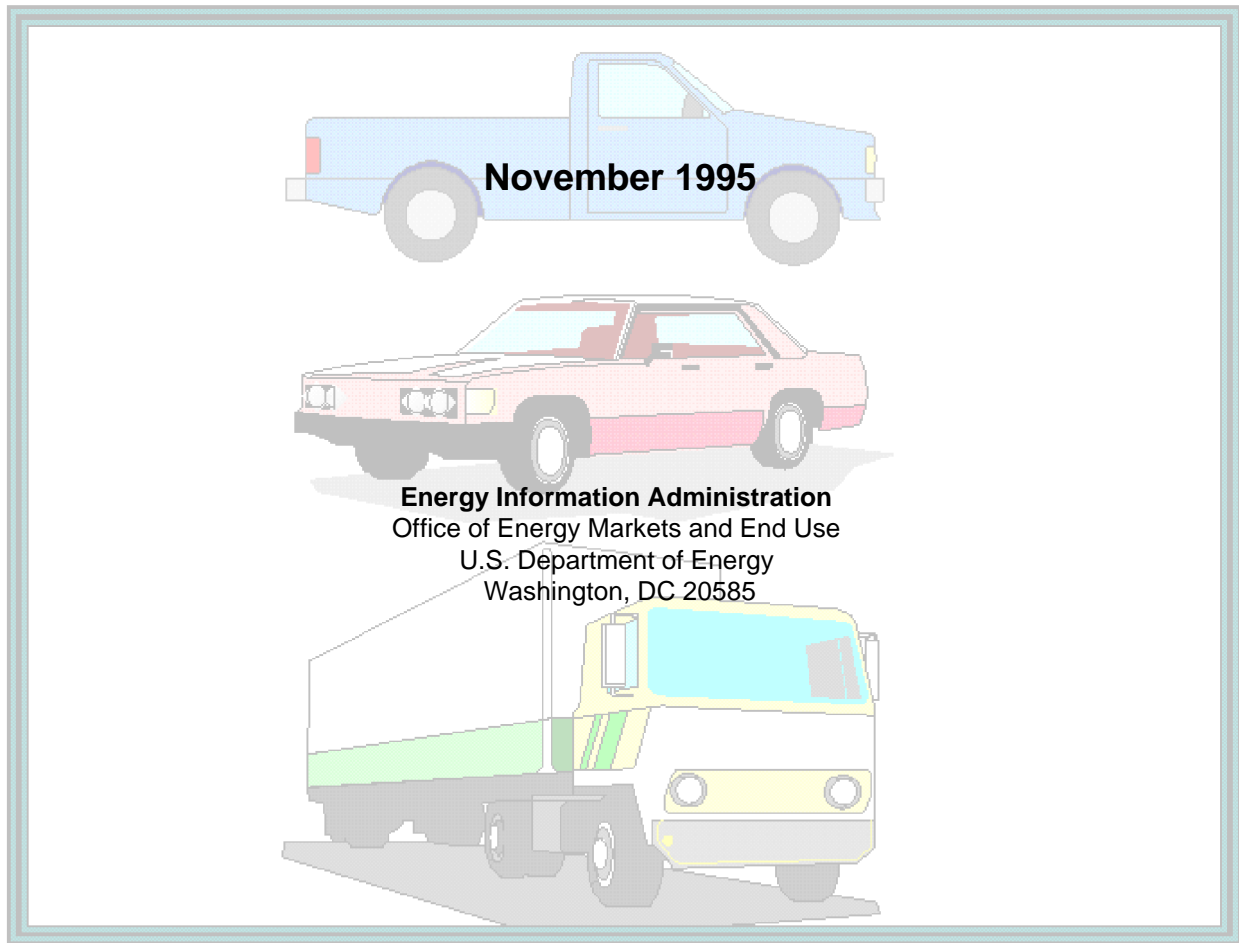


# **Profile of Motor-Vehicle Fleets in Atlanta 1994**

## **Assessing the Market for Alternative-Fuel Vehicles**



This report was prepared by the Energy Information Administration, the independent statistical and analytical agency within the Department of Energy. The information contained herein should not be construed as advocating or reflecting any policy position of the Department of Energy or any other organization.

## Contacts

The Energy Information Administration (EIA) prepared this report under the general direction of W. Calvin Kilgore, Director of the Office of Energy Markets and End Use (202-586-1617). The project was directed by Lynda T. Carlson, Director of the Energy End Use and Integrated Statistics Division (202-586-1112). Dwight K. French, Chief of the Transportation and Industrial Branch (202-586-1114) provided the technical direction for this first EIA fleet survey. Leigh Carleton (202-586-1132) is the author. Christy Hall developed the relative standard errors for the data presented in this report. F. Ronald Lambrecht (202-586-4962) provided the data from the Residential Transportation Energy Consumption Survey, and Hattie Ramseur made important contributions to its publication.

Appreciation is due to the persons and agencies in Atlanta, Georgia that provided help and advice in numerous ways. These include the U.S. Department of Energy's Atlanta Support Office; the Transportation Committee of the Atlanta Chamber of Commerce; and members of CleanAir Transportation - Atlanta, which include: Atlanta Gas Light, Georgia Power, Georgia Gas Distributors, Georgia Environmental Protection Division Mobile Source Emissions Programs, the local chapter of the National Association of Fleet Administrators, and the Southern Coalition for Advanced Transportation. Most of all, thanks is due to the fleet managers that responded to this survey.

Dear Colleague:

In 1992, Congress passed the Energy Policy Act (EPACT), a bipartisan effort to secure the Nation's long-term energy future by encouraging energy efficiency, alternative fuels, and renewable energy sources. The Energy Information Administration (EIA) was directed by Section 407 of the Act to establish a new data collection program that would be useful to persons seeking to manufacture, convert, sell, own, or operate alternative-fuel vehicles.

A consultation process with interested parties and review of existing data confirmed that the most useful information would be basic descriptions of fleets. Private and public fleet owners were expected to be the first purchasers of alternative-fuel vehicles, because the logistics of refueling may be easier for vehicles in fleets. As a whole, few data were available regarding fleet vehicles and their characteristics. The survey discussed in this report was a first attempt to collect private and municipal fleet data, and focuses on a major metropolitan area designated as a Department of Energy Clean City.

*Profile of Motor-Vehicle Fleets in Atlanta 1994* reports the results of the EIA survey of motor-vehicle fleets, both private and municipal, in Atlanta. These data should be useful to those whose goal is to assist or participate in the early development of alternative-fuel vehicle markets. The data also should be useful to persons implementing motor-vehicle-related clean air programs or analyzing transportation energy use. Persons in the petroleum industry will find useful information regarding conventional fuels and the fuel-purchasing behavior of fleets.

Many persons expressed an interest in the methodology of this study as it was under way. EIA's intention was to take this first step in fleet-population surveys and to produce a report that will be useful to others wishing to undertake similar surveys in their own locales.

Jay E. Hakes  
Administrator  
Energy Information Administration

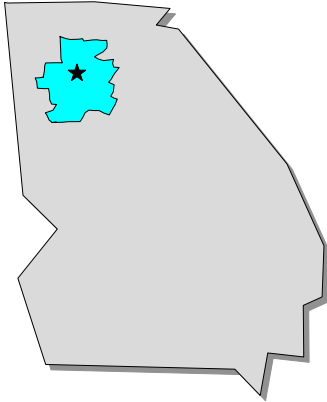
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# Profile of Motor-Vehicle Fleets in Atlanta 1994

## Private Fleet Characteristics

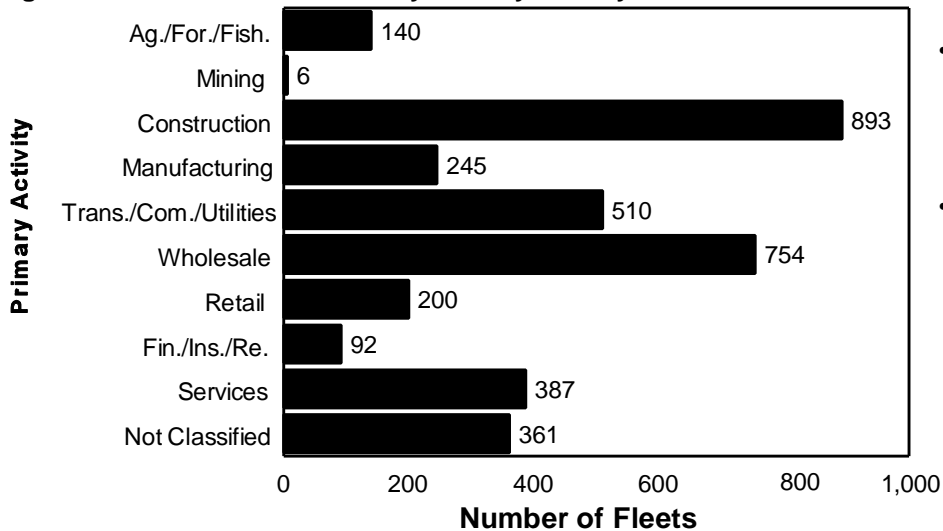
*Geographically, the survey area comprises 13 counties that immediately surround Atlanta, Georgia. In 1990, this area represented about one percent of the U.S. population.*



- Atlanta, Georgia is the first designated U.S. Department of Energy Clean City.
- The survey area is the Atlanta nonattainment area, as defined by the 1990 Clean Air Act Amendments.
- The survey area represents the Atlanta Metropolitan Statistical Area (MSA), excluding five counties with relatively small populations, which are on the outer ring of the MSA.

*The fleets in Atlanta are concentrated in three industry divisions.*

**Figure 1. Atlanta Private Fleets by Primary Activity**



- There were approximately 3,600 private fleets<sup>1</sup> with 6 or more vehicles operating out of the Atlanta area.
- Sixty percent of the private fleets with 6 or more vehicles operating in the Atlanta nonattainment area were in three industry divisions-- Construction; Wholesale; and Transportation, Communications, Electric, Gas, and Sanitary Services.

Notes: • Primary activities are based on industry divisions from the Standard Industrial Classification Manual, U.S. Executive Office of the President, 1987. • Ag./For./Fish.=Agriculture, Forestry, and Fishing. • Trans./Com./Utilities =Transportation, Communications, and Electric, Gas and Sanitary Services. • Fin./Ins./Re. = Finance, Insurance, and Real Estate.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.

<sup>1</sup>A private fleet for this study was defined as any group of six or more vehicles owned or operated by a commercial company and operated out of a base location/locations in the 13-county nonattainment area of Atlanta. (See Appendix A, "Fleet Composition.")

**Text Box 1**



According to the Standard Industrial Classification Manual, the Construction Division includes general contractors and builders engaged in the construction of buildings, general contractors involved in heavy construction on highways and bridges, and special trade contractors engaged in painting, electrical work, heating, air-conditioning, or roofing at construction sites.

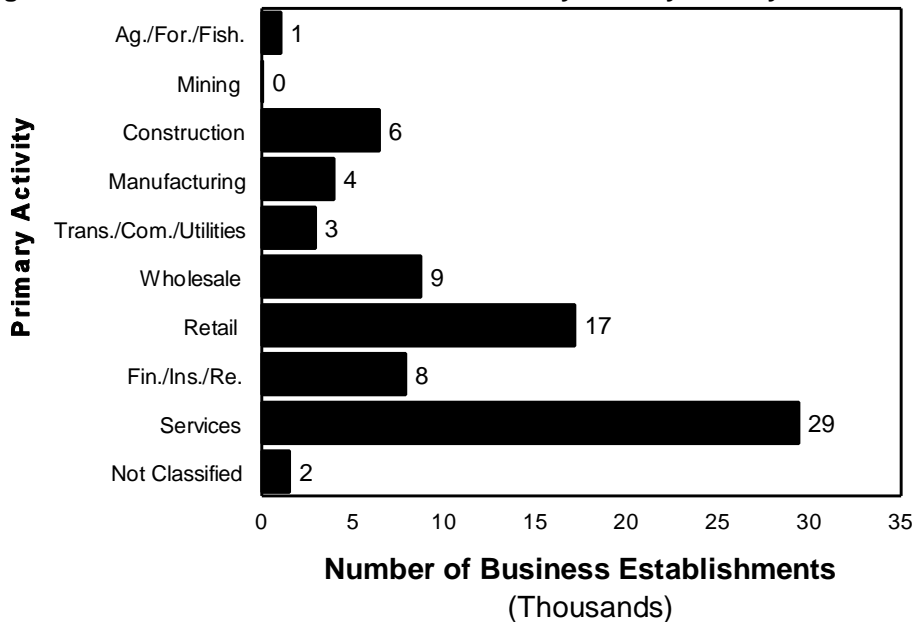
Wholesale businesses are engaged primarily in selling goods to retailers or other commercial enterprises. In addition to selling, they perform a variety of services associated with wholesale including merchandise delivery. Wholesale establishments can be a branch (not a retail store) of a company that is separate from the manufacturing plant, that is maintained to market products.



