

## Uses of Energy

[Residential- homes](#)  
[Commercial - buildings](#)  
[Industry and Manufacturing](#)  
[Transportation- cars, trucks, planes, etc.](#)

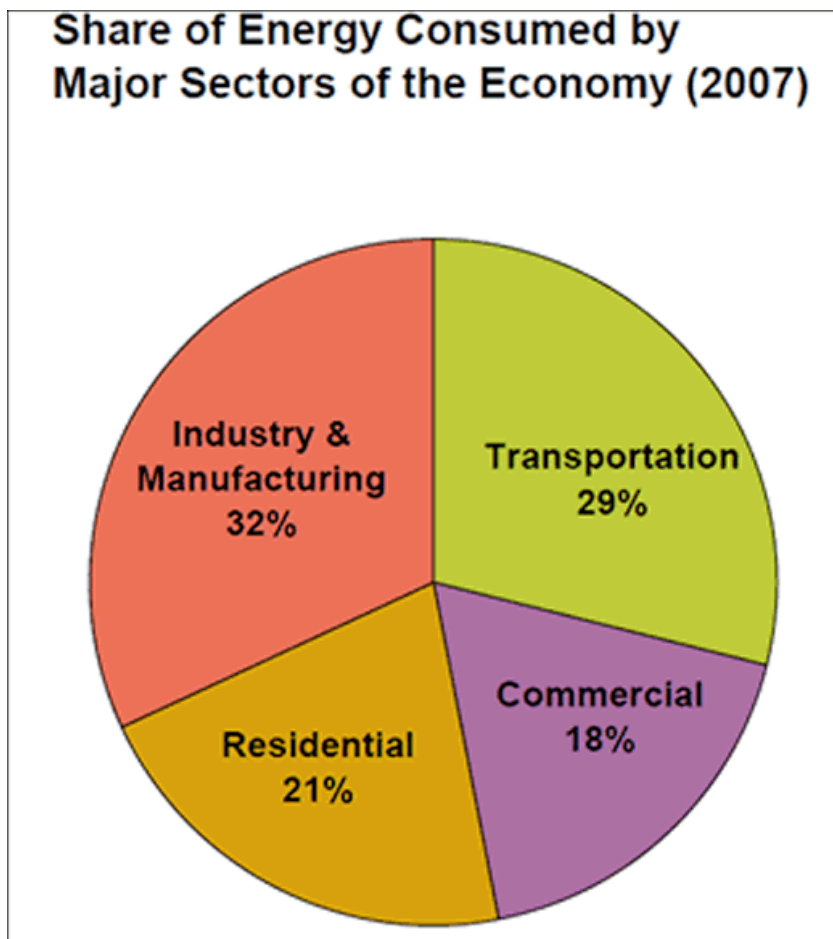
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The United States is a highly developed and industrialized society. We use a lot of energy - in our homes, in businesses, in industry, and for traveling between all these different places.

The industrial sector uses almost one-third of the total energy. The residential and commercial sectors combined use 39 percent of all energy. These two sectors include all types of buildings, such as houses, offices, stores, restaurants, and places of worship. Energy used for transportation accounts for more than a quarter of all energy.

Last Revised: March 2009

Source: Energy Information Administration, *Annual Energy Review 2007*, Washington, DC, June 2008.



*Note: Due to rounding, data may not sum to exactly 100 percent.*

## Residential Energy Use - Energy Used in Households

[Uses of Energy in Homes](#)

[Types of Energy Used in Homes](#)

[Energy Use in Different Types of Homes](#)

