 1991, the Access Board Vehicle Standards went into effect. All new fixed route transit buses (with at least 15 passengers plus driver) are required to be accessible for handicapped riders. Any bus over 22 feet must have increased wheelchair securement areas, from one to two. Rural transit operators providing demand response service have the option of providing equivalent service for handicapped riders.

Since 1989, each new model transit bus must be FTA tested at the testing facility at Altoona, Pennsylvania. The new model is evaluated and reviewed for structural, emissions and safety deficiencies -- for example, a 40 foot bus is put on a test track for 3 -- 4 months to simulate long-term daily service. Until recently, the entire cost of the test (sometimes in excess of \$100,000 per vehicle) was the responsibility of the manufacturer. This cost, in addition to the loss of a new vehicle (which could be sold as a used vehicle after the completed test) caused concern in the industry. The Altoona testing program is viewed with ambivalence by industry manufacturers. Some agreed the testing adds an important evaluation structure - especially for the small van conversion where safety is a primary concern. Smaller transit authorities were given an additional gauge to evaluate and review new models. Large bus manufacturers indicated their own internal testing met all necessary Federal Transit Administration standards and Altoona was an unnecessary expense and was an additional deterrent to adding new designs to their fleets. The ISTEA legislation now allows an 80% reimbursement of costs per vehicle for tests at Altoona -- changing the industry perspective on the program. Since the implementation of this cost sharing programming, the number of vehicles tested at Altoona has increased.

The recently passed ISTEA authorized substantial increases in federal subsidies for local transit operations. Over the past decade, federal budget authority for transit declined by 30%. The ISTEA attempts to correct modal biases (for highways) at the federal level by substantially increasing funding for transit. Both the Americans with Disabilities Act and the

Clean Air Act Amendments of 1990 are imposing huge costs on the transit industry by requiring federal mandates without providing additional funding to cover these new costs. ISTEA regulations increase the federal cost share for new bus purchases to 90/10. However, when the administration submitted its 1993 budget to Congress, these authorizations were severely cut. It can be expected there will be additional local procurement delays until the budget is approved and monies have been appropriated; deliveries through 1994 will continue to remain static.

TRANSIT INDUSTRY BUS MARKET

	1990		1991		Deliveries Projected Per Year '92-'94**	Deliveries Projected Per Year '95-'98**
	Delivered	Fleet Total*	Delivered	Fleet Total*		
Under 20'	530	2422	451	2,681	445	600
20-25'	459	2508	568	2,901	475	614
26-30'	279	2012	349	2,409	360	371
31-35'	366	8275	254	7,940	285	370
36-42'	2,441	38375	2,536	39,932	2,625	3543
Over 42'	48	1809	80	1,891	80	108
Total	4,123	55,401	4,238	57,754	4,270	5,606

* Totals reflect buses taken out of service.
 ** Projections combine both APTA and FTA (UMTA) data.
 SOURCE: APTA

FIGURE 2

Figure 2 presents the current state of the transit bus industry. Data from APTA for 1990 and 1991 shows an overall increase in vehicle deliveries, from 4,123 to 4,238 with variants in particular sizes of buses. Projections for '92--'94 and '95--'98 are based on APTA and Federal Transit Administration information as well as manufacturers' comments. It is anticipated deliveries for the near term will remain level due to previously discussed factors. The longer term projections see increased business due to improved economic conditions along with an aging fleet in need of replacement and a demystification of regulatory statutes.

Projections shown in Figure 2 are based on conversations with transit manufacturers; their comments are based on current deliveries and projected deliveries for the next six to twelve

months. It should be noted while some companies sales figures show declines, the opposite is true for other manufacturers. Aggressive marketing and negotiating contribute to individual market share; but overall, there will be only minimal growth. As the fleet ages and as questions concerning the CAAA are answered by early adaptor transit systems taking the lead by adding cleaner fuel buses now, projections for longer term growth appear more optimistic. Projections for deliveries between 1995 -- 98 are based on the age of the fleet, annual fleet growth at 2 1/2% and an assessment of additional growth for specific types of buses. It is anticipated there will be more stability in alternative fuel technology options and infrastructure issues and questions will be more clearly defined and answered throughout the country. Local jurisdictions will have had to deal with early clean fleet development, mechanics and technicians will already be trained to deal with low emission vehicles (LEVs) troubleshooting, and public awareness should provide positive reinforcement for continued commitments to clean transportation.