The Transportation, Communications, Electric, Gas and Sanitary Services Division includes most companies in the business of transporting people and goods by all modes of transportation. Also in this division are establishments furnishing communication and utility services.

*The top three industry divisions with the greatest number of fleets (60 percent) made up only 23 percent of Atlanta area business establishments.*

**Figure 2. Atlanta Business Establishments by Primary Activity**



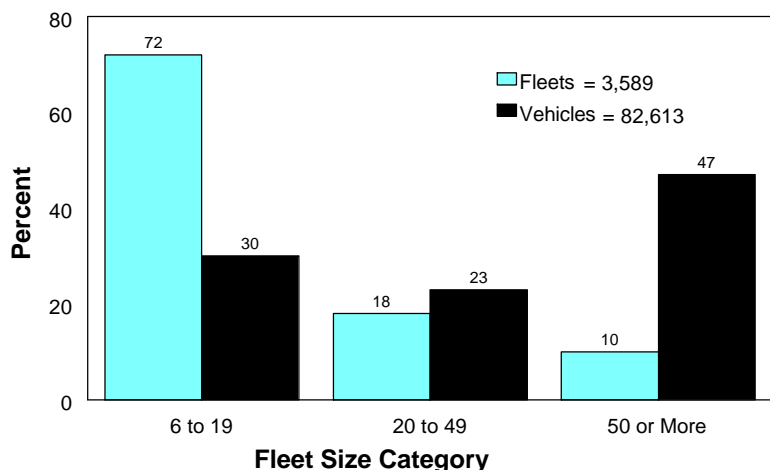
- The Construction; Wholesale; and Transportation, Communications, Electric, Gas, and Sanitary Services divisions ranked first, second, and third, respectively, in number of fleets.
- These three industries ranked fifth, third, and seventh, respectively, in number of establishments.

Notes: • Primary activities are defined based on industry divisions from the Standard Industrial Classification Manual, U.S. Executive Office of the President, 1987. • Ag./For./Fish. = Agriculture, Forestry, and Fishing. • Trans./Com./Utilities = Transportation, Communications, Electric, Gas, and Sanitary Services. • Fin./Ins./Re.= Finance, Insurance, and Real Estate.

Source: Bureau of the Census, 1992 *County Business Patterns*.

*Almost half of the private fleet vehicles were controlled by only 10 percent of the fleets.*

**Figure 3. Distribution of Fleets and Gasoline and Diesel-Fuel Vehicles by Fleet Size Category**



- Seventy-two percent of fleets fell into the small category of 6 to 19 vehicles, but these fleets accounted for only 30 percent of all private fleet vehicles.
- Medium-size fleets with 20 to 49 vehicles made up about 20 percent of the fleet population and 23 percent of the fleet vehicles.
- Large fleets, those with 50 or more vehicles, represented only 10 percent of the fleet population, but controlled 47 percent of all private fleet vehicles in the Atlanta nonattainment area.

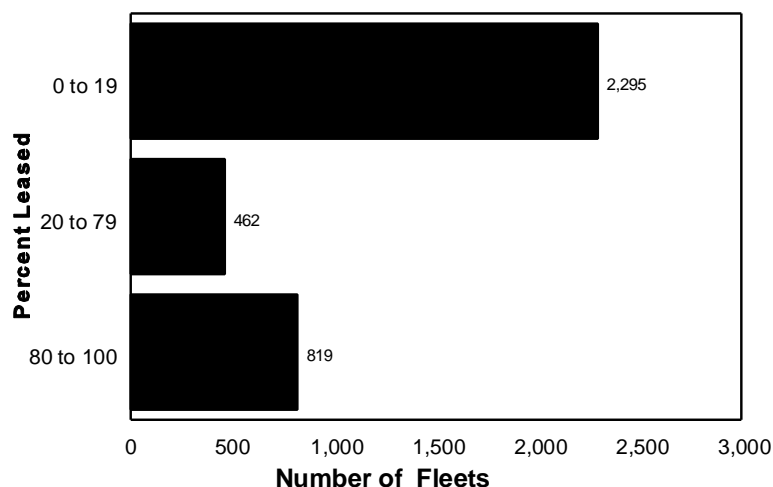
Note: Vehicles in fleets with less than six vehicles were not part of the fleet survey.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.

*About 60 percent of the Atlanta area fleets chose to lease less than 20 percent of their fleet vehicles.*

- Twenty-three percent of the fleets chose to lease 80 percent or more of their vehicles; these fleets operated 30 percent of the fleet vehicles in the Atlanta area.
- The remaining 13 percent of the fleets had a greater mix of leased versus purchased vehicles (Table 1).

**Figure 4. Distribution of Fleets by Percent of Vehicles Leased**



Note: The estimate from the survey for the category "no answer" is less than one percent of the total fleets but is not shown because the relative standard error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.

**Text Box 2**

**Distribution of Fleet Vehicles in Fleets that Reported the Following Percentages of Leased Fleet Vehicles**

Percent of Fleet Vehicles Leased	Fleet Vehicles
0 to 19	43,827
20 to 39	4,077
40 to 59	6,283
60 to 79	Q
80 to 100	26,651
No answer	197

Q=Withheld because the relative standard error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.

*Of the light-duty private fleet vehicles in Atlanta, between 30,000 and 40,000 were in fleets that would meet current size criteria in the 1992 Energy Policy Act (EPACT) for alternative-fuel vehicle purchase mandates, if such mandates were put into effect.*

- Of the 82,613 fleet vehicles in Atlanta, about 56,000 are light-duty vehicles.
- Of these 56,000 light-duty vehicles, roughly 40,000<sup>2</sup> were in fleets with 20 or more vehicles and, therefore, met the EPACT size criteria of “20 or more light-duty vehicles operating in a Metropolitan area” (Text Box 3).
- However, about 10,000 of these 40,000 vehicles were in fleets in Atlanta with 20 to 49 vehicles and, therefore, may or may not meet a third EPACT size criteria of being operated by an entity that controls 50 or more such vehicles nationwide (Text Box 3).

**Text Box 3**

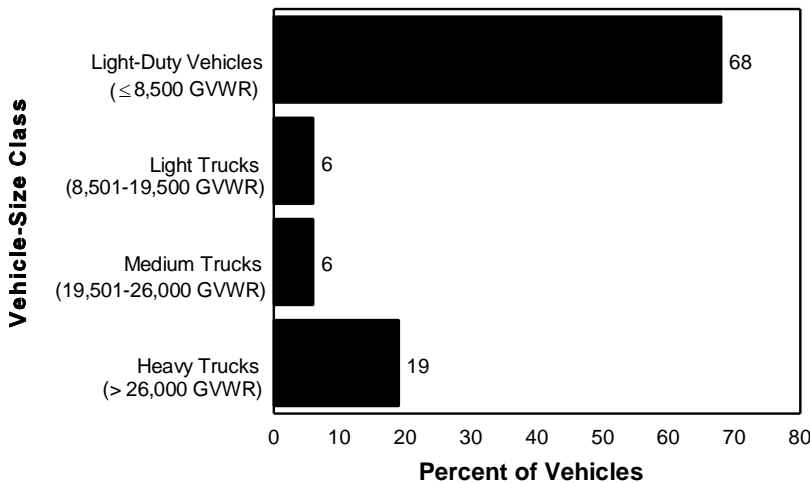


The EPACT directs the Department of Energy to determine whether certain private and municipal fleets could be a critical component in achieving the EPACT goals of replacing 10 percent of the U.S. projected petroleum consumption by the year 2000 and 30 percent by the year 2010. If so, such fleets would be required to purchase alternative-fuel vehicles at preset percentages of their new vehicle acquisitions.

Fleets to which the mandates may apply include those that consist of 20 or more light-duty motor vehicles that are centrally fueled or capable of being centrally fueled, in a metropolitan area with a 1980 population greater than 250,000, operated by an entity that controls 50 or more such vehicles nationwide.

*Light-duty vehicles dominate all other fleet vehicle-size classes.*

**Figure 5. Distribution of Gasoline and Diesel-Fuel Vehicles by Vehicle-Size Class**



- Light-duty vehicles--8,500 or less gross vehicle weight rating (GVWR) (passenger cars, pickup trucks, vans and sport/utility vehicles) made up almost 70 percent of total fleet vehicles.
- Heavy trucks were second in number of fleet vehicles. Tractor trailers and other trucks greater than 26,000 GVWR accounted for almost 20 percent of fleet vehicles.
- The two middle-size classes--light trucks (8,501 to 19,500 GVWR) and medium trucks (19,501 to 26,000 GVWR) together accounted for 12 percent of Atlanta fleet vehicles.

GVWR = Gross vehicle weight rating.

Note: The survey estimate for the number of buses is on the order of one percent; but these data are not shown because the relative standard error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

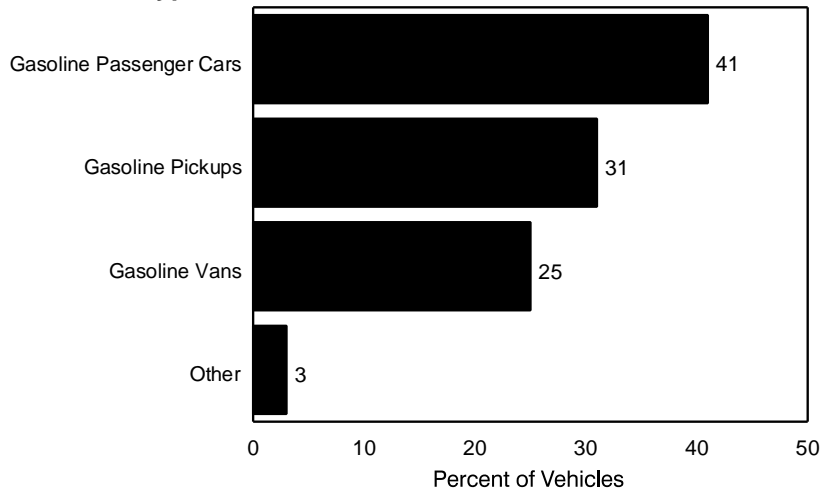
Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.

<sup>2</sup> One of the components of these 40,000 vehicles, those vehicles in fleets of 50 or more vehicles (27,451), is subject to a relative standard error of 62 percent (Table B2) and, therefore, the estimate is not shown in Table 2. However, its magnitude can be derived from other estimates shown in Table 2, and has been combined here with the estimated number of vehicles in fleets of 20 to 49 (11,497) to present an estimate of the number of vehicles in fleets of 20 or more.



*Within the light-duty size class, multipurpose vehicles were often the choice for fleet applications; vans and pickup trucks together made up almost 60 percent of the light-duty fleet vehicles. For households, in contrast to fleets, passenger cars still dominate multipurpose vehicles.*

**Figure 6. Distribution of Atlanta Light-Duty Fleet Vehicles by Type**

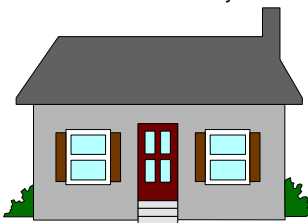


Light-duty fleet vehicles:

- Passenger cars comprised 41 percent of all light-duty vehicles
- Pickups made up 31 percent of all light-duty vehicles
- Vans, almost as popular as pickups, comprised 25 percent of all light-duty fleet vehicles.

Note: Other includes diesel cars, pickups, and vans; and all sport/utility vehicles (gasoline and diesel).

