**Student Name**_____ **Class**_____

# Energy Uses in Connecticut

## Science, Technology & Society
## Student Materials

## Grades 9-10

# Energy Uses in Connecticut

## Student Materials

Energy is used everyday to heat and light our homes, schools and businesses. Have you ever thought about where the energy we use everyday comes from? How have these energy sources changed over the last several decades?

You have been provided with a spreadsheet containing some information about energy use and its sources in Connecticut from 1960 through 2001. Use this information and the Excel program to prepare a line graph showing the trends in the energy consumption from the following sources: coal; natural gas; nuclear; hydroelectric; and wood/waste over this time span.

**Your task is to choose one of the fuel sources (coal, natural gas, nuclear, hydroelectric or waste) and research the advantages and disadvantages of this particular energy trend as it is illustrated on the graph.** Does this trend support Connecticut's initiative to significantly decrease the use of non-renewable resources by the year 2010? Some support materials for the study of energy resources may be found at the websites listed below and many others.

**Nuclear Energy Resources**

Energy Information Administration: Nuclear
http://www.eia.doe.gov/fuelnuclear.html

Office of Nuclear Energy, Science and Technology
http://www.ne.doe.gov/

**Hydroelectric Energy Resources**

National Hydropower Association
http://hydro.org

Power Matters: Hydroelectric Power
http://www.tva.gov/power/hydro.htm

**Biomass Energy Resources**

Energy Efficiency and Renewable Energy
http://www.eere.energy.gov/RE/bio_basics.html

Connecticut Clean Energy Fund
http://ctcleanenergy.com/renewable/biomass_tech.html

**Coal Energy Resources**

Office of Fossil Energy-U.S. Department of Energy
www.fe.doe.gov/programs/powersystems/cleancoal/index.html