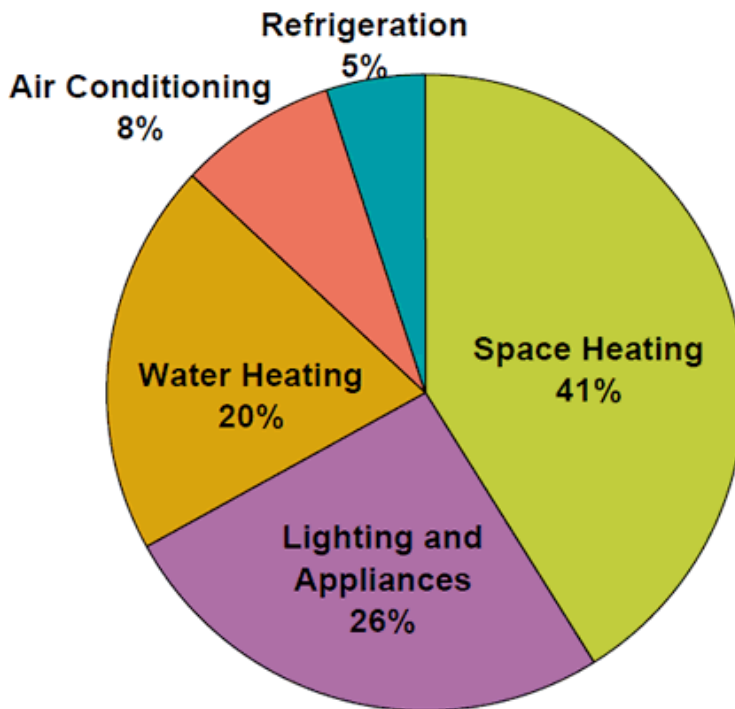
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### USES OF ENERGY IN HOMES

The ability to maintain desired temperatures is one of the most important accomplishments of modern technology. Our ovens, freezers, and homes can be kept at any temperature we choose, a luxury that wasn't possible 100 years ago. Keeping our homes comfortable uses a lot of energy. Over 40 percent of the average home's energy consumption is used for heating. Another 20 percent is used for water heating, 8 percent for cooling rooms, and 5 percent for refrigeration.

Almost one-fourth of the energy used in homes is used for lighting and appliances. Lighting is essential to a modern society. Lights have revolutionized the way we live, work, and play.

### How Energy is Used in Homes (2005)



*Due to rounding, percentages may not add to exactly 100 percent.*

Most homes still use the traditional incandescent bulbs invented by [Thomas Edison](#). These bulbs convert only about ten percent of the electricity they use to produce light, the other

90 percent is converted into heat. In 1879, the average bulb produced only 14 lumens per watt, compared to about 17 lumens per watt today. By adding halogen gases, the efficiency can be increased to 20 lumens per watt.

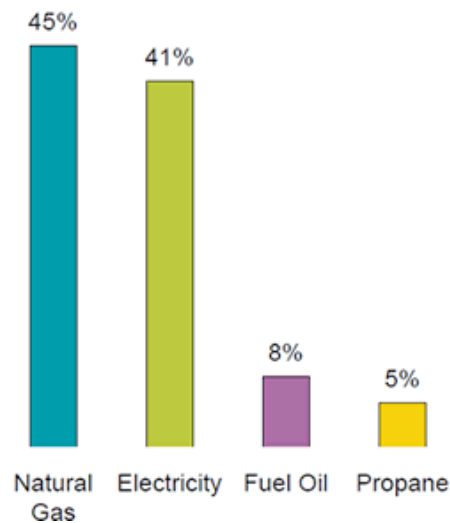
Compact fluorescent bulbs, or "CFLs", have made inroads into home lighting systems in the last few years. These bulbs last much longer and use much less energy, producing significant savings over the life of the bulb.

Appliances such as refrigerators, washing machines and dryers are also more energy efficient than they used to be. In 1990 Congress passed the National Appliance Energy Conservation Act, which requires new appliances to meet strict energy efficiency standards. Learn more about [energy efficient light bulbs and appliances, and other ways to save energy at home](#).