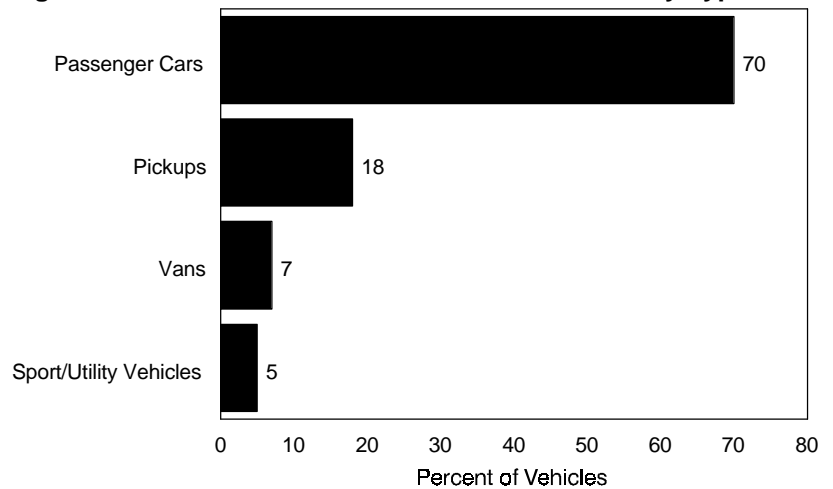
Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.



Residential vehicles:

- Passenger cars made up 70 percent of household vehicles.
- Pickup trucks were more than twice as popular as vans (18 percent and 7 percent, respectively).
- Sport/utility vehicles, often thought of as recreational vehicles, accounted for 5 percent of all household vehicles.

**Figure 7. Distribution of U.S. Residential Vehicles by Type**

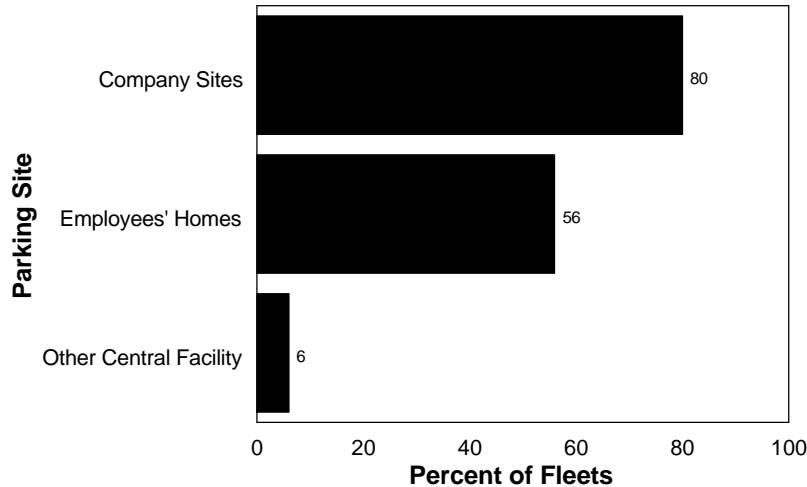


Note: Residential vehicle data are based upon the first four vehicles that were reported upon by households in the 1993 Residential Energy Consumption Survey. Data for up to 10 vehicles will be available through the 1994 Residential Transportation Energy Consumption Survey.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-457, 1993 Residential Energy Consumption Survey.

*Most fleets reported parking vehicles at a company site or other central facility; at the same time, many of those fleets reported that they also parked vehicles at employees' homes.<sup>3</sup> Vehicles that return to a fixed location at the end of the day are a potential market for central alternative-fueling/charging facilities.*

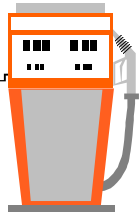
**Figure 8. Fleets by Type of Sites Used to Park Company Vehicles (more than one may apply)**



- Eighty percent of the fleets reported that they parked at least some of their fleet vehicles at their site.
- Fifty-six percent reported parking at least some of their vehicles at employees' homes.

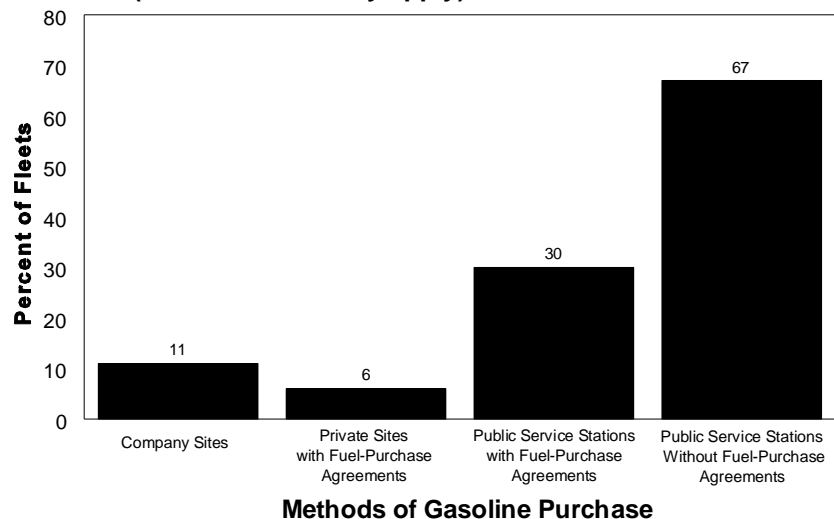
Notes: • Some fleets are represented in more than one category. • For a second fleet survey conducted in Denver, data were collected on the percentage of vehicles typically parked at different sites. (Data from the Denver survey are in an early stage of processing.)

Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.



*In Atlanta, most fleets used public service stations to obtain gasoline.*

**Figure 9. Methods Used by Fleets to Refuel with Gasoline (more than one may apply)**



- Only about 10 percent of the fleets with gasoline vehicles fueled those vehicles on site.
- Another 6 percent of the fleets with gasoline vehicles reported that gasoline was obtained at private fueling facilities.
- Thirty percent of the fleets purchased their gasoline at public service stations with fuel-purchase agreements,<sup>4</sup> 70 percent purchased at public service stations without any agreements.

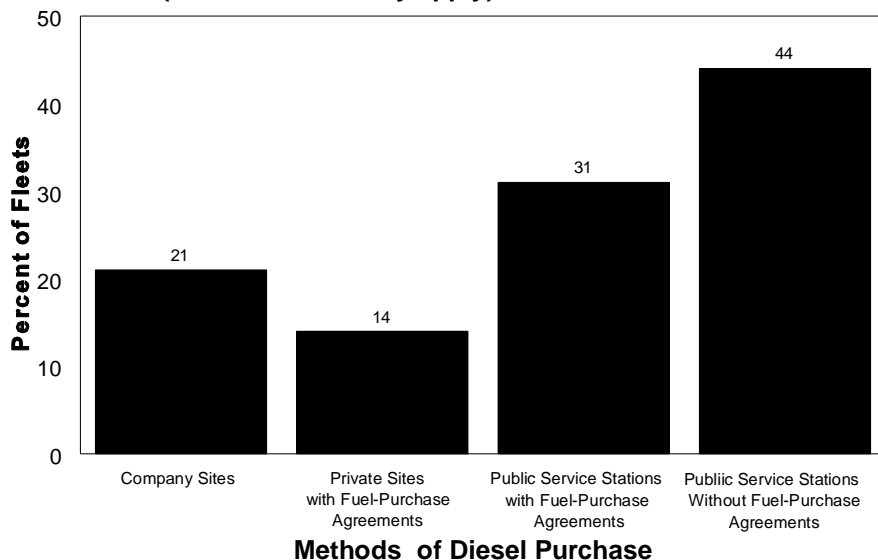
Note: Some fleets are represented in more than one category.  
Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.

<sup>3</sup>For a second fleet survey conducted in Denver, data were collected on the percentage of vehicles typically parked at different sites. (Data from the Denver survey are in an early stage of processing.)

<sup>4</sup>For this survey a fuel-purchase agreement was not explicitly defined to include fleet credit cards. For a second fleet survey, conducted in Denver, a fuel-purchase agreement was defined to include fleet credit cards. (Data from the survey in Denver are in an early stage of processing.)

*Diesel was more likely than gasoline to be provided at company sites or obtained at private fueling facilities.*

**Figure 10. Methods Used by Fleets to Refuel with Diesel (more than one may apply)**



- About 20 percent of the fleets with diesel vehicles provided diesel fuel on site; these fleets operated about 40 percent of all diesel vehicles (Text Box 5).
- About 15 percent of the fleets reported that diesel fuel was obtained at private fueling facilities.

Note: Some fleets are represented in more than one category.  
 Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.

**Text Box 4**

**Distribution of Fleet Vehicles in Fleets that Reported Using these Methods to Refuel with Gasoline (more than one may apply)**

Refueling Practices	Gasoline Vehicles
Total Gasoline Vehicles	58,527
Company Sites	6,565
Private Sites with Fuel-Purchase Agreements	5,340
Public Service Stations with Fuel-Purchase Agreements	20,057
Public Service Stations Without Fuel-Purchase Agreements	34,884
No Answer	549

Note: Vehicles sum to more than the total because some vehicles are represented in more than one category.  
 Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Fleet Vehicle Survey.

**Text Box 5**

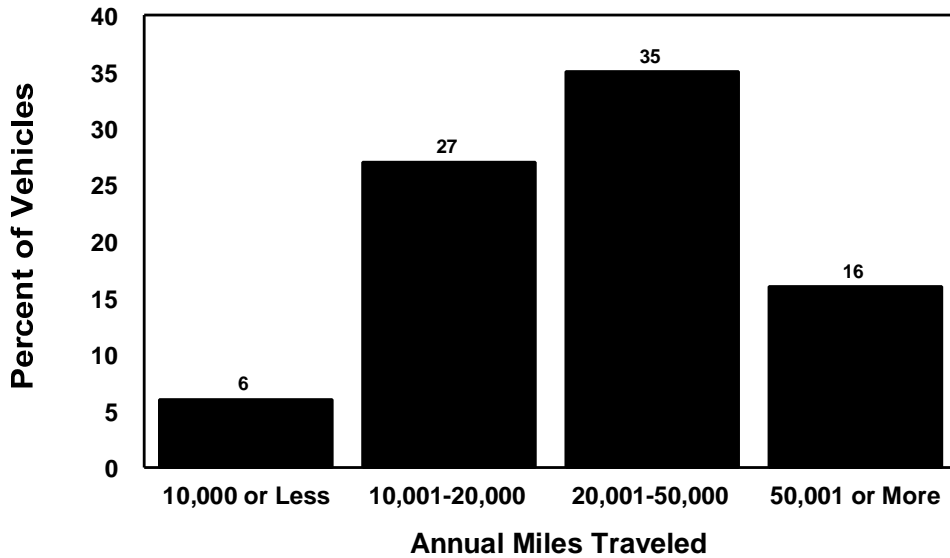
**Distribution of Fleet Vehicles in Fleets that Reported Using these Methods to Refuel with Diesel (more than one may apply)**

Refueling Practices	Diesel Vehicles
Total Diesel Vehicles	24,086
Company Sites	9,779
Private Sites with Fuel-Purchase Agreements	3,594
Public Service Stations with Fuel-Purchase Agreements	7,124
Public Service Stations Without Fuel-Purchase Agreements	6,781
No Answer	Q

Q=Withheld because relative standard error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.  
 Note: Vehicles sum to more than the total because some vehicles are represented in more than one category.  
 Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Fleet Vehicle Survey.