Several large transit manufacturers are beginning to build smaller (under 30 feet) buses. There is a growing demand to down-size buses on certain urban routes as well as a growing need for smaller buses to provide increased suburban service. As the hub and spoke system develop -- conveniently feeding suburban passengers from their homes to express transfer centers -- public transportation will become less hostile to commuters. Frequent loop service can be economically accomplished with smaller vehicles. Some smaller urban transit systems are choosing 35 foot buses as an alternative to the standard 40 foot bus; and market research is also being done on the viability of a 28--34 foot bus. However, the 40 foot bus is still the accepted industry standard. Higher fuel costs, persistent pollution problems, the increasing number of elderly citizens, mainstreaming of people with disabilities, and the growing congestion of urban corridors will all affect future trends. As urban and rural transportation demands grow, the need for a system meeting these demands in an efficient and effective manner will also continue to grow.

III. SCHOOL BUSES

DEFINITIONS OF SCHOOL BUSES

Type A. A conversion or body constructed vehicle upon a van-type compact truck or a front-section vehicle, with a gross vehicle weight rating of 10,000 pounds or less, designed for carrying more than 10 persons.

Type B. A conversion or body constructed vehicle installed upon a van or front-section vehicle chassis, or stripped chassis, with a gross vehicle weight rating of more than 10,000 pounds, designed for carrying more than 10 persons. Part of the engine is beneath and/or behind the windshield and beside the driver's seat. The entrance door is behind the front wheels.

Type C. A body installed upon a flat back cowl chassis with a gross vehicle weight rating of more than 10,000 pounds, designed for carrying more than 10 persons. All of the engine is in front of the windshield and the entrance door is behind the front wheels.

Type D. A body installed upon a chassis, with the engine mounted in the front, middle, or rear, with a gross vehicle weight rating of more than 10,000 pounds, designed for carrying more than 10 persons. The engine may be behind the windshield and beside the driver's seat; it may be at the rear, behind the rear wheels, or midship between the front and rear axles. The entrance door is ahead of the front wheels.

Source: National Standards for School Buses and National Standards for School Bus Operations

School buses make up the majority of the buses on the road today. There are currently 272,812 district-owned buses and 110,669 contract-owned buses on the road. Data presented in this category comes primarily from *School Bus Fleet Magazine*, which is generally considered in the industry to be the most accurate and comprehensive source for sales information and secondarily from some of the larger school bus manufacturers. In comparing sales from 1990 and 1991, overall figures were down approximately 10%. This reflects the weakened economy in terms of available state tax dollars for school districts as well as lower school enrollment. For purposes of sales analysis, school bus fleets are classified into four types of vehicles (shown in Figure 3). Type A and B, large van conversions and smaller body on chassis designs, account for buses used specifically for

handicapped and special needs students. These figures increased approximately 26% over the previous year. Conventional 24--76 passenger bus (Type C) sales declined by 2,374 or 10% of 1990 sales and transit style bus sales (Type D) increased by 9% from the previous year. The 1990 total school bus fleet was estimated at 392,000. It is projected the 1991 fleet will show a slight decrease in size.

SCHOOL BUS MARKET

Passengers	1990	1991
Type A & B (Under 24)	6,297	6,864
Type C (24--76)	23,658	21,370
Type D (Over 76)	5,801	7,310
Total	35,756	35,544
Total Fleet*	392,000	N/A

SOURCE: School Bus Fleet Magazine
* ESTIMATE

FIGURE 3

Model year 1991 saw the introduction of forward controlled school buses. Industry analysts say this new style, a flat front bus, allows the driver better visibility of children on the road. In addition, new buses are being built to be easier to service and maintain, and there is a growing trend to offer alternative fuel buses -- with compressed natural gas becoming the current alternative fuel of choice. California recently added 10 CNG buses to their fleet for testing and evaluation. The success of these buses has led to an order for 100 CNG flat front, rear engine buses at a rate of 20 buses added each month beginning in October, 1992. This program was initiated by the California Energy Commission along with the bus industry and is funded by petroleum violations.

