

Energy Consumption Statistics: 1999, 2005, and 2007

Energy Consumption/Year * <i>(million metric tons of oil equivalent) †</i>	United States (2007)	U.S. %‡ of World Energy Use	China (2007)	China %‡ of World Energy Use	Total World Energy Use (2007)
Transportation	635,601		139,049		2,296,731
Residential	267,111		315,220		1,941,450
Industrial/Commercial§	512,975		620,945		3,112,816

Energy Consumption/Year * <i>(million metric tons of oil equivalent) †</i>	United States (2005)	U.S. %‡ of World Energy Use	China (2005)	China %‡ of World Energy Use	Total World Energy Use (2005)
Transportation	648,412		114,230		2,182,194
Residential	269,813		331,502		1,950,764
Industrial/Commercial§	507,381		475,761		2,905,220

Energy Consumption/Year * <i>(million metric tons of oil equivalent) †</i>	United States (1999)	U.S. %‡ of World Energy Use	China (1999)	China %‡ of World Energy Use	Total World Energy Use (1999)
Transportation	601,275		69,176		1,755,505
Residential	254,209		289,489		1,845,475
Industrial/Commercial§	554,076		363,523		2,818,316

Total T + R + I/C	1,414,687		1,075,214		7,350,997
in thousand MTOE:	1,414,687,000		1,075,214,000		7,350,997,000

1999 table from *Fueling the Future*; 2005 and 2007 tables from IEA (www.iea.org/stats) by R. Sedlock

Changes in Annual Energy Use: The World, the U.S., and China
modified from Fueling the Future by Richard Sedlock

1. Your instructor will give you a “data table” with three charts of energy-use statistics for the years 1999, 2005, and 2007; each chart has data for the U.S., China, and the world. Complete one or more of the three charts (your instructor will explain) by computing the values that belong in the gray boxes. You will need a calculator. Round to the nearest tenth—one digit to the right of the decimal point (so your answer might look like “23.4%”).

In 2005, both the U.S. and China used more energy for *transportation* than they did in 1999. How much more? We’ll describe the increase in two different ways.

2. First, use **subtraction** to determine the **difference** (use the space below). Note that the unit in the tables above is “million metric tons of oil equivalent,” which is abbreviated MMTOE.

a. U.S. increase in MMTOE used for transportation, 2005 compared to 1999

b. China increase in MMTOE used for transportation, 2005 compared to 1999

c. Which country’s energy use for transportation grew by more MMTOE from 1999 to 2005?

3. Second, use **division** to express the increase as a **percentage**. Follow the following steps, first for the U.S. Remember, all the calculations here are for the *transportation* sector usage.

4. Construct a ratio.

a. For the numerator (top value), use the value from Step 2a (the “difference”). Write that value above the dashed line: _____

b. For the denominator (bottom value), use the value from the 1999 table. Write that value below the dashed line:

5. Now use a calculator to express this ratio as a decimal (it will be less than 1.00).

6. Finally, multiply the value from Step 5 by 100, and add a percentage sign: _____

This value is the percentage increase of energy used for transportation in the U.S. from 1999 to 2005.

7. Now let's do the same steps for China. Construct a ratio:
- a. For the numerator, use the value from Step 2b (the "difference"): _____
 - b. For the denominator, use the value from the 1999 table:

8. Now use a calculator to express this ratio as a decimal (it will be less than 1.00).

9. Finally, multiply the value from Step 8 by 100, and add a percentage sign: _____

You now have calculated the percentage increase of energy used for transportation from 1999 to 2005 in the U.S. (Step 6) and China (Step 9).

10. In which country did energy use increase by a larger percentage from 1999 to 2005? _____

11. Compare your answers to 2c (the difference) and 10 (the percentage). Which method of calculating the increase do you think gives a better idea of how a country's energy use is really changing? Why do you think so?

12. Examine the chart for 2007 energy use. In words, describe the changes from 2005 to 2007 in U.S. energy usage compared to the changes from 2005 to 2007 in Chinese energy usage.

Populations in 2007: U.S. 301,000,000 China 1,318,000,000 World 6,700,000,000.

13. Below the 2007 chart, the sum of the three energy uses is shown as "Total T + R + I/C." Below that is the same value, but in thousand (instead of million) metric tons of oil equivalent. Use the values in this last line to calculate the 2007 per-capita (from the Latin for "per head," i.e., per person) energy use in the U.S., China, and the world.

14. What percentage of 2007 world population was 2007 U.S. population? _____

15. What percentage of 2007 world energy use was 2007 U.S. energy use? _____

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	1999	2005	2007
World			
Trans			2,296,731
Res			1,941,450
Ind/Comm			3,112,816
U.S.			
Trans			635,601
Res			267,111
Ind/Comm			512,975
China			
Trans			139,049
Res			315,220
Ind/Comm			620,945

This grid presents the same types of data as those shown on the Data Sheet, and includes data from 2007.

Complete the grid by transferring the 1999 and 2005 data from the Data Sheet to the appropriate blank boxes above.

Note to teachers: An alternative extension for younger students or those who need table/math practice.... The information in the above table is the same as in the table on page 1, but it's rearranged. Students should enter data from table 1 into the appropriate cells of the table above.