*Most of Atlanta's fleet Vehicles (about 80 percent) traveled more than 10,000 miles per year. In contrast 57 percent of U.S. residential vehicles traveled 10,000 miles or less.*

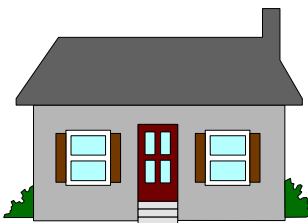
**Figure 11. Distribution of Atlanta Fleet Vehicles by Annual Miles Traveled Categories**



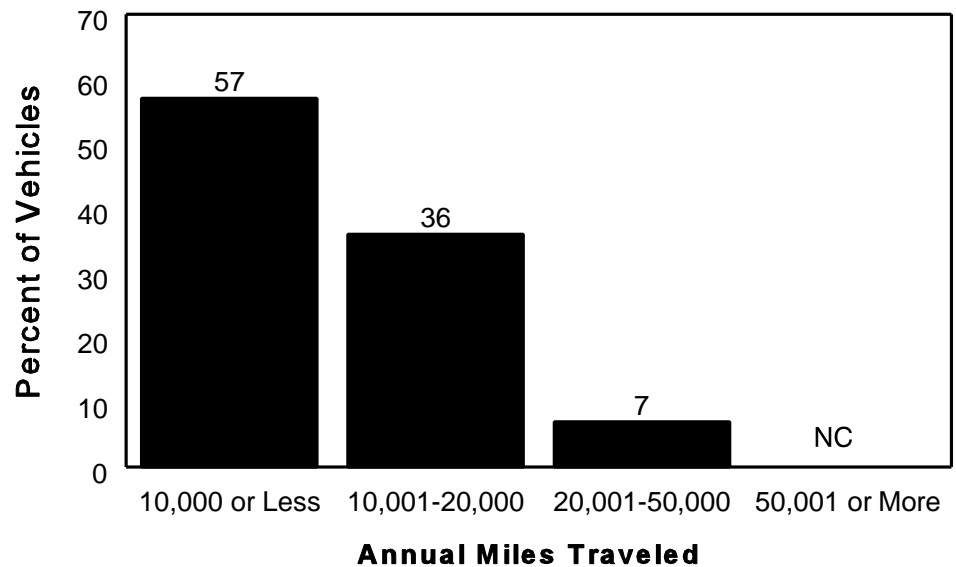
- For the largest percentage of fleet vehicles (35 percent) miles traveled ranged from 20,001 to 50,000 per year.
- For the second largest group of fleet vehicles (27 percent) miles traveled ranged from 10,001 to 20,000 per year.
- Sixteen percent of Atlanta fleet vehicles traveled more than 50,000 miles per year.
- Only 6 percent of the fleet vehicles in Atlanta traveled 10,000 miles or less.

Note: Not Shown here are an estimated 17 percent of total fleet vehicles for which no mileage data were reported. (Data not shown due to a relative standard error equal to or greater than 50 percent, or data were reported for fewer than five fleets.)

Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicle Fleet Survey.



**Figure 12. Distribution of U.S. Residential Vehicles by Annual Miles Traveled Categories**



- About one-third of U.S. residential vehicles traveled between 10,001 and 20,000 miles per year .
- Only 7 percent of residential vehicles traveled more than 20,000 miles per year.

NC = No case reported.

Source: Energy Information Administration, Office of Energy Markets and End Use, 1991 Residential Transportation Energy Consumption Survey

***Roughly 90 percent of the Atlanta fleets operated between 220 and 366 days per year.***

- Fifty-seven percent of the Atlanta fleets operated between 220 and 292 days per year (Table 1).
- Thirty-five percent operated between 293 and 366 days per year (Table 1).

***One measure of how far a fleet vehicle needs to travel before refueling, is the average miles that a fleet vehicle travels per day. Vehicle miles per day can be estimated from reported annual miles traveled per vehicle and reported fleet operating days per year.***

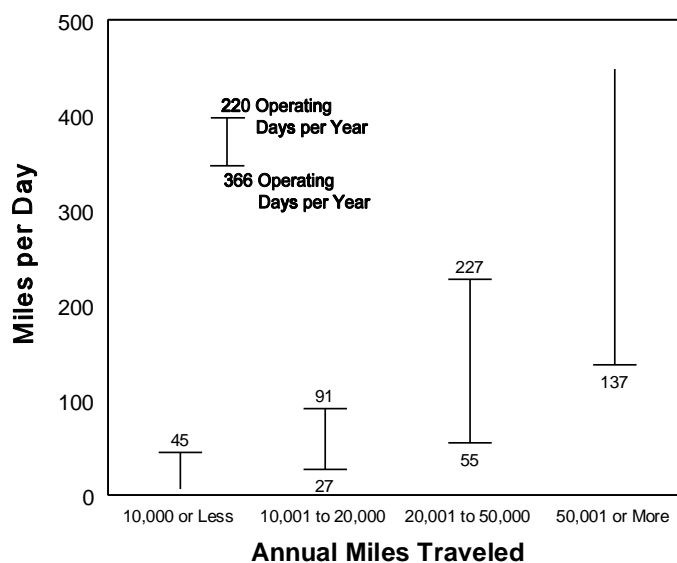
**Text Box 6**

**Estimating Vehicle Miles per Day**

For fleet vehicles in the annual miles traveled category 20,001 to 50,000, the upper limit for vehicle miles traveled per day of 227 (Figure 13) is computed by dividing 50,000 miles per year by 220, the minimum number of operating days per year, for most fleet vehicles in Atlanta.

The lower limit for vehicle miles traveled per day of 55 is computed by dividing 20,001 miles per year by 366, the maximum number of operating days per year, for Atlanta fleet vehicles.

**Figure 13. Estimated Vehicle Miles per Day by Annual Miles Traveled Categories**



Note: The first and last categories of annual miles are open-ended categories and, therefore, only one estimate of miles per day is shown.  
 Source: Energy Information Administration, Office of Energy Markets and End Use, 1994 Atlanta Vehicles Fleet Survey.

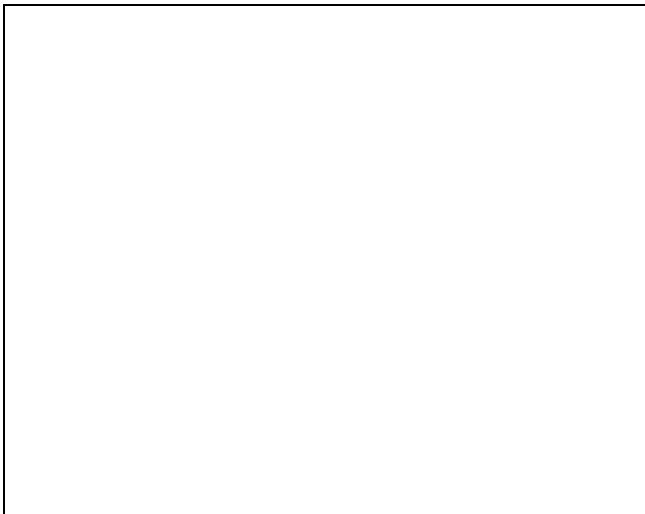
***It is estimated that roughly 70 percent of Atlanta fleet vehicles traveled less than 227 miles per day, and almost one-half of those vehicles traveled less than 100 miles per day.***

- For the 35 percent of Atlanta fleet vehicles in the annual miles traveled category 20,001 to 50,000 (Figure 11), estimated vehicle miles traveled per day was between 55 and 227 (Figure 13).
- Estimated vehicle miles traveled per day, for the 27 percent of fleet vehicles in the annual miles traveled category 10,001 to 20,000 was between 27 and 91.
- Six percent of Atlanta fleet vehicles traveled 10,000 miles or less per year; on average, no more than an estimated 45 miles per day.

## Alternative-Fuel Vehicles in Private Fleets

*In mid-summer 1994, only 1 percent of private fleets had alternative-fuel vehicles (AFV's). Three percent of the fleets said they had plans to purchase alternative-fuel vehicles or convert some vehicles to alternative fuel in 1995.*

- Alternative-fuel vehicles in the Atlanta area represented one percent of total vehicles. Seventy percent of fleet vehicles in Atlanta's private fleets are fueled with gasoline; twenty-nine percent of fleet vehicles used diesel fuel.
- Ninety percent of the alternative-fuel vehicles reported were light-duty vehicles. In contrast light-duty vehicles made up 70 percent of conventional-fuel vehicles.
- For private fleets, general awareness of existing or pending legislation regarding mandates for alternative-fuel vehicles was low at the time of the survey (mid-summer 1994). Less than 25 percent of the fleets reported being aware of any existing or pending legislation requiring the use of alternative fuels.

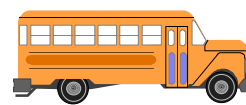
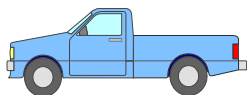


*In the photo above a natural gas vehicle is being fueled at a public service station. The vehicle on the right is a flexible-fuel vehicle, i.e., a vehicle that has one fuel tank, and that can be fueled with any mixture of an alternative fuel such as ethanol or methanol and gasoline.*



## Municipal Fleet Characteristics

*Municipal entities provide a variety of services that require the operation of motor vehicles. Services provided can include one or more of the following: police, fire, ambulance, school bus transportation, transit services, trash removal, public works, water, electric, natural gas, and sewer services.*



### VEHICLES

Of the roughly 19,000 gasoline and diesel-fuel vehicles in municipal fleets in the Atlanta area:

- 11,292 are light-duty vehicles (passenger cars, pickup trucks, vans, and sport/utility vehicles)
- 700 are medium trucks
- 1,130 are heavy trucks
- 521 are light trucks
- 5,090 are buses.

### LEASING VERSUS PURCHASING

- All of the municipal fleets surveyed purchased most (80 percent or more) of their vehicles.

### OPERATING LOCATIONS

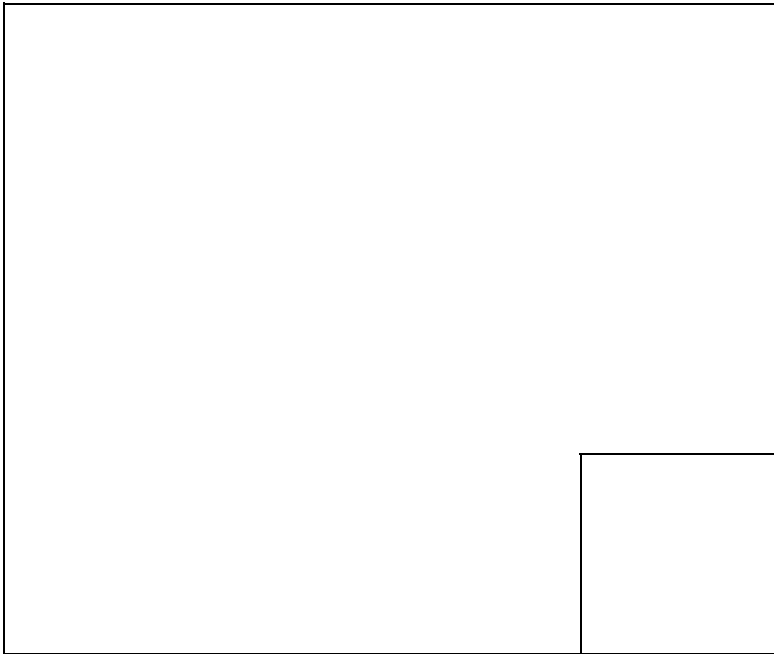
- Almost 70 percent of the municipal fleets operated their vehicles from multiple locations in the Atlanta area.
- In contrast, only 22 percent of the private fleets operated their vehicles from more than one location in the study area.

### METHODS USED TO FUEL VEHICLES (more than one may apply)

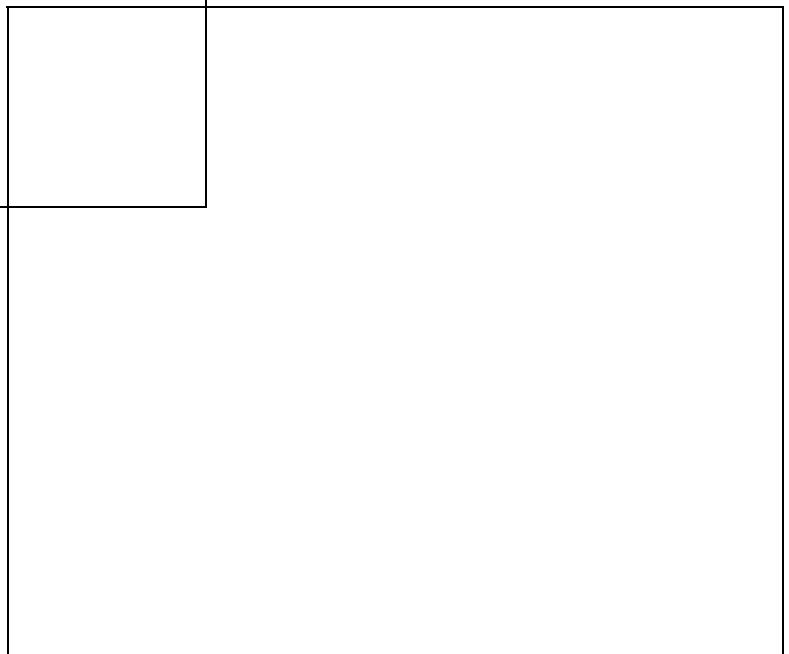
- Eighty-five percent of the municipal fleets reported that they used a central government-owned site to fuel their gasoline vehicles; 9 percent reported using multiple government-owned sites, 10 percent reported the use of public service stations with fuel-purchase agreements, and 20 percent reported using public service stations without purchase agreements.
- Eighty percent reported that they fueled their diesel vehicles at a central government-owned site; 12 percent reported purchasing diesel fuel at multiple government-owned sites and 10 percent reported that they purchased diesel at public service stations with fuel-purchase agreements.