The ADA will not have significant impact on the school bus fleet because handicapped and special needs children have been provided paratransit service for a number of years. However, the current trend toward mainstreaming handicapped and special needs children will increase the need to have larger buses with specialized equipment. Analysts expect this trend to increase as children born to crack cocaine addicted mothers -- 'crack kids' and fetal alcoholic syndrome children -- those children born to alcoholic mothers -- reach school age. Furthermore, some states are beginning to phase out the use of van conversion-style buses because of potential safety hazards.

School bus transportation costs are paid by local jurisdictions; some school districts own their own fleet while others contract the service to private companies. As the latest figures report, sales are down and are expected to continue to decrease in 1992. This economic valley reflects the current recession -- causing an increase in the postponement of bus purchases for another 12 -- 18 months. Starting in 1993, deliveries are predicted to increase almost 10% and settle back to smaller increases of 1 -- 2% until 1996.

IV. COMMERCIAL NON-TRANSIT BUSES

DEFINITION

Any commercial passenger bus carrying 15 or more people that is not engaged in transit, school bus or intercity transport.

The non-transit segment of the bus industry is the most challenging to identify and evaluate. There are a large number of manufacturers and numerous types and styles of vehicles. The market for these buses reflects this diversity. As this sector of the market matures, a need for structure and communication within the industry increases. While trade associations provide services for users and manufacturers, accumulation of market statistics and trends are not centrally available. Therefore, in analyzing this portion of the market it became clear early in the stage of research that individual manufacturers would need to be queried. Parameters concerning size and type of bus were identified as the following:

- Type 1 Small van conversions (under 18 feet)
- Type 2 Large van conversions (over 19 feet)
- Type 3 Body on chassis types (25 to 29 ft.)
- Type 4 Body on chassis types (30 ft and above)
- Type 5 Purpose built Buses (25 to 29 ft.)
- Type 6 Purpose built Buses (30 to 35 ft.)
- Type 7 Purpose built Buses (36 to 42 ft.)

During the data collecting, two additional types were identified:

- Body on Chassis (under 24 ft.)
- Specialty Buses

Individual companies were asked to provide data on the number of buses they delivered in 1991 and project deliveries for 1992. They were then asked to indicate factors influencing the short term and long term health of the industry. Nearly 100% of companies contacted responded to the inquiry.

ESTIMATED COMMERCIAL NON-TRANSIT BUS MARKET

	1991	1992*	'93-'94**	'95-'98**
Small van conversions (Under 18')	570	403	500	650
Large Van Conversions (Over 18')	150	50	100	200
Body On Chassis (Under 24')	400	675	720	750
Body On Chassis (25-29')	2,582	3,065	3100	3200
Body On Chassis (Over 30')	564	560	575	580
Specialty Buses	130	170	150	180
Purpose Built (25-29')	103	284	250	300
Purpose Built (30-35')	198	425	450	500
Purpose Built (36-42')	110	175	180	200
Total Deliveries	4,807	5,807	6,025	6,560
Total Commercial Fleet 1991*	148,695			
* ESTIMATE				
** ESTIMATED PER YEAR PRODUCTION				
SOURCE: Individual Bus Manufacturers				
"BIG THREE" OEM 15-PASSENGER VANS	1991*	1992*	1994*	1996*
Deliveries	16,241	18,600	25,000	26,000
* ESTIMATE				
SOURCE: "Big Three" Auto Manufacturers				

FIGURE 4

In reviewing the data collected, Figure 4 shows the number of buses sold has increased and projections continue to show growth. It is estimated deliveries in 1992 will increase by 21% from 4,807 to 5,807. However, there is general agreement the market for commercial buses is tentative and will continue to be influenced by economic and regulatory forces. It is estimated the total fleet in 1991 was 148,695. Projected growth between '93--'94 will be 3.7 % and 8.8% from '95--'96. The largest overall subset of vehicles in Figure 4 is the 'Big Three' OEM passenger vans. Current deliveries for these vehicles are separately factored into the total commercial fleet estimates.