Coal Fired Power Generation
www.rst2.edu/ties/acidrain/IEcoal/how.htm

**Natural Gas Energy Resources**

Adventures in Energy
www.adventuresinenergy.org/main.swf

Natural Gas Supply Organization
www.naturalgas.org

Energy Information Administration
Last updated 12/15/2004

## Table 7. Energy Consumption Estimates by Source, 1960-2001, Connecticut

| | | | Petroleum Products | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Coal (Trillion Btu) | Natural Gas (Trillion Btu) | Asphalt & Road Oil (Trillion Btu) | Aviation Gasoline (Trillion Btu) | Distillate Fuel (Trillion Btu) | Jet Fuel (Trillion Btu) | Kerosene (Trillion Btu) | LPG (Trillion Btu) | Lubricants (Trillion Btu) | Motor Gasoline (Trillion Btu) | Residential Fuel (Trillion Btu) | Other (Trillion Btu) | Total Petroleum Prod. (Trillion Btu) | Nuclear Electric Power (Trillion Btu) | Hydroelectric Power (Trillion Btu) | Wood and Waste (Trillion Btu) | Other a,f (Trillion Btu) | Net Interstate Electricity Flow/Losses (Trillion Btu) | Total (Trillion Btu) |
| 1960 | 101.7 | 29.4 | 7.2 | 0.5 | 136.1 | 6.4 | 10.9 | 4.4 | 2.1 | 101.6 | 91.9 | 1.3 | 362.4 | 0 | 4.6 | 12.8 | 0 | -2.8 | 508.2 |
| 1961 | 107.5 | 31.4 | 6.5 | 0.5 | 136.1 | 6.2 | 11.1 | 4.4 | 2.1 | 103.9 | 93.5 | 1.4 | 365.8 | 0 | 3.9 | 13.2 | 0 | -3.5 | 518.4 |
| 1962 | 112.1 | 33.4 | 8 | 0.6 | 135.4 | 6.7 | 9.6 | 5 | 3.2 | 108.4 | 100.6 | 1.6 | 379 | 0 | 3.1 | 12.8 | 0 | -3.4 | 536.9 |
| 1963 | 117.4 | 35.6 | 6.7 | 0.9 | 133.6 | 6.8 | 8 | 5.7 | 3.2 | 112.3 | 102.3 | 3 | 382.5 | 0 | 2.9 | 13.3 | 0 | -4 | 547.7 |
| 1964 | 120.8 | 38.6 | 5.9 | 0.8 | 119.5 | 6.6 | 7.1 | 6.1 | 3.4 | 115.6 | 123.7 | 3.8 | 392.5 | 0 | 2.8 | 13.9 | 0 | -2.3 | 566.3 |
| 1965 | 128.6 | 41.7 | 8.8 | 0.9 | 123.4 | 8 | 7.4 | 5.5 | 3.4 | 120.5 | 107.9 | 3.7 | 389.4 | 0 | 2 | 13.5 | 0 | -3.2 | 572 |
| 1966 | 136.2 | 48.7 | 7.9 | 0.8 | 117.5 | 8.7 | 5.2 | 5.9 | 3.5 | 126 | 130.8 | 26.9 | 433.1 | 0 | 2.6 | 13.6 | 0 | -4.3 | 630 |
| 1967 | 109.5 | 50.8 | 7 | 0.7 | 121.1 | 9.6 | 4.5 | 5.8 | 2.9 | 128.8 | 159.6 | 29.7 | 469.7 | 6.1 | 4.1 | 14 | 0 | -6.3 | 647.9 |
| 1968 | 82.4 | 54.1 | 8 | 0.8 | 130 | 13.2 | 4.1 | 6.5 | 3.2 | 137.4 | 176.1 | 33.1 | 512.5 | 33.9 | 3.7 | 14.9 | 0 | -26.2 | 675.4 |
| 1969 | 59.2 | 58.4 | 8.5 | 0.7 | 134.7 | 14.9 | 4.2 | 7.3 | 3.4 | 142.8 | 203.9 | 33.2 | 553.6 | 40.2 | 4.4 | 15.3 | 0 | -36.3 | 694.8 |
| 1970 | 48.6 | 61.5 | 6.8 | 0.6 | 140.5 | 16.4 | 4.4 | 7 | 3.5 | 150.4 | 223.8 | 34 | 587.4 | 39.6 | 3.5 | 15.8 | 0 | -34 | 722.4 |
| 1971 | 36.4 | 62.4 | 8.1 | 0.6 | 140.4 | 12.4 | 4.4 | 7.1 | 2.9 | 155.2 | 212.6 | 2.7 | 546.4 | 84.2 | 4.1 | 16.1 | 0 | -64.9 | 684.7 |
| 1972 | 4.2 | 65 | 9.7 | 0.6 | 144.3 | 15.9 | 5.1 | 7.9 | 3.1 | 161.8 | 255.9 | 3.1 | 607.4 | 83.9 | 5.6 | 17.1 | 0 | -63.1 | 720.2 |
| 1973 | 2.6 | 63.5 | 10.4 | 0.6 | 148.2 | 14.2 | 3.4 | 8.2 | 3.3 | 166 | 272.2 | 3.4 | 629.8 | 46.9 | 4.6 | 17.2 | 0 | -18.8 | 746 |
| 1974 | 6.5 | 67.1 | 7.3 | 0.5 | 135.1 | 13.8 | 3.1 | 8 | 3.2 | 165.5 | 236.6 | 3.6 | 576.8 | 89 | 4.5 | 18 | 0 | -44.7 | 717.2 |
| 1975 | 1.3 | 64.3 | 8.4 | 0.5 | 125.9 | 12 | 3.3 | 8.2 | 2.4 | 167.2 | 204.4 | 3.4 | 535.7 | 89.6 | 5.1 | 17.1 | 0 | -20.8 | 692.3 |
| 1976 | 1.2 | 66.4 | 7.4 | 0.4 | 141.1 | 11 | 4.1 | 8.9 | 2.7 | 171.4 | 206.2 | 6.6 | 559.8 | 136.2 | 4 | 19.9 | 0 | -40.5 | 746.9 |