## Alternative-Fuel Vehicles in Municipal Fleets

- Nine percent of municipal fleets in Atlanta had AFV's in their fleets.
- One percent of municipal vehicles were AFV's (63 percent were fueled with gasoline, 36 percent with diesel fuel).
- Sixty percent of municipal fleets reported being aware of existing or pending legislation regarding mandates for AFV's, this is in sharp contrast to awareness levels in private fleets (about 25 percent).
- Twenty percent of municipal fleets reported plans to purchase or convert some vehicles to alternative-fuel in 1995.



*An electric vehicle, in service at a municipal department of water and power, is being recharged.*



*The vehicle in the photo above is a dedicated propane vehicle in service at a county police department.*



# Data Tables for Private Fleets

There are two types of tables. One type provides counts of the number of fleets that fall into various categories of data. The other provides counts of the number of vehicles by characteristics. Where only fleet data are provided instead of vehicle data, it means that particular questionnaire item was asked at the fleet level only. Vehicle questions were recorded by type of vehicle not by individual vehicle.

**Table 1. Number of Private Fleets in Atlanta by Fleet Size and Selected Characteristics**

Selected Characteristics	Total	Fleet Size (number of vehicles)		
		6 to 19	20 to 49	50 or More
<b>Total Number of Fleets</b> .....	3,589	2,569	651	369
<b>SIC Codes</b>				
Ag./For./Fish. ....	140	65	31	Q
Mining .....	6	Q	Q	NC
Construction .....	893	740	100	54
Manufacturing .....	245	201	35	9
Trans./Com./Utilities .....	510	299	117	94
Wholesale Trade .....	754	609	113	32
Retail Trade .....	200	123	Q	Q
Fin./Ins./Re. ....	92	Q	Q	Q
Services .....	387	294	Q	Q
Not Classified .....	361	212	10 2	47
<b>Number of Atlanta Operating Locations</b>				
1 .....	2,810	2,240	426	143
2 to 5 .....	536	242	Q	159
6 to 10 .....	72	Q	Q	10
11 to 20 .....	41	Q	Q	6
21 to 50 .....	47	NC	Q	Q
No Answer .....	83	49	Q	19
<b>Vehicle Type</b>				
<b>(more than one may apply)</b>				
Passenger Cars .....	1,728	1,065	399	265
Small Pickup Trucks .....	992	629	183	179
Large Pickup Trucks .....	1,630	1,173	286	172
Minivans .....	633	378	Q	Q
Full-Size Vans .....	1,193	774	269	151
Sport/Utility Vehicles .....	285	193	Q	38
Light Trucks/Step Vans .....	829	611	124	94
Medium Trucks .....	626	391	118	117
Heavy Trucks .....	1,191	746	314	131
All Buses .....	119	33	Q	15
<b>Fuel Type</b>				
<b>(more than one may apply)</b>				
Gasoline Vehicles .....	3,189	2,321	548	321
Diesel Vehicles .....	1,895	1,218	443	234
<b>Refueling Practices (Gasoline Vehicles)</b>				
<b>(more than one may apply)</b>				
Company-Owned Sites .....	351	196	93	62
Private Sites with Fuel-Purchase Agreements .....	206	138	Q	Q
Public Service Stations with Fuel-Purchase Agreements .....	958	661	177	Q
Public Service Stations Without Fuel-Purchase Agreements .....	2,123	1,568	356	198
No Answer .....	262	174	70	18

See footnotes at end of table.

**Table 1. Number of Private Fleets in Atlanta by Fleet Size and Selected Characteristics  
(Continued)**

Selected Characteristics	Total	Fleet Size (number of vehicles)		
		6 to 19	20 to 49	50 or More
<b>Refueling Practices (Diesel Vehicles) (more than one may apply)</b>				
Company-Owned Sites .....	390	168	135	86
Private Sites with Fuel Purchase Agreements .....	274	193	43	39
Public Service Stations with Fuel-Purchase Agreements .....	581	362	162	57
Public Service Stations Without Fuel-Purchase Agreements .....	830	584	156	91
No Answer .....	Q	Q	Q	Q
<b>Percent Vehicles Leased</b>				
0 to 19 .....	2,295	1,714	383	199
20 to 39 .....	178	113	49	Q
40 to 59 .....	197	147	48	Q
60 to 79 .....	87	79	Q	Q
80 to 100 .....	819	509	162	148
No Answer .....	13	Q	Q	Q
<b>Vehicle Storage (more than one may apply)</b>				
At Employees' Homes .....	2,008	1,378	386	244
Company Site .....	2,857	2,018	541	299
Other Central Facility .....	213	149	Q	28
No Answer .....	Q	NC	Q	NC
<b>Number of Company-Owned or Other Central Storage Facilities</b>				
1 .....	2,371	1,860	369	142
2 to 5 .....	441	214	101	125
6 to 10 .....	79	Q	19	9
11 to 20 .....	41	NC	Q	9
21 to 50 .....	33	NC	Q	12
Employees' Homes Only .....	591	432	Q	Q
No Answer .....	34	Q	Q	Q
<b>Percent Travel Outside Atlanta Area</b>				
0 to 20 .....	2,258	1,736	311	211
21 to 40 .....	301	224	Q	Q
41 to 60 .....	277	166	Q	23
61 to 80 .....	267	206	39	23
81 to 100 .....	216	124	62	30
No Answer .....	268	114	77	Q
<b>Days of Operation per Year</b>				
0 to 73 .....	NC	NC	NC	NC
74 to 146 .....	Q	Q	NC	Q
147 to 219 .....	210	119	Q	33
220 to 292 .....	2,033	1,576	312	144
293 to 366 .....	1,274	838	257	179
No Answer .....	62	32	Q	Q
<b>Vehicle Miles Traveled Varies Significantly from Day to Day</b>				
Yes .....	1,297	893	236	168
No .....	2,215	1,659	389	168
No Answer .....	77	Q	26	Q

See footnotes at end of table.

**Table 1. Number of Private Fleets in Atlanta by Fleet Size and Selected Characteristics  
(Continued)**

Selected Characteristics	Total	Fleet Size (number of vehicles)		
		6 to 19	20 to 49	50 or More
<b>Aware of Existing or Pending Legislation Requiring the Use of Alternative Fuels</b>				
Yes .....	823	514	190	118
No .....	2,762	2,053	461	248
No Answer .....	Q	Q	NC	Q
<b>Plans to Acquire or Convert to Alternative-Fuel Vehicles in 1995</b>				
Yes .....	95	40	Q	22
No .....	3,402	2,496	596	310
No Answer .....	92	33	Q	Q

Q = Withheld because Relative Standard Error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

NC = No case reported.

Notes: • Totals may not equal sum of components because of independent rounding. • Ag./For./Fish. = Agriculture, Forestry, Fishing. • Trans./Com./Utilities = Transportation, Communications, Electric, Gas, and Sanitary Services. • Fin./Ins./Re. = Finance, Insurance, and Real Estate.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

**Table 2. Number of Gasoline and Diesel Vehicles in Private Fleets in Atlanta by Vehicle-Size Class and Selected Characteristics**

Selected Characteristics	Total	Light-Duty Vehicles	Light Trucks/ Step Vans	Medium Trucks	Heavy Trucks
<b>Total Vehicles</b> .....	82,613	55,794	5,257	4,951	15,400
<b>SIC Codes</b>					
Ag./For./Fish. ....	Q	Q	626	Q	Q
Mining .....	Q	Q	Q	NC	Q
Construction .....	14,565	11,461	1,209	705	1,172
Manufacturing .....	3,902	2,042	518	360	982
Trans./Com./Utilities. ....	17,863	7,411	795	1,307	7,923
Wholesale Trade .....	12,625	7,964	612	1,157	2,513
Retail Trade .....	Q	Q	236	304	463
Fin./Ins./Re. ....	Q	Q	NC	NC	Q
Services .....	Q	Q	725	138	Q
Not Classified .....	9,481	6,437	524	286	1,914
<b>Fleet Size (number of vehicles)</b>					
6 to 9 .....	11,021	7,629	1,028	426	1,823
10 to 19 .....	13,741	9,217	1,395	705	2,299
20 to 49 .....	18,977	11,497	874	1,088	4,755
50 or More .....	38,874	27,451	1,959	2,732	6,523
<b>Annual Miles Traveled</b>					
0 to 10,000 .....	4,809	3,790	500	1,109	Q
10,001 to 20,000 .....	Q	Q	1,754	1,544	1,689
20,001 to 50,000 .....	28,677	20,489	1,666	1,221	2,746
50,001 or More .....	12,820	3,207	Q	372	8,210
No Answer .....	14,383	Q	682	Q	1,691
<b>Miles Before Replacement</b>					
0 to 50,000 .....	Q	Q	Q	117	Q
50,001 to 100,000 .....	Q	Q	662	467	659
100,001 to 250,000 .....	18,150	13,303	2,211	1,736	1,789
250,001 or More .....	13,643	Q	Q	928	10,052
No Answer .....	23,526	Q	1,233	1,704	2,900
<b>Planned Vehicle Acquisitions</b> .....	20,230	15,763	632	827	2,879
<b>Planned Vehicle Retirements</b> .....	15,803	12,660	299	556	2,026

Q = Withheld because Relative Standard Error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

NC = No case reported.

Notes: ● Totals may not equal sum of components because of independent rounding. ● Buses included in totals but are not shown because the relative standard error is equal to or greater than 50 percent, or data were reported for fewer than five fleets. ● Ag./For./Fish. = Agriculture, Forestry, Fishing. ● Trans./Com./Utilities = Transportation, Communications, Electric, Gas, and Sanitary Services. ● Fin./Ins./Re. = Finance, Insurance, and Real Estate.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

**Table 3. Number of Gasoline Vehicles in Private Fleets in Atlanta by Vehicle Type and Selected Characteristics**

Selected Characteristics	Total	Cars	Small/ Compact Pickups	Large/ Full-Size Pickups	Minivans	Full-Size Vans	Sport/ Utility Vehicles	Light Trucks/ Step Vans	Medium Trucks	Heavy Trucks
<b>Total Vehicles</b> .....	58,527	Q	Q	8,053	Q	7,967	Q	2,159	1,002	Q
<b>Yearly Mileage</b>										
0 to 5,000 .....	2,582	354	339	222	Q	1,489	NC	140	Q	63
5,001 to 10,000 .....	Q	Q	84	515	67	343	Q	Q	195	Q
10,001 to 20,000 .....	Q	Q	2,071	2,514	Q	Q	Q	684	514	130
20,001 to 50,000 .....	20,546	6,109	3,614	3,298	Q	2,588	187	429	175	Q
50,001 to 100,000 .....	2,901	998	Q	340	Q	816	NC	263	Q	NC
100,001 or More .....	396	Q	Q	Q	Q	Q	NC	NC	NC	NC
No Answer .....	Q	882	2,421	1,151	193	Q	Q	377	79	Q
<b>Fuel Economy (miles per gallon)</b>										
1 to 10 .....	1,856	Q	234	514	30	765	Q	917	506	127
11 to 20 .....	23,542	Q	Q	4,828	Q	5,461	Q	637	Q	Q
21 to 30 .....	Q	Q	Q	336	522	230	Q	Q	NC	NC
31 to 50 .....	Q	Q	Q	NC	NC	NC	NC	NC	NC	NC
No Answer .....	Q	Q	1,407	2,375	Q	Q	61	601	284	Q

Q = Withheld because Relative Standard Error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

NC = No case reported.

