A MAJOR CHALLENGE FOR THE COUNTRY

There are many responses to the challenges we face. The various approaches generally fall into one or more of these three major categories:

1) Improving fuel efficiency and emissions controls. Designing more fuel-efficient and less polluting gasoline-powered vehicles; choosing to buy and use smaller and/or more fuel-efficient cars; making good use of efficient technologies by keeping cars well maintained and driving them conscientiously.

2) Reducing the number of cars on the road or the number of miles that each person drives. Using mass transit; bicycling; walking; carpooling; combining multiple errands into single trips; telecommuting.

3) Using alternative fuels. Developing and using alternative-fueled vehicles.

There is no one right or best solution; in fact, we need to look at them all. For this project, however, we're going to look most closely at alternative fuels.

Adopting different transportation fuels is a major challenge for the country. We need to find and develop new sources of power, design and test new vehicles, and develop a fueling infrastructure to make traveling in the future as convenient as it is today. This work is very costly, takes decades, and requires the involvement of governments, industry, and inventive individuals and the support of consumers. The good news is that it is already under way.

As the chart shows, the number of alternative-fueled vehicles (AFVs) in the United States is growing. These cars, trucks, and buses are owned by individuals, businesses, and governments. For many years conversion kits have been available to assist people wishing to convert gasoline-powered cars to AFVs. Alternative fuels have been used in dual-fuel, flexible-fuel, or hybrid vehicles, which run on either gasoline or an alternative fuel, or both. Recently, in response to public demand, auto manufacturers have been producing small numbers of vehicles dedicated to alternative fuels. AFVs are being driven throughout the United States and especially in metropolitan areas involved with the federally sponsored Clean Cities Program, where industry and governments have joined forces to clean up the air. In the next 10 years, we can expect to see automobile manufacturers marketing new models of AFVs powered by a variety of engines, motors, and fuels.

The rising number of AFVs goes hand in hand with the development of fueling infrastructures for alternative fuels. Governments and businesses are gradually developing new fueling infrastructures that make alternative fuels more widely available. Eventually two or three fuels will probably become most popular nationwide, and national fueling infrastructures will be developed for them. Other fuels may be widely used only in certain regions of the country.

What will those fuels be? The answer is partly up to you — the people who will be driving the next generation of cars. The decisions you make can greatly resolve the security, health, and environmental problems we are facing today.

ESTIMATES OF ALTERNATIVE-FUEL VEHICLES IN USE IN THE U.S.

FUEL TYPE	1992	1995	1999	Annual change 1992–99
Liquid Petroleum Gas (LPG)	221,000	259,000	274,000	*3.1%*
Compressed Natural Gas (CNG)	23,191	50,218	96,017	*22.5%*
Liquefied Natural Gas (LNG)	90	603	1,517	*49.7%*
Methanol (M85	4,850	18,319	21,829	*24.0%*
Ethanol (E85)	172	1,527	17,892	*94.2%*
Electricity	1,607	2,860	6,481	*22.0%*
Total Vehicles on the Road	181,519,150	193,440,393	209,509,161	*1.8%*

Source of AFV data: U.S. Energy Information Administration, URL: http://www.eia.doe.gov.

Source of data about total vehicles: Ward's Motor Vehicle Fact and Figure Book, *2000 Edition. Ward's Communications, Southfield, Mich.*

1999 figures reported as of July 1.

QUESTIONS FOR DISCUSSION

1) Why was gasoline not the best fuel choice for early automobiles?

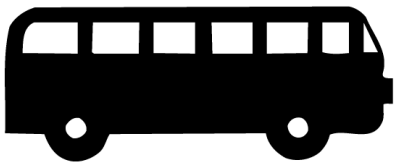
2) Of the problems related to our current transportation system, which do you think are the most important?

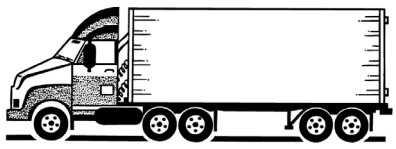
3) In this unit you will look most closely at changing to alternative-fueled vehicles. What are some other ways of resolving our nation's fuel and transportation problems? Do you know people who are already doing any of these things?

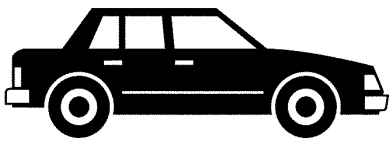
4) What has already been done to make the change to alternative-fueled vehicles?

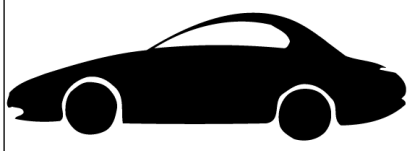
5) Look at the chart. Which alternative fuels are most commonly used in vehicles?

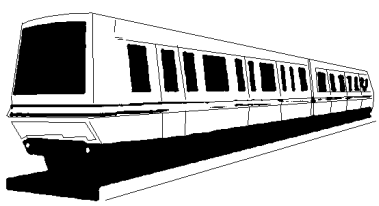
6) Have you ever seen or ridden in analternative-fueled vehicle? If so, what was the vehicle like? Was it very different from a vehicle running on gasoline or diesel? Was your experience different?











TYPES OF VEHICLES

BI-FUEL VEHICLE -
A vehicle with two separate fuel systems, designed to run either on an alternative fuel or on gasoline or diesel, using only one fuel at a time.

CONVERTED VEHICLE -
A vehicle originally designed to operate on gasoline or diesel that has been modified or altered to run on an alternative fuel.

DEDICATED VEHICLE -
A vehicle that operates solely on one fuel. In general, dedicated vehicles provide superior emissions and performance results because their design has been optimized for operation on only one fuel.

DUAL FUEL VEHICLE -
See bi-fuel vehicle.

HYBRID ELECTRIC VEHICLE -
A vehicle that relies on both internal combustion engines and electric motors.