## TYPES OF ENERGY USED IN HOMES

[Natural gas](#) is the most widely consumed energy source in American homes, followed by electricity, heating oil and propane. Natural gas and heating oil (fuel oil) are used mainly for home heating. [Electricity](#) may also be used for heating and cooling, plus it lights our homes and runs almost all of our appliances including refrigerators, toasters, and computers. Many homes in rural areas use [propane](#) for heating, while others use it to fuel their barbecue grills.

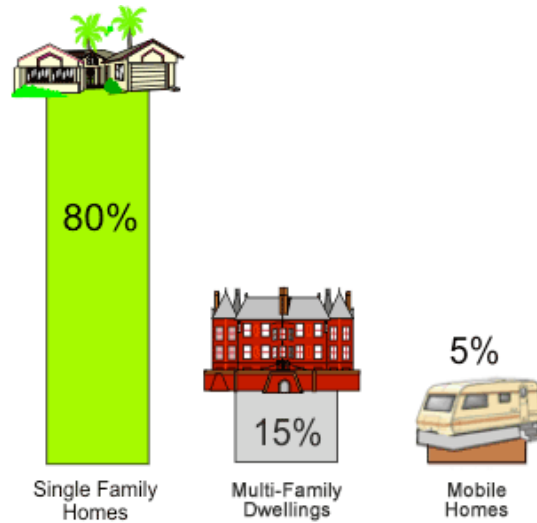
**Types of Energy Consumed in Homes (2005)**



*Note: Due to rounding, percentages may not add to exactly 100 percent.*

## ENERGY USE IN DIFFERENT TYPES OF HOMES

About 80 percent of residential energy use is consumed in single family homes, while 15 percent is consumed in multi-family dwellings such as apartments, and 5 percent is consumed in mobile homes.



More than half of the energy used for heating in **single-family homes** (either attached or detached) is natural gas, about one-fourth is electricity, and one-tenth is fuel oil (heating oil). Over three-fourths of single-family homes have some type of air conditioning. Most single-family homes have a washing machine and a dryer.

#### Among Single-Family Dwellings:

In 2005, for the Main Heating Fuel and Equipment:

- 56% use Natural Gas
- 26% use Electricity
- 7% use Fuel Oil
- 6% use LPG
- 1% use Kerosene

84% of single family homes have air conditioning (central system, wall/window units - or both)

For Appliances:

- 95% have a clothes washer
- 92% have a clothes dryer
- 74% have a personal computer

**Multi-family dwellings** such as apartments use about equal amounts of natural gas and electricity for heating. More than 80 percent of multi-family homes have air conditioning and more than one-third contain washers and dryers.

#### Among Multi-Family Dwellings:

In 2005, for the Main Heating Fuel and Equipment:

- 47% use Natural Gas
- 41% use Electricity
- 7% use Fuel Oil

82% of multi-family homes have air conditioning (a central system, wall/window units - or both)

**For Appliances:**

- 40% have a clothes washer
- 35% have a clothes dryer
- 55% have a personal computer

**Mobile homes** are more likely than the other types of homes to heat with propane(LPG). More than one-third of mobile homes use electricity and about one-third use natural gas for heating. Most mobile homes contain washing machines and dryers.

**Among Mobile Homes:**

In 2005, for the Main Heating Fuel and Equipment:

- 27% use Natural Gas
- 42% use Electricity
- 3% use Fuel Oil
- 19% use LPG
- 4% use Kerosene

84% of mobile homes have air conditioning(central system, wall/window units - or both

For Appliances:

- 87% have a clothes washer
- 78% have a clothes dryer
- 49% have a personal computer

Last Revised: June 2009

Sources: Energy Information Administration, 2005 Residential Energy Consumption Survey.

The National Energy Education Development Project, *Secondary Energy Infobook*, Manassas, VA, 2004.