Notes: ● Totals may not equal sum of components because of independent rounding. ● Buses included in totals but are not shown because the relative standard error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

**Table 4. Number of Diesel Vehicles in Private Fleets in Atlanta by Vehicle-Size Class and Selected Characteristics**

Selected Characteristics	Total	Light-Duty Vehicles	Light Trucks/ Step Vans	Medium Trucks	Heavy Trucks
<b>Total Vehicles</b> .....	24,086	1,102	3,098	3,950	14,921
<b>Annual Miles Traveled</b>					
0 to 5,000 .....	948	Q	Q	654	Q
5,001 to 10,000 .....	401	Q	Q	Q	Q
10,001 to 20,000 .....	3,997	153	863	1,028	1,560
20,001 to 50,000 .....	5,885	634	1,301	1,026	2,493
50,001 to 100,000 .....	6,210	Q	Q	330	4,714
100,001 or More .....	3,571	Q	NC	Q	3,496
No Answer .....	3,075	Q	305	Q	1,671
<b>Fuel Economy (miles per gallon)</b>					
1 to 10 .....	17,213	69	1,045	2,356	13,309
11 to 20 .....	3,050	605	1,424	839	210
21 to 30 .....	122	73	Q	Q	NC
31 to 50 .....	NC	Q	NC	NC	NC
No Answer .....	3,701	346	Q	Q	1,401

Q = Withheld because Relative Standard Error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

NC = No case reported.

Notes: ● Totals may not equal sum of components because of independent rounding. ● Buses included in totals but are not shown because the relative standard error is equal to or greater than 50 percent, or data were reported for fewer than five fleets.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

## Design of the Study

### Defining the Need

The Atlanta Motor-Vehicle Fleet Survey was prompted by the lack of data on characteristics of commercial vehicle fleets. Although it is clear that most fleet vehicles use conventional fuels such as gasoline or diesel, there is a growing interest in the expansion of the use of alternative fuels, such as electricity, ethanol, methanol, natural gas, propane, and hydrogen. This interest stems from a desire to curtail U.S. dependence on imported petroleum, to produce cleaner air in U.S. cities, and to achieve greater energy security by diversifying America's motor-vehicle fuels. Fleets, many hope, will pave the way for more widespread use of alternative-fuel vehicles (AFV's) among the general public.

The Energy Policy Act of 1992 (EPACT) directed the Energy Information Administration (EIA) to establish several new data collections. EPACT's Section 407 required information about the market in which AFV's would have to compete, as well as the nature of the vehicles that they might replace (Text Box A1). The Atlanta motor-vehicle fleet survey was conducted to fulfill the requirements of Sections 407(a) and 407(a1), which directed EIA to collect data useful to marketers of AFV's. In addition, EPACT's Section 503 required EIA to identify AFV's already in use, AFV's likely to be in use in the following calendar year, and AFV's being made available to the market each year (Text Box A2).

Before conducting the Atlanta fleet survey, EIA consulted with stakeholders, published a Federal Register notice to elicit public comment, and reviewed existing data. These measures revealed that basic data on motor-vehicle fleets were sparse throughout the transportation industry. Further, a number of national and local energy and environmental laws focus on fleets: for example, EPACT includes both tax incentives for purchases of AFV's and purchase mandates for certain fleets. Federal agencies must already comply with a schedule for the purchase of AFV's for their fleets. In February 28, 1995, the U.S. Department of Energy (DOE) issued a Notice of Proposed Rulemaking describing proposed purchase mandate rules for State fleets and for the vehicles of alternative-fuel providers. (Notices on June 12, 1995 and July 31, 1995 extended the comment period.) A future rulemaking, if issued, would provide similar mandates for private and municipal fleets. For these reasons, and because initial AFV marketing efforts are being focused on fleets, EIA concluded that the EPACT Section 407 data collection effort should be directed at motor-vehicle fleets.

The EPACT legislation that prompted the Atlanta fleet survey directed that data be developed for climatically diverse regions of the country. A homogeneous national survey was deemed inappropriate, in view of the diversity of fleet operations and their working environments. EIA, therefore, decided to conduct several area surveys that would serve as models for other areas of the country. The DOE Clean Cities, because of their geographic dispersment, were ideally suited for this purpose. EIA conducted the first fleet survey in Atlanta, Georgia, which was the first DOE designated Clean City. (The second survey was conducted in the summer of 1995 in Denver, Colorado, DOE's second designated Clean City.)

### Designing the Survey

#### Geographic Scope

The first step in designing the Atlanta survey was to define the appropriate geographic survey area. The two major choices were the Atlanta Metropolitan Statistical Area and the 13-county nonattainment area defined by the Clean Air Act Amendments of 1990. EIA chose the latter because it was consistent with other Clean City initiatives in progress in Atlanta. The 13 counties immediately surround Atlanta and roughly correspond to the Atlanta Metropolitan Statistical Area (MSA) with the exclusion of five counties which are on the outer edge of the MSA. In 1990, about 1 percent of the U.S. population resided in the Atlanta nonattainment area. The 13 counties in the Atlanta study are: Cherokee, Clayton, Cobb, Coweta, Dekalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Henry, Paulding, and Rockdale.

## Text Box A1

### Energy Policy Act Section 407 Data Acquisition Program

- SEC. 407 (a) and (a)(1) directed EIA to collect data that would be useful to marketers of AFV's, and to identify "the number and types of motor-vehicle trips made daily and miles driven per trip." EIA has responded to these requirements with surveys, which collect data on the **stock of motor vehicles in fleets**. These included surveys of private and municipal fleets in Atlanta, Denver, and national surveys of electric, natural gas, and propane fuel provider fleets. (Contact Leigh Carleton (202-586-1132) for details about the private and municipal surveys; contact Jennifer Reichert (202-586-5736) for details of the fuel provider surveys.)
- SEC. 407 (a)(2) calls for "**projections of alternative-fuel vehicles**." These forecasts are being conducted as part of EIA's basic National Energy Modeling System. The forecasts are driven by a consumer vehicle choice model and by estimates of the sales impact of EPACT and the California Low-Emission Vehicle (LEV) program. *The Supplement to the Annual Energy Outlook*; February 1995, DOE/EIA-0554(95). (Contact David Chien (202-586-3994) for details.)
- SEC. 407 (a)(3) covers cost, environmental, energy, and safety data on alternative-fuels and AFV's. No specific projects are currently underway. Some related data are being developed as part of the EPACT SEC. 503 Program. (Contact Fred Mayes (202-254-5300) for details.)
- SEC. 407 (a)(4) calls for data on "**consumer preferences**." EIA is conducting an analysis and summary of the results of a national telephone survey of consumer-vehicle preferences and attitudes toward AFV's. The survey was conducted by students in a joint survey-methodology program of the University of Maryland and the University of Michigan. Preference data are not available by fuel type. (Contact Christy Hall (202-586-1068) for details.)

Future Reports: *EPACT Section 407 Data Programs: Vehicle Stock and New Survey Findings* (early in 1996). This report will present the findings of the fuel provider fleet surveys (contact: Jennifer Reichert (202-586-5736)), the consumer-preference study and estimates of the share of residential, and nonresidential (government and private fleet) vehicles in the U.S. (contact: Christy Hall (202-586-1068)). Results of the recently completed survey of private and municipal fleets in the Denver area are in the early stages of processing. (Contact Leigh Carleton (202-586-1132) for details.)

## Text Box A2

### Energy Policy Act Section 503 Replacement Fuel Demand Estimates and Supply Information

- Section 503 directs EIA to estimate annually for both the preceding and the following calendar years: (1) the number of each type of AFV likely to be in use in the United States, (2) the probable geographic distribution of the vehicles, (3) the amount and distribution of each type of replacement fuel, and (4) the greenhouse gas emissions likely to result from replacement fuel use over the entire fuel cycle. *Alternatives to Traditional Transportation Fuels 1993*, DOE/EIA-0585(93), January 1995 is the first in a series of annual reports designed to provide such information. Prior to the issuance of that report, EIA provided background information on alternative and replacement fuels and the use of AFV's, in the publication *Alternatives to Traditional Transportation Fuels: An Overview*, DOE/EIA-0585/O, June 1994.
- The *Alternatives to Traditional Transportation Fuels 1993* report includes data about on-road AFV's in use, alternative and replacement fuel consumption, and greenhouse gas emissions from the entire transportation fuel cycle. The 1993 report includes vehicle and fuel data for 1992 and 1993, and projections for 1995. Estimates are based on data and information collected from a variety of sources. EIA has developed a new survey, Form EIA-886, "Alternative Fuel Vehicle Suppliers' Annual Report." It is directed at vehicle manufacturers and companies that perform conversions and is being used to request data on AFV's made available on a calendar year basis. The first year of data collection will collect data for 1994, during 1995.

Another survey is under consideration, that will collect data about the stock of AFV's in use, the quantity of replacement fuels supplied, and other fuel supply data sufficient to estimate the emissions of greenhouse gases. (Contact Fred Mayes (202-254-5300) for details of these data programs.)

The decision regarding fleet size was based, in part, on the EPACT purchase mandates, which stipulate the inclusion of those fleets with 20 or more light-duty vehicles in a metropolitan area and at least 50 vehicles nationwide. However, the 1990 Clean Air Act Amendments (CAAA) affect fleets with 10 or more vehicles and includes much larger vehicles of up to 26,000 pounds gross vehicle weight rating (GVWR). To accommodate both Federal regulations, the broader definition was chosen and then extended to include fleets of six or more vehicles. This was done to ensure that few fleets of the appropriate size were missed due to errors of undercounting. All motor-vehicle types were included--those over 26,000 pounds gross vehicle weight rating as well as buses.

## Fleet Composition

A number of separate criteria regarding vehicle ownership and use characteristics were developed (Text Box A3). The goal of these criteria was to define commercial fleets as clearly and completely as possible and at the same time to avoid double counting vehicles.

The choice of the appropriate company unit for sampling purposes was determined by the results of a "benchmark" survey (see discussion below). It was decided to count as a single unit or fleet any company that operated one or more branch locations in the 13-county area, because the commercial fleet lists were found to be more accurate and inclusive when analyzed by company than by disaggregated branch location. The benchmark survey also revealed that some branch managers might report the number of vehicles operating throughout the survey area while others might report only vehicles at their particular branch. Therefore, it was decided to contact one person within the survey area with authority to speak about all of the vehicles that operated in the survey area.

### Text Box A3

#### Fleet Composition

Included:

- light-duty vehicles, light trucks/step vans, medium trucks, heavy trucks, and buses
- purchased and leased vehicles
- all types of businesses except vehicle leasing companies
- municipal entities (to cover these a separate survey was conducted).

Excluded:

- employee-owned vehicles
- short-term rental vehicles
- vehicles in Federal or State government fleets
- fleet vehicles that might have been operated within the 13-county nonattainment area but were based outside of it
- vehicles being held for sale, such as those on automobile dealers' lots.

## Compiling a Population List of Fleets

With the survey scope defined, the next step was to define the population from which a sample could be drawn. This was done by contacting commercial sources of fleet lists, evaluating their lists, and purchasing and combining a selection of these that were as complete as possible. However, Georgia law prohibits public access to the motor-vehicle records of private companies, and motor-vehicle registrations are an important source used by the companies that compile fleet lists for sale. It was clear, therefore, that commercial fleet lists of the Atlanta survey area would have some deficiencies, but it was not clear how serious those deficiencies would be. A benchmark telephone survey was conducted of businesses in order to evaluate the fleet lists for gaps. Since only a fraction of businesses have fleets, a telephone survey of all businesses to identify fleets would have been inefficient, and would be particularly deficient in identifying very large fleets that were fewer in number than smaller fleets. This method, however, was used to assess the completeness of the population fleet list being developed from commercial sources and used to provide a rough estimate of the number of companies with fleets of certain size classes for comparison with the final survey estimates.

The benchmark survey contacted 5,000 businesses and asked whether their company owned or leased any fleet vehicles and, if so, how many, and at how many locations? As expected, the benchmark survey revealed the existence of fleets that did not appear on the population fleet list. Those fleets were added to the final fleet list.



A traditional, stratified random sample was drawn from the augmented fleet list, with strata formed by the measure-of-fleet size on the lists. The largest fleets were selected with certainty, while the smaller fleets were sampled and weighted to represent their strata. The fleets that were added from the benchmark survey formed a separate strata. They were included with certainty for the full survey but with a weight that was carried over from the benchmark survey. The fleet survey identified companies from the population fleet list that did not operate a fleet at all. These companies were treated as out-of-scope units. When the fleet survey was completed, survey estimates of the number of fleets by fleet-size class were compared with corresponding estimates from the benchmark survey. The two sets of estimates compared closely.