Many of the non-transit manufacturers are small companies, some producing less than 100 vehicles annually; competition can be fierce. The economic downturn has seen some companies go out of business, others file Chapter 11 and a few takeovers.

In comparing the regulations imposed on the transit sector, the CAAA is less stringent with the non-transit sector. Beginning in 1994, heavy duty buses must meet a 0.1g/bhp-hr particulate matter emission standard. It is expected this will be accomplished either by engine modification and improvement or use of a particulate trap. Alternative fuel buses will also be introduced.

The ADA requirements for non-transit vehicles provides a flexible standard based on whether a bus is "primarily engaged" or "not primarily engaged" in the business of transporting people. If bus service is fixed route and demand response, "primarily engaged" with more than 8 passengers, an accessible vehicle must be provided; fixed route and demand response, "not primarily engaged" with more than 15 passengers, an accessible vehicle is required, less than 15 passengers, accessible vehicle or equivalent service is required. These new requirements have increased the number of customized smaller buses being built and was also responsible for the introduction of front door wheel chair ramps.

There is a growing interest in smaller vans of less than 15 passengers because of the new Commercial Driver's License requirement for the operators of larger buses. These smaller, less expensive vehicles, manufactured by the OEMs, (shown in Figure 4) are meeting the needs of church groups and senior centers requiring driver flexibility in order to provide increased service demands by their users.

The number of smaller buses (body on chassis under 24 foot) being ordered is increasing. Manufacturers are offering better built buses that have many of the same features as larger transit style vehicles but provide increased maneuverability, and offer greater reliability and longer life than a van conversion.

Three user subsets were identified as a part of the larger field of non-transit purchasers. Data in Figure 5 is the result of a partial survey of shuttle buses in this category. This partial survey was conducted to determine user needs of rental car companies, major airport authorities and colleges and universities. The findings indicate a continuing reliance on small and transit style vehicle fleets that are in a continual state of replacement. In the case of rental car companies, there is a strong commitment to providing high quality customer service in new, contemporary designed smaller vehicles; therefore, their cycle of

SAMPLE OF SHUTTLE BUSES IN SERVICE

RENTAL CAR COMPANIES		MAJOR AIRPORTS BUS FLEETS		COLLEGES & UNIVERSITIES
Bus Fleet	Fleet Size '92*		1992	
Under 19'	40	Under 35'	122	
19-24'	645	35' and over	290	
25-29'	495			1992
Over 30'	400	Total for 17 Major Airports**	412	Total*** 525
Total	1580			
Delivered in 1991*	211			
Projected Deliveries 1992*	125			
SOURCE: * Individual rental car company inquiry		SOURCE: ** Inquiry to 17 Major U.S. Airports Airports reported limited replacements		SOURCE: *** Inquiry to 39 Colleges & Universities

FIGURE 5

replacements and/or new buses is highest in this subset. Shuttle buses are standard on most college and university campuses. Schools have their own fleets or contract out the service to a private provider. Other institutions are served by the local transit authority. In this case, cost sharing for these services vary from fees assessed to the university by the transit authority to garaging and maintenance provided by the school in exchange for service. Because of high replacement costs, intercity type buses in this subset are being refurbished and/or rebuilt for extended life.

In summary, aggressive distribution systems and dealer networks have been factors involved in the expansion of the commercial non-transit bus business. The growing number of older Americans with the related increase in the long term care market and the continued decentralization of the population will be significant influences on the non-transit bus industry.

V. INTERCITY BUSES

DEFINITION

An *intercity bus*, or an over the road bus, is characterized by an elevated passenger deck located over a baggage compartment. The bus has front doors only, high-backed seats and usually will provide lavatory facilities. It is used for high-speed, long distance service.