## Commercial Energy Use

[Energy Use in Commercial Buildings](#)

[Types of Energy Used in Commercial Buildings](#)

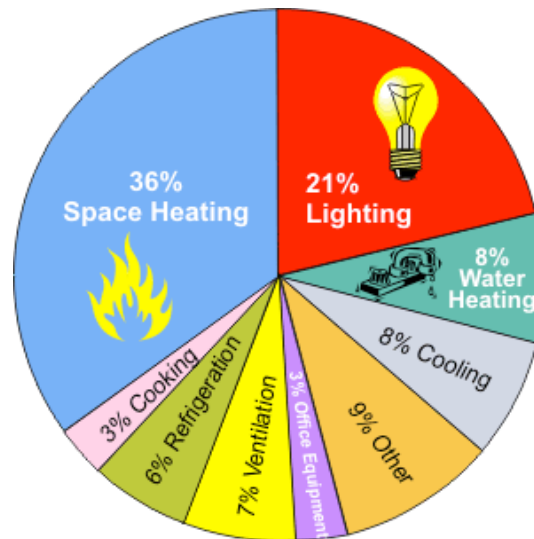
[Energy Use by Type of Building](#)

[links page](#)

### ENERGY USE IN COMMERCIAL BUILDINGS

Commercial buildings include a wide variety of building types—offices, hospitals, schools, police stations, places of worship, warehouses, hotels, barber shops, libraries, shopping malls—and that’s just the beginning of the list. These different commercial activities all have unique energy needs but, as a whole, commercial buildings use more than half their energy for heating and lighting.

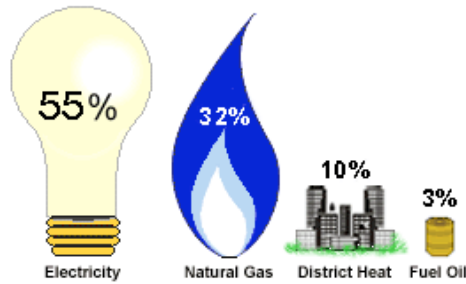
#### How Energy is Used in Commercial Buildings



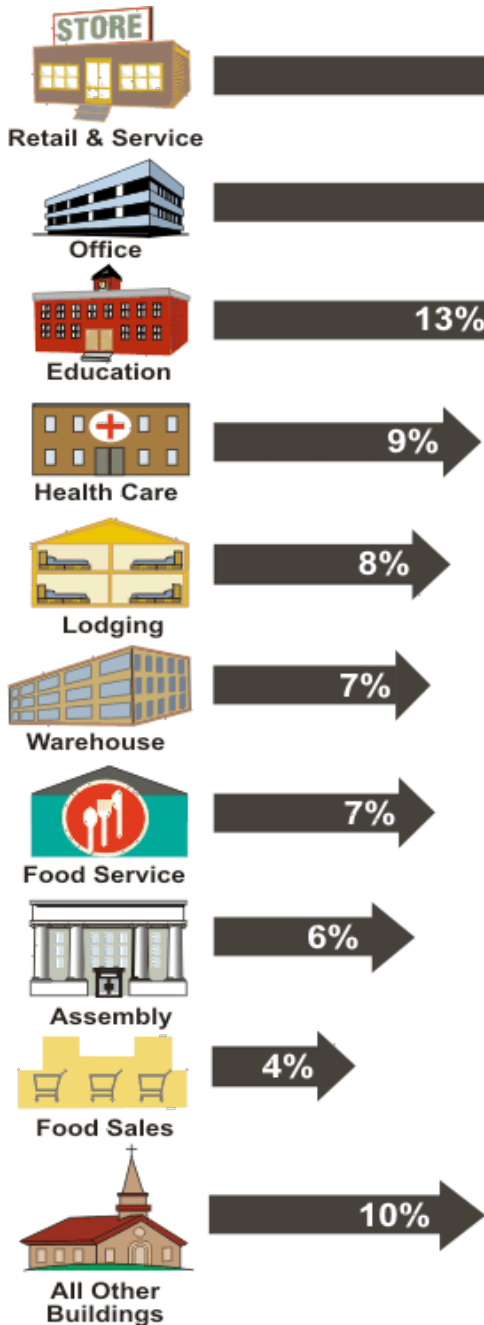
*Note: Total may not equal 100 percent due to independent rounding.*

### TYPES OF ENERGY USED IN COMMERCIAL BUILDINGS

Electricity and natural gas are the most common energy sources used in commercial buildings. Commercial buildings also use another source that you don’t usually find used in residential buildings—district energy. When there are many buildings close together, like on a college campus or in a big city, it is sometimes more efficient to have a central heating and cooling plant that distributes steam, hot water, or chilled water to all of the different buildings. A district system can reduce equipment and maintenance costs, as well as save energy.