## **The Municipal Fleet Frame**

A separate list of municipal entities was developed. Municipal entities that were found on the private fleet list were removed from the list prior to the start of telephone interviews. The private fleet questionnaire also asked sampled companies if they were a unit of government; if they were, the interview was terminated. Sources consulted for the municipal fleet frame included telephone directories for the Atlanta area, the Pupil Transportation Division of the Georgia Education Department, the Municipal Electric Association of Georgia, and the Georgia Municipal Association.

For the 13-county nonattainment area, the following entities were included in the municipal fleet survey: the 13 county governments, 14 boards of education, the 12 largest cities in the Atlanta area, and a sample of 6 of the remaining 55 cities. Quasi-governmental or regional entities, such as the Atlanta Metropolitan Transit Authority, were not included. A shorter telephone interview was conducted with the municipal entities than with the private fleets.

## **Fleet Questionnaire Design**

The final step in preparing to conduct the survey was the design of the questionnaire. EIA met with representatives of many stakeholder groups to discuss their data needs, and sponsored focus groups of fleet managers to discuss the practical availability of the types of data the survey intended to seek. In addition, in May 1993, EIA published a notice in the Federal Register asking for input from interested parties in order to identify broad data needs. This effort yielded many valuable suggestions. The detailed questionnaire form, which was designed to be used in a Computer-Assisted-Telephone Interview (CATI) format, reflected these inputs.

## Data Quality

The statistics in this report are estimates of population values. These estimates are based upon a randomly chosen subset of the entire population of fleets with six or more vehicles that are operated out of the Atlanta, Georgia nonattainment area. As a result, estimates always differ from the true population values. The differences between estimated values and the actual population values are of two types: nonsampling errors and sampling errors. Nonsampling errors are errors of the survey process, which can result from difficulties, such as unit nonresponse or item nonresponse, inaccuracies in data collection, or incomplete coverage in the design of the sampling frame. Sampling error is due to the fact that data are obtained from a subset of the population of interest, rather than all members.

### Nonsampling Errors

#### Adjustments for Item Nonresponse

Item nonresponse occurs when the respondent does not know or, less frequently, refuses to give the answer to a particular question. Item nonresponse is also recorded when the interviewer does not ask the question or does not record the answer during the interview. EIA made no adjustments for item nonresponse for this survey. If the respondent provided no information or the CATI system, somehow, did not record the item, it is shown in this report as a "no answer." Many of these "no answers" were actually recorded as "don't know" but have been combined into one residual category. Since this survey was a telephone survey in which interviewers elicited data estimates from fleet managers, there were numerous instances when a manager did not know the answer to a particular question. Some "don't know" responses came about because fleet managers were asked questions about vehicles or vehicle types they acquired recently and with which they had little experience.

The extent of item nonresponse can be observed, with a small exception, by reviewing the "no answer" categories on the data tables. There were 25 respondent cases in which a vehicle type was recorded, but for which the number of vehicles was not recorded. Item nonresponse in these cases could not be shown on the tables because the tables were expressed in units of vehicles.

#### Adjustments for Unit Nonresponse

Unit nonresponse occurs when a respondent refuses to cooperate or is unavailable. Unit nonresponse bias in the survey statistics was corrected through a series of weight adjustments. The survey was designed so that survey responses could be used to estimate characteristics of the entire population of private fleets in the Atlanta area. The method of estimation was to calculate basic sampling weights that related the sampled units (about 600) to the entire population of eligible fleets in the Atlanta nonattainment area. To reduce bias for unit nonresponse in the survey statistics, these base weights were then adjusted upwards, so that the respondent fleets would represent not only unsampled fleets, but also nonrespondent fleets. The survey had a 65-percent response rate.

Adjustments were not needed for sample units determined to be ineligible, i.e., out of scope, for the project. The Atlanta survey had a large number of ineligible or out-of-scope sample units, because the lists of fleets that were purchased and merged to form the sampling frame contained many companies that did not actually have a fleet or had a fleet with less than six vehicles. The out-of-scope fleets were estimated to represent about 50 percent of the sample frame.

### Sampling Errors

Sampling error occurs because the selected sample represents only one of the possible samples that could be selected under the same survey specifications. The estimated values are developed from one of the many possible samples that could be drawn and, therefore, will differ from true population values that would be obtained from a complete enumeration. Each possible sample yields its own estimate of the true population values, with the differences attributable to the particular set of cases selected in each sample. One measure of the variability of a survey estimate due to the sampling process is the average magnitude of the difference between the values

of the estimate for individual samples and the average value of the estimate over all samples of the same size based on the same design. In other words, sampling error is a measure of the variability of an estimate over all comparable samples, one of which was drawn.

The average magnitude of the sampling error is measured by the standard error of an estimate. The standard error is the root-mean-square measure of average difference over all possible samples. The relative standard error (RSE) is the standard error expressed as a percent of the estimate. Although data are available only for the one sample chosen for this study, traditional sampling theory provides a way of estimating the standard error for the stratified, random sample design used in this study.<sup>5</sup>

## Relative Standard Errors

Throughout this report standard errors are given as percents of their estimated values, that is as RSE's. Estimates with RSE's equal to or greater than 50 percent, or for which data were reported for fewer than five fleets were withheld from the published tables due to their lack of precision. The tables in this appendix present the RSE's for the private fleet data tables shown in this report. To determine the standard error for an estimate, multiply the RSE for the estimate, shown in the tables in this appendix, by the estimate. The standard error can be used to construct confidence intervals and to perform hypothesis tests by using standard statistical methods.

### Calculating the Confidence Range

To calculate the 95-percent confidence range (the range that covers the true value of the estimate with 95-percent confidence):

1. Multiply the standard error by 1.96.
2. Subtract the result of Step 1 from the given estimate to determine the bottom of the range.
3. Add the result of Step 1 to the given estimate to determine the top of the range.

### Measuring Statistical Significance

To determine if the difference between any two estimates in this report are statistically significant:

1. Calculate the standard error of each estimate.
2. Square the standard error of each estimate.
3. Add the two values from Step 2.
4. Take the square root of the value in Step 3.
5. Multiply the value in Step 4 by 1.96.

If the value in Step 5 is less than the difference in the estimates, the difference between the estimates is statistically significant.

<sup>5</sup>William G. Cochran, *Sampling Techniques*, 3rd. ed. (John Wiley & Sons, Inc., 1977).

**Table B1. Relative Standard Errors for Table 1  
(Percent)**

Selected Characteristics	Total	Fleet Size (number of vehicles)		
		6 to 19	20 to 49	50 or More
<b>Total Number of Fleets</b> .....	0	0	0	0
<b>SIC Codes</b>				
Ag./For./Fish. ....	17	21	21	97
Mining .....	0	0	0	NC
Construction .....	9	12	14	20
Manufacturing .....	15	20	17	0
Trans./Com./Utilities .....	9	14	13	14
Wholesale Trade .....	15	18	30	19
Retail Trade .....	18	13	60	166
Fin./Ins./Re. ....	49	63	135	144
Services .....	32	36	101	113
Not Classified .....	21	35	32	10
<b>Number of Atlanta Operating Locations</b>				
1 .....	8	8	19	12
2 to 5 .....	20	22	57	46
6 to 10 .....	0	12	65	0
11 to 20 .....	29	56	28	0
21 to 50 .....	25	NC	22	130
No Answer .....	15	27	18	24
<b>Vehicle Type (more than one may apply)</b>				
Passenger Cars .....	13	16	7	28
Small Pickup Trucks .....	15	18	43	39
Large Pickup Trucks .....	11	14	28	26
Minivans .....	22	28	60	54
Full-Size Vans .....	17	23	34	30
Sport/Utility Vehicles .....	24	33	59	19
Light Trucks/Step Vans .....	13	20	14	15
Medium Trucks .....	13	20	13	37
Heavy Trucks .....	10	14	20	11
All Buses .....	29	13	107	15
<b>Fuel Type (more than one may apply)</b>				
Gasoline Vehicles .....	3	4	5	6
Diesel Vehicles .....	10	13	21	19
<b>Refueling Practices (Gasoline Vehicles) (more than one may apply)</b>				
Company-Owned Sites .....	11	15	35	10
Private Sites with Fuel-Purchase Agreements .....	17	12	84	130
Public Service Stations with Fuel-Purchase Agreements .....	15	18	21	57
Public Service Stations Without Fuel-Purchase Agreements .....	11	13	23	35
No Answer .....	14	23	14	26
<b>Refueling Practices (Diesel Vehicles) (more than one may apply)</b>				
Company-Owned Sites .....	11	16	33	12
Private Sites with Fuel-Purchase Agreements .....	21	23	17	47
Public Service Stations with Fuel-Purchase Agreements .....	13	19	28	17
Public Service Stations Without Fuel-Purchase Agreements .....	17	21	45	17
No Answer .....	60	51	81	0

See footnotes at end of table.

**Table B1. Relative Standard Errors for Table 1 (Continued)**  
(Percent)

Selected Characteristics	Total	Fleet Size (number of vehicles)		
		6 to 19	20 to 49	50 or More
<b>Percent Vehicles Leased</b>				
0 to 19 .....	10	12	24	23
20 to 39 .....	9	14	16	29
40 to 59 .....	23	35	15	0
60 to 79 .....	27	33	0	0
80 to 100 .....	17	17	48	49
No Answer .....	8	14	0	0
<b>Vehicle Storage (more than one may apply)</b>				
At Employees' Homes .....	12	15	21	30
Company Site .....	8	10	17	25
Other Central Facility .....	26	34	88	21
No Answer .....	0	NC	0	NC
<b>Number of Company-Owned or Other Central Storage Facilities</b>				
1 .....	9	11	17	48
2 to 5 .....	13	19	32	35
6 to 10 .....	29	52	15	0
11 to 20 .....	29	NC	98	0
21 to 50 .....	35	NC	148	19
Employees' Homes Only .....	18	20	55	78
No Answer .....	6	9	0	28
<b>Percent Travel Outside Atlanta Area</b>				
0 to 20 .....	10	11	20	35
21 to 40 .....	22	23	79	0
41 to 60 .....	13	11	65	20
61 to 80 .....	10	14	16	19
81 to 100 .....	7	8	14	21
No Answer .....	10	8	42	56
<b>Days of Operation per Year</b>				
0 to 73 .....	NC	NC	NC	NC
74 to 146 .....	7	0	NC	33
147 to 219 .....	12	13	55	23
220 to 292 .....	10	11	20	30
293 to 366 .....	17	23	31	41
No Answer .....	19	10	125	0
<b>Vehicle Miles Traveled Varies Significantly from Day to Day</b>				
Yes .....	15	17	38	44
No .....	10	13	21	11
No Answer .....	16	8	16	125
<b>Aware of Existing or Pending Legislation Requiring the Use of Alternative Fuels</b>				
Yes .....	12	13	41	36
No .....	8	8	20	30
No Answer .....	0	0	NC	0
<b>Plans to Acquire or Convert to Alternative-Fuel Vehicles in 1995</b>				
Yes .....	13	9	94	0
No .....	4	1	15	0
No Answer .....	26	10	139	23

NC = No case reported.

Notes: ● Ag./For./Fish. = Agriculture, Forestry, Fishing. ● Trans./Com./Utilities = Transportation, Communications, Electric, Gas, and Sanitary Services. ● Fin./Ins./Re. = Finance, Insurance, and Real Estate.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

**Table B2. Relative Standard Errors for Table 2  
(Percent)**

Selected Characteristics	Total	Light-Duty Vehicles	Light Trucks/ Step Vans	Medium Trucks	Heavy Trucks
<b>Total Vehicles</b> .....	22	31	10	8	7
<b>SIC Codes</b>					
Ag./For./Fish. ....	146	204	48	57	59
Mining .....	0	0	0	NC	0
Construction .....	20	20	17	15	33
Manufacturing .....	11	21	9	24	16
Trans./Com./Utilities. ....	10	18	27	6	11
Wholesale Trade .....	24	31	19	22	14
Retail Trade .....	108	136	25	39	32
Fin./Ins./Re. ....	94	97	NC	NC	196
Services .....	151	163	49	41	73
Not Classified .....	23	18	25	47	22
<b>Fleet Size (number of vehicles)</b>					
6 to 9 .....	25	34	23	32	21
10 to 19 .....	4	13	34	17	13
20 to 49 .....	17	35	20	19	15
50 or More .....	21	30	11	15	9
<b>Annual Miles Traveled</b>					
0 to 10,000 .....	33	19	39	39	68
10,001 to 20,000 .....	66	76	22	26	37
20,001 to 50,000 .....	17	20	19	16	19
50,001 or More .....	8	21	114	31	10
No Answer .....	46	76	31	58	15
<b>Miles Before Replacement</b>					
0 to 50,000 .....	214	112	52	4	15
50,001 to 100,000 .....	60	54	21	11	0
100,001 to 250,000 .....	18	16	17	27	39
250,001 or More .....	11	54	76	18	43
No Answer .....	29	82	29	32	10
<b>Planned Vehicle Acquisitions</b> .....	35	42	8	8	6
<b>Planned Vehicle Retirements</b> .....	25	30	6	9	7

NC = No case reported.