During recent interviews about the Intercity bus business an industry analyst commented that 1991 was the "worst year in decades" for deliveries and a manufacturer's representative said "the market is mature." While these two quotes present slightly divergent opinions, it is safe to say that there has been minimal growth, if any, in the Intercity bus market in the recent past, as shown in Figure 6. There are approximately 25,000 buses in the Intercity fleet today. Estimated figures for 1991 deliveries were less than 1000 buses and projections for 1992 are not expected to increase significantly.

Figure 6 projects growth over the long term for the Intercity bus fleet. These estimates reflect a slow but steady strengthening in intercity travel and tourism. It is expected the Intercity bus fleet will be over 30,000 vehicles by the late --'90's.

INTERCITY BUSES

	1991	1992*	'93-'94**	'95-'98**
Deliveries	> 1000	< 1000	1200	1300
Total Intercity Fleet 1992*	25,000			
* ESTIMATE				
** ESTIMATED PER YEAR PRODUCTION				
SOURCE: Individual Bus Manufactures				

FIGURE 6

The recent downturn can be attributed to several factors -- from Greyhound going into Chapter 11 and flooding the market with late model used buses to the Gulf War causing a precipitous drop in travel and tourism (bus trips to Atlantic City went from over 1,500 per day down to less than 300). New ADA regulations can add up to an additional 20% price hike in new buses and the Clean Air Act Amendments and state emissions standards also impact on intercity bus manufacturing costs. New federal regulatory procedures for drivers

do not impact directly on intercity bus purchases, but have added an additional administrative burden on the smaller operators. As stated before, as of April 1, 1992, the Federal Highway Administration is now requiring a Commercial Driver's License for any driver of a vehicle having 15 or more passengers. In the past, Intercity drivers often had several state licenses -- which made it easier for them to elude violations by presenting a 'clean' license if stopped. With this new, federally mandated program through the Federal Highway Administration, bus drivers will have only one commercial license -- issued by individual states with a central clearinghouse maintained by the American Association of Motor Vehicle Administrators Network.

In looking at 1992 and beyond, several trends are beginning to take form. Increased sales reflect the public's willingness to again leave home as well as an indication of an early economic up-turn. With the passage of the Intermodal Surface Transportation Efficiency Act of 1991, the longer 45 foot Intercity bus was legalized for interstate travel. This extra space will create larger, more comfortable seating, bigger lavatories as well as increased seating capacity. New Intercity buses, regardless of size, are becoming more luxurious with additional passenger amenities; as one representative said 'it will be hard to tell the difference in bus travel from first class airline seating.' Investment tax credits would be a plus to the industry by offering incentives to increase the size of the fleet. In a cost saving measure, more rebuilding and refurbishing of older buses is currently being done.

VI. SUMMARY OF FINDINGS

The purpose of this report was to examine the American bus industry's recent, current and future position in the marketplace. This was accomplished through an analysis of 1991 deliveries and projected deliveries for 1992 and estimated short term and long term delivery forecasts. Government and private sector data along with interviews with representatives from bus manufacturers, were utilized for this study. This report was done in conjunction with the DOE/DOT Fuel Cell Transit Bus Program by Georgetown University.

There are several overriding factors presently impacting the bus industry: the economy, the Clean Air Act Amendments of 1990, the Intermodal Surface Transportation Efficiency Act of 1991, the Americans with Disabilities Act and federal and local funding.

In 1992, the bus industry finds itself in a holding pattern. Deliveries have remained either

stable or have endured slight declines. However, representatives throughout the industry are cautiously optimistic about the future. While the long term will see a number of major changes in bus manufacturing due in part to the CAAA and ADA which should produce an increase in new buses on the road, the short term will see a slower paced growth dependent upon the resolution of the above stated current overriding factors.

In conclusion, there are substantial direct and indirect indications the bus industry will demonstrate continued and deliberate growth during this decade.

VIII. ACKNOWLEDGEMENTS

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