## ENERGY USE BY TYPE OF BUILDING



Retail and service buildings use the most total energy of all the commercial building types. This isn't too surprising when you think of all the stores and service businesses in most towns. Offices use a large share of energy, too. Education buildings, like your school, use 13 percent of all total energy, which is even more than all hospitals and other medical buildings combined! Lodging buildings (like hotels or dormitories) use 8 percent of all energy. Warehouses and food service (like restaurants) each use 7 percent. Public assembly buildings, which can be anything from libraries to sports arenas, use 6 percent; food sales buildings (like grocery stores and convenience stores) use 4 percent. All other types of buildings, like places of worship, fire stations, police stations, and laboratories, account for the remaining 10 percent of commercial building energy.

Due to rounding. Percentages may not

add to exactly 100 percent.

Last Revised: October 2008

Source: Energy Information Administration, 2003 Commercial Buildings Energy Consumption Survey.

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## Industrial and Manufacturing Energy Use

- [Energy Use in Industry/Manufacturing](#)
- [Types of Energy for Industry/Manufacturing](#)
- [Energy Use by Type of Industry](#)

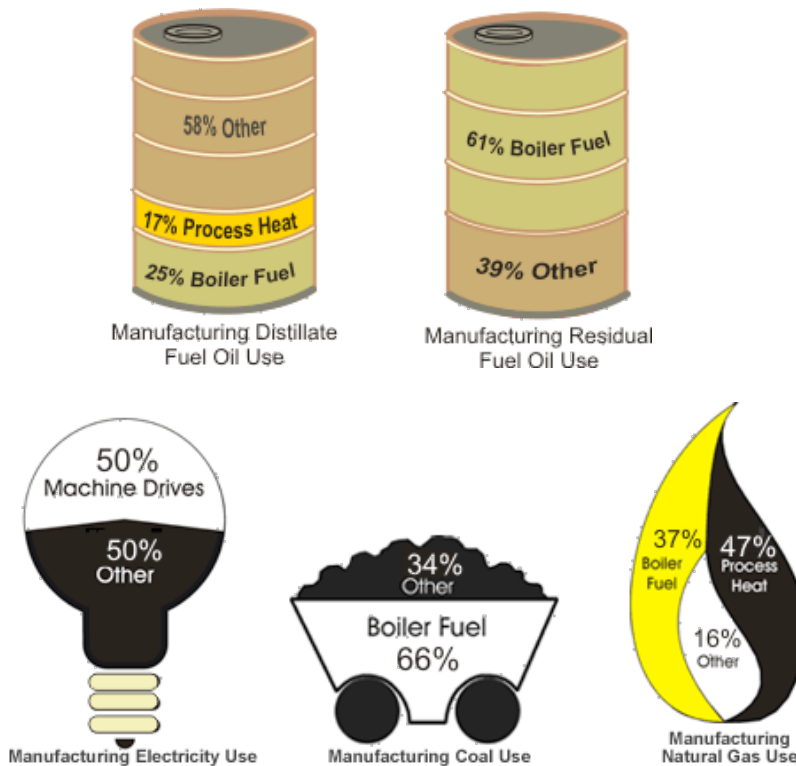
[links page](#)

### ENERGY USE IN INDUSTRY/MANUFACTURING

The United States is highly industrialized. Industry accounts for about one-third of the energy used in the country.