Notes: ● Ag./For./Fish. = Agriculture, Forestry, Fishing. ● Trans./Com./Utilities = Transportation, Communications, Electric, Gas, and Sanitary Services. ● Fin./Ins./Re. = Finance, Insurance, and Real Estate.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

**Table B3. Relative Standard Errors for Table 3**  
(Percent)

Selected Characteristics	Total	Cars	Small/ Compact Pickups	Large/ Full-Size Pickups	Minivans	Full-Size Vans	Sport/ Utility Vehicles	Light Trucks/ Step Vans	Medium Trucks	Heavy Trucks
<b>Total Vehicles</b> .....	31	50	72	15	97	18	57	13	20	85
<b>Yearly Mileage</b>										
0 to 5,000 .....	1	6	5	8	4	14	NC	13	0	30
5,001 to 10,000 .....	53	250	16	34	28	36	12	58	10	26
10,001 to 20,000 .....	71	72	14	23	174	55	79	24	36	29
20,001 to 50,000 .....	21	36	41	25	112	31	44	13	45	7
50,001 to 100,000 .....	28	26	77	8	14	39	NC	10	10	NC
100,001 or More .....	25	0	35	0	0	32	NC	NC	NC	NC
No Answer .....	68	31	18	40	20	78	36	25	24	18
<b>Fuel Economy (miles per gallon)</b>										
1 to 10 .....	10	4	26	35	0	45	114	19	17	35
11 to 20 .....	30	55	114	18	105	20	72	25	63	169
21 to 30 .....	65	81	60	31	23	2	45	0	NC	NC
31 to 50 .....	6	4	24	NC	NC	NC	NC	NC	NC	NC
No Answer .....	71	147	34	32	170	61	34	23	28	97

NC = No case reported.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

**Table B4. Relative Standard Errors for Table 4**  
(Percent)

Selected Characteristics	Total	Light-Duty Vehicles	Light Trucks/ Step Vans	Medium Trucks	Heavy Trucks
<b>Total Vehicles</b> .....	10	15	22	16	9
<b>Annual Miles Traveled</b>					
0 to 5,000 .....	44	51	20	1	12
5,001 to 10,000 .....	20	45	10	78	71
10,001 to 20,000 .....	32	20	30	20	39
20,001 to 50,000 .....	14	22	24	18	19
50,001 to 100,000 .....	18	56	147	35	11
100,001 or More .....	17	26	NC	0	18
No Answer .....	22	51	49	62	15
<b>Fuel Economy (miles per gallon)</b>					
1 to 10 .....	11	5	20	20	10
11 to 20 .....	17	22	26	25	18
21 to 30 .....	3	5	5	86	NC
31 to 50 .....	NC	0	NC	NC	NC
No Answer .....	38	30	104	56	22

NC = No case reported.

Source: Energy Information Administration, Office of Energy Markets and End Use, Form EIA-890, 1994 Atlanta Vehicle Fleet Survey.

# Glossary

**Alternative Fuel:** As defined pursuant to EPACT: “methanol, denatured ethanol, and other alcohols; mixtures containing 85 percent or more (or such other percentage, but not less than 70 percent, as determined by the Secretary, by rule, to provide for requirements relating to cold start, safety, or vehicle functions) by volume of methanol, denatured ethanol, and other alcohols with gasoline or other fuels; natural gas; liquefied petroleum gas; hydrogen, coal-derived liquid fuels, fuels (other than alcohols) derived from biological materials, electricity (including electricity from solar energy); and any other fuel the Secretary determines, by rule, is substantially not petroleum and would yield substantial energy security benefits and substantial environmental benefits.”

**Alternative-Fuel Vehicle (AFV):** A vehicle that has the capability of being fueled by an alternative fuel. This category of vehicle includes dual-fuel, bi-fuel and flexible-fuel, as well as dedicated vehicles.

**Bi-Fuel Vehicle:** A vehicle with the capability of using two separate fuel systems, one that can be operated on conventional fuel and one that can be operated on an alternative fuel.

**Clean Air Act Amendments of 1990 (CAAA):** Public Law No. 105-549. The 1990 amendments to the Clean Air Act of 1970 include provisions that require gasoline refiners to reformulate their gasolines to meet more stringent emissions standards. In cities that do not meet Federal air quality requirements set forth in the 1990 amendments, gasolines must be reformulated during certain months, when air pollution levels are most serious. The regulations also require certain fleet operators in 22 cities nationwide to use clean fuel vehicles.

**Compressed Natural Gas (CNG):** Natural gas that has been condensed under high pressures, typically between 2,000 and 3,600 psi, and expands when released from a container; used as an alternative fuel for motor vehicles.

**Converted Vehicle:** A vehicle originally designed to operate on gasoline, that has been modified to run on an alternative fuel.

**Dedicated Vehicle:** A motor vehicle that operates solely on one fuel.

**Dual-Fuel Vehicle:** Vehicles designed to run on a combination of an alternative fuel such as CNG or LPG, and conventional fuel, such as gasoline or diesel. Dual-fuel systems are used mostly in heavy-duty or diesel engines. The vehicle generally has two separate fuel tanks, from which both fuels are injected into the combustion chamber simultaneously.

**Electric Vehicle:** A vehicle powered by electricity, generally provided by batteries, which store electricity, but may also be provided by photovoltaic cells or a fuel cell.

**Energy Policy Act of 1992 (EPACT):** Public Law 104-486. A broad energy act with several titles that deal with alternative transportation fuels. EPACT includes provisions for accelerating purchases of alternative-fuel vehicles by Federal fleets, certain urban area State government fleets, the fleets of providers of alternative fuels, and under certain conditions, private and municipal fleets.

**E-85:** Ethanol and gasoline mixture containing 85 percent denatured ethanol and 15 percent gasoline, by volume, used as an alternative fuel for motor vehicles.

**E-95:** Ethanol and gasoline mixture containing 95 percent denatured ethanol, by volume, used as an alternative fuel for motor vehicles.

**E-100:** Neat (pure, 100 percent) ethanol, used as alternative fuel for motor vehicles.

**Fleet:** Any group of six or more vehicles owned or operated by the reporting company, out of the Atlanta nonattainment area.

**Fleet Vehicle:** Any on-road motor vehicle owned or operated by the reporting company and used in the normal operations of the company. Only those vehicles that were operated out of base locations within the Atlanta 13-county nonattainment area were counted as fleet vehicles. Fleet vehicles included gasoline, diesel powered vehicles and alternative-fuel vehicles.

**Flexible-Fuel Vehicle:** A vehicle that has the ability to operate on a mixture of an alternative fuel and gasoline or diesel, or to operate exclusively on an alternative fuel, or gasoline or diesel.

**Fuel-Purchase Agreement:** The respondent was asked if fuel was purchased *with* or *without fuel-purchase agreements*. No definition of agreement was provided. In the Denver Fleet Survey fuel-purchase agreement was defined to include fleet credit cards.

**Gross Vehicle Weight Rating (GVWR):** The weight of the empty vehicle plus the weight of the maximum load that could be carried on the vehicle.

**Heavy Trucks:** A truck weighing more than 26,000 pounds GVWR. If the reporting company was unable to estimate the weight of a fleet vehicle, the company's best assessment of the vehicle-size classification was acceptable.



**Light-Duty Vehicles:** Those vehicles (passenger cars, trucks, vans, and sport/utility vehicles) that weigh no more than 8,500 pounds GVWR. If the reporting company was unable to estimate the weight of a fleet vehicle, the company's best assessment of the vehicle-size classification was acceptable.

**Light Trucks:** A truck or van weighing between 8,501 and 19,500 pounds GVWR.

**Liquefied Natural Gas (LNG):** Natural gas that has been condensed to a liquid, typically by cryogenically cooling the gas; used as an alternative fuel for motor vehicles.

**Liquefied Petroleum Gas (LPG):** A hydrocarbon and colorless gas, also known as propane, found in natural gas and produced from crude oil; used as an alternative fuel for motor vehicles.

**Medium Trucks:** A truck or van weighing between 19,501 pounds GVWR and 26,000 pounds GVWR. If the reporting company was unable to estimate the weight of a fleet vehicle, the company's best assessment of the vehicle-size classification was acceptable.

**M-85:** Mixture containing 85 percent methanol and 15 percent gasoline, used as an alternative fuel for motor vehicles.

**M-100:** Neat (pure, 100 percent) methanol used as an alternative fuel for motor vehicles.

**Metropolitan Area:** A metropolitan statistical area or consolidated metropolitan statistical area, as established by the Bureau of the Census.

**Municipal Fleets:** Fleets, which are part of local government, i.e., are not part of Federal or State government. These are fleets that are providing services to particular political jurisdictions below the State level of government. Quasi-government agencies such as the regional Metropolitan Atlanta Transit Authority were not included in the municipal fleet survey.

**Nonattainment Area:** A region determined by population density in accordance with the U.S. Census Bureau, which exceeds minimum acceptable national air quality standards for one or more air pollutants regulated under the Clean Air Act.

**Operating Locations in Atlanta:** The respondent was asked to report the total number of vehicles that the company operated in the Atlanta area and the total number of locations, out of which these vehicles were operated.

**Private Fleet:** Any business fleet, i.e., a fleet that is not a residential fleet and is not a government fleet. Also excluded are leasing companies, however, leased vehicles are counted as part of the private fleets in which they are operated.

**Private Site:** A fueling facility that normally services only fleets and is not open to the general public.

**Propane:** See Liquefied Petroleum Gas (LPG).

**Public Service Station:** A fueling facility that is open to the general public.

**Replacement Fuel:** Replacement fuels are defined in the Energy Policy Act of 1992 as "the portion of any motor fuel that is methanol, ethanol, or other alcohols; natural gas; liquefied petroleum gases, hydrogen, coal derived liquid fuels, fuels (other than alcohol) derived from biological materials, electricity (including electricity from solar energy), ethers, or any other fuel the Secretary of Energy determines, by rule, is substantially not petroleum and would yield substantial energy security benefits and substantial environmental benefits."

**SIC Code:** The Standard Industrial Classification (SIC) code identifies the primary business activity of a company. These codes were part of the fleet company name and address records supplied by the commercial fleet list sources, which were purchased to develop a list of the Atlanta fleet population. A few of the sources used did not provide an SIC code with the record. These fleets are coded as "not classified."

# Alternative-Fuel Vehicle Information Sources

National Energy Information Center . . . . .	202-586-8800
Alternative Fuels Hotline . . . . .	800-423-1DOE
Clean Cities Hotline . . . . .	800-CCITIES
American Biofuels Association . . . . .	703-522-3392
American Fuel Cell Association . . . . .	301-681-3532
American Hydrogen Association . . . . .	602-921-0433
American Methanol Institute . . . . .	202-467-5050
Electric Transportation Coalition . . . . .	202-508-5995
Electric Vehicle Association . . . . .	415-249-2690
National Propane Gas Association . . . . .	703-351-7500
National Renewable Energy Laboratory . . . . .	303-275-3000
Natural Gas Vehicle Coalition . . . . .	703-527-3022
Northeast Sustainable Energy Association . . . . .	413-774-6051
Local Area Providers of Fuel . . . . .	Consult Local Directories

Source: U.S. Department of Energy, Office of Transportation Technologies, *Alternative Fuel Information Sources* (available through the National Alternative Fuels Hotline (800) 423-1DOE).