There are many different uses and a variety of different energy sources in the manufacturing sector. One main use is as boiler fuel, which means producing heat that is transferred to the boiler vessel to generate steam or hot water. Another use is as process heating, which is when energy is used directly to raise the temperature of products in the manufacturing process; examples are separating components of crude oil in petroleum refining, drying paint in automobile manufacturing, and cooking packaged foods.

#### Major End Uses of Some Common Energy Sources (Percent of Energy Source Used for an End Use)

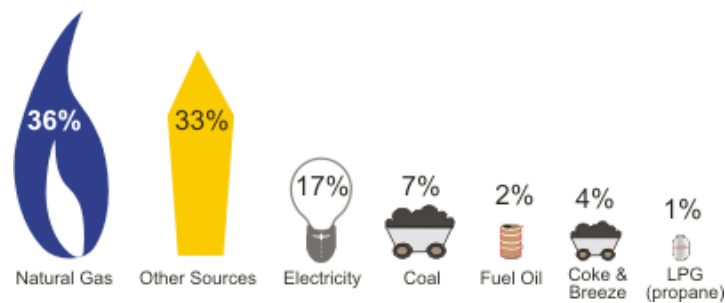


### TYPES OF ENERGY FOR INDUSTRY/MANUFACTURING

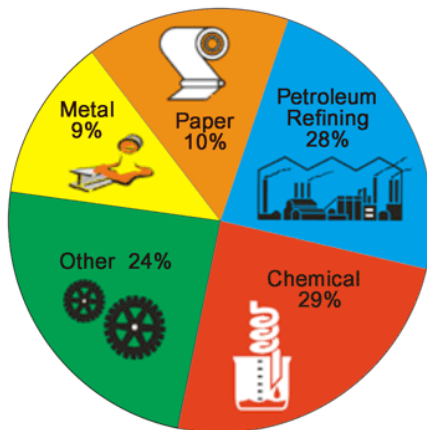
In the manufacturing sector, the predominant energy sources are natural gas and [electricity](#) (a secondary source). Manufacturers also use [other energy sources](#) for heat,

power, and electricity generation. Many [uncommon energy sources](#) are also used by manufacturers as a [feedstock](#)(a raw material used to make other products).

### Sources of Energy Used for Industry and Manufacturing



### ENERGY USE BY TYPE OF INDUSTRY



Every industry uses energy, but there are a handful of energy-intensive industries that use the bulk of the energy consumed by the industrial sector.

The chemical industry is the largest industrial consumer of energy, followed closely by petroleum refining. The refining, chemical, paper and metal industries together use:

- 94% of the feedstock
- 92% of the byproduct energy
- 70% of total inputs of energy for heat, power, and electricity generation

Last Revised: July 2006

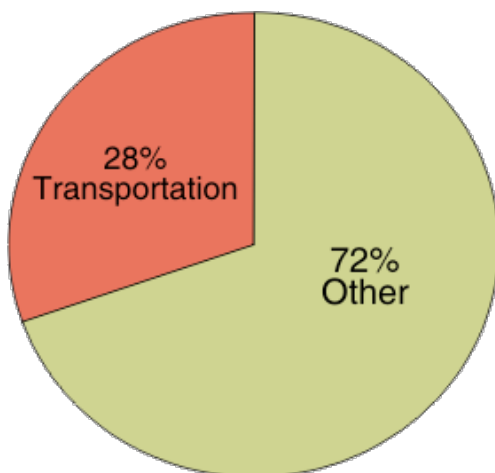
Source: Energy Information Administration, 2002 Manufacturing Energy Consumption Survey

## Transportation Energy Use

[Energy Use for Transportation](#)  
[Types of Energy Used for Transportation](#)  
[Energy Use by Type of Vehicle](#)

[links page](#)

### ENERGY USE FOR TRANSPORTATION



America is a nation on the move. About 28 percent of the energy we use goes to transporting people and goods from one place to another.

Cars, vans, and buses are commonly used to carry people. Trucks, airplanes, and railroads can be used to carry people and freight. Barges and pipelines only carry freight. In 2005, there were almost 239 million vehicles (cars, buses, and trucks) in the United States. That's more than three motor vehicles for every four people!

Automobiles, motorcycles, trucks, and buses drove nearly 3.0 trillion miles in 2005. That's almost one-twelfth the distance to the nearest star beyond the solar system. It's like driving to the sun and back 13,440 times.



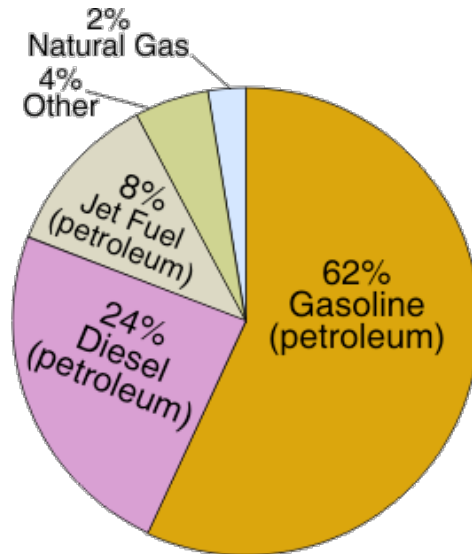
### TYPES OF ENERGY USED FOR TRANSPORTATION

Gasoline is used mainly by cars, motorcycles, and light trucks; diesel is used mainly by heavier trucks, buses, and trains. Together, gasoline and diesel make up 86 percent of all the energy used in transportation.

There is currently a push to develop vehicles that run on fuels other than petroleum

products, or on blended fuels. Today, there are some vehicles that run on electricity, natural gas, propane, and ethanol. Hybrid-electric vehicles combine the benefits of gasoline engines and electric motors, reducing the amount of fuel required for moving a vehicle. This is why hybrid-electric vehicles can get more miles per gallon of gasoline compared to vehicles that run on gasoline alone.

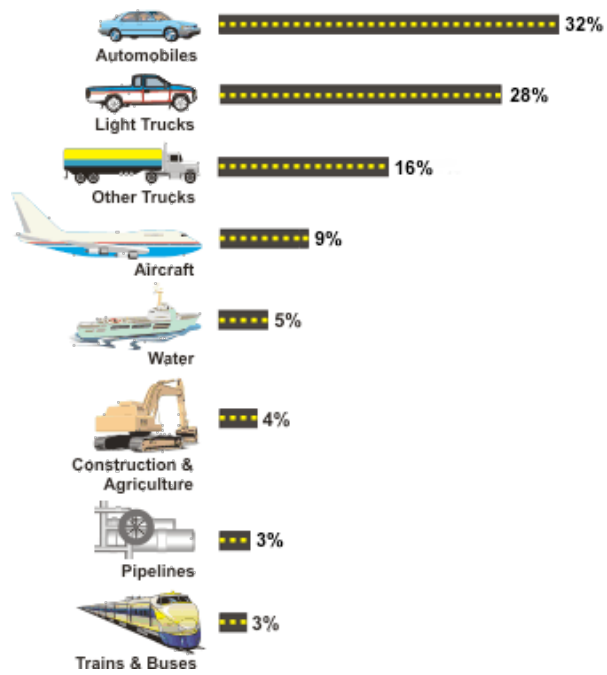
### Fuels Used for Transportation



*Note: Due to rounding, data may not sum to exactly 100 percent.*

### ENERGY USE BY TYPE OF VEHICLE

The people in the United States have always had a love affair with the automobile. Personal vehicles (like cars and light trucks) consume 63 percent of the total energy used for transportation, while commercial vehicles (like large trucks and construction vehicles), mass transit (like airplanes, trains, and buses), and pipelines account for the rest.



Last Revised: October 2007

Source: U.S. Department of Energy, *Transportation Energy Data Book*: Edition 26-2007.

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