| 1977 | 1.2 | 64.7 | 6.1 | 0.6 | 138.5 | 12.3 | 2.9 | 8.9 | 2.8 | 174 | 202.2 | 8 | 556.2 | 141.9 | 4.5 | 19.6 | 0 | -34 | 754.1 |
| 1978 | 0.8 | 66 | 7.6 | 0.5 | 137.3 | 12 | 2.7 | 8 | 3 | 174.5 | 215.2 | 8.8 | 569.6 | 151.7 | 3.7 | 22.7 | 0 | -39.2 | 775.4 |
| 1979 | 1.1 | 68.8 | 5.6 | 0.4 | 165.9 | 13.5 | 2.1 | 5.4 | 3.1 | 165.4 | 169.2 | 10.5 | 541.2 | 138.2 | 4.8 | 24.6 | 0 | -14.5 | 764.1 |
| 1980 | 0.4 | 74.2 | 4.2 | 0.4 | 129.9 | 11.2 | 2.8 | 5.5 | 2.8 | 158.7 | 184.4 | 11 | 510.9 | 129.1 | 2.7 | 35.3 | 0 | -20.6 | 731.8 |
| 1981 | 0.9 | 78.7 | 5.2 | 0.4 | 114.9 | 8.9 | 2.4 | 4.9 | 2.6 | 158.9 | 135.4 | 13.9 | 447.5 | 139.8 | 2.7 | 36.5 | 0 | -0.7 | 705.4 |
| 1982 | 0.8 | 80.4 | 5.2 | 0.3 | 119.4 | 6.1 | 2.2 | 5.1 | 2.4 | 157.9 | 133.9 | 10.7 | 443.1 | 150.9 | 3.9 | 37.2 | 0 | -10 | 706.2 |
| 1983 | 0.7 | 76.6 | 4.9 | 0.3 | 98.5 | 5.4 | 1.7 | 5.2 | 2.5 | 160.4 | 146.6 | 9.3 | 434.8 | 126.4 | 4 | 39.4 | 0 | 9.5 | 691.4 |
| 1984 | 1.5 | 83.5 | 6.2 | 0.3 | 119.7 | 5.7 | 1.3 | 5 | 2.7 | 162.1 | 157.7 | 10.5 | 471.2 | 155 | 3.9 | 36.4 | 0 | -31.3 | 720.2 |
| 1985 | 21.3 | 80.6 | 13.9 | 0.4 | 120.5 | 6.1 | 4 | 4.6 | 2.5 | 162.8 | 132.3 | 10 | 457.2 | 135.1 | 2.8 | 36 | 0.1 | -2.6 | 730.4 |
| 1986 | 21.2 | 81.3 | 14.1 | 0.4 | 130.6 | 7.1 | 3.2 | 4.1 | 2.5 | 167.4 | 140.1 | 6.4 | 475.8 | 197.5 | 3.9 | 31.1 | 1.5 | -66.9 | 745.3 |
| 1987 | 21.4 | 94.7 | 14.2 | 0.3 | 137.7 | 10.1 | 3.3 | 5.7 | 2.8 | 170.3 | 119.1 | 6.4 | 470 | 214.5 | 3.6 | 27.1 | 2 | -63.8 | 769.4 |
| 1988 | 23.1 | 90.9 | 12.3 | 0.2 | 149 | 12.2 | 4.1 | 5.5 | 2.7 | 172.5 | 137.4 | 6.4 | 502.4 | 235.9 | 3.4 | 30.6 | 2.3 | -87.5 | 801.1 |
| 1989 | 23.8 | 102 | 11.9 | 0.2 | 161.1 | 12.7 | 3.8 | 5.8 | 2.7 | 169.5 | 139.3 | 6.3 | 513.4 | 207 | 4.6 | 30.7 | 0.8 | -65.2 | 817.1 |
| 1990 | 38.5 | 109 | 10.5 | 0.5 | 135.5 | 13.3 | 1.8 | 5.8 | 2.8 | 163.6 | 104.1 | 7.1 | 444.9 | 209.3 | 6 | 28.3 | 0.2 | -64.8 | 771.3 |
| 1991 | 38.6 | 116 | 13.1 | 0.1 | 129.8 | 12.7 | 2.1 | 5.4 | 2.5 | 167.4 | 91.3 | 8.2 | 432.8 | 128.4 | 4.5 | 29.9 | 1.9 | 17.7 | 769.5 |
| 1992 | 39.2 | 126 | 11.1 | 0.1 | 146 | 13 | 1.4 | 6.8 | 2.6 | 171.2 | 68.3 | 8.5 | 429.1 | 175.6 | 4.4 | 34.1 | 3.2 | -8.6 | 803.2 |
| 1993 | 37.3 | 126 | 10.5 | 0.2 | 134.7 | 13.1 | 1.6 | 6.1 | 2.6 | 173.9 | 55.5 | 8.6 | 406.6 | 229 | 4.2 | 34.2 | 3.7 | -45 | 796 |
| 1994 | 38.6 | 134 | 11.1 | 0.1 | 128.4 | 13.9 | 1.5 | 5.4 | 2.7 | 170.9 | 47.6 | 8.8 | 390.3 | 210.7 | 5 | 35.2 | 4.2 | -22.4 | 796 |
| 1995 | 40.8 | 145 | 12.7 | 0.2 | 124.2 | 14.1 | 1.4 | 5.1 | 2.7 | 159.5 | 42.8 | 8.4 | 371.1 | 197 | 3.6 | 43.2 | 4.5 | -26.3 | 778.9 |
| 1996 | 41.1 | 139 | 10.4 | 0.2 | 129.1 | 15.4 | 1.3 | 5.5 | 2.6 | 170.4 | 65.4 | 21.8 | 422.1 | 65.4 | 6.5 | 48.3 | 4.7 | 101.4 | 828.6 |
| 1997 | 45 | 149 | 8.1 | 0.1 | 129.2 | 13.4 | 1.6 | 6.3 | 2.8 | 171.7 | 92.3 | 23.8 | 449.2 | -1.3 | 4.5 | 43.7 | 6 | 126.9 | 822.6 |
| 1998 | 32.6 | 135 | 3.7 | 0.3 | 115.8 | 12.5 | 2 | 8.1 | 2.9 | 175.1 | 94.2 | 23.9 | 438.5 | 34 | 4.6 | 42.8 | 5 | 113.1 | 805.5 |
| 1999 | 15.2 | 156 | 4.4 | 0.2 | 130.5 | 13.9 | 2 | 6.1 | 2.9 | 189.1 | 90.7 | 23.9 | 463.7 | 132.5 | 4.3 | 43.4 | 5.5 | 32 | 852.5 |
| 2000 | 36.2 | 164 | 4.5 | 0.2 | 137.3 | 14.7 | 2.9 | 7.7 | 2.9 | 182 | 74.4 | 23.5 | 450.1 | 170.7 | 5.3 | 43.4 | 5.6 | -20.4 | 854.6 |
| 2001 | 40 | 149 | 4.7 | 0.4 | 144.6 | 13.4 | 2.6 | 8.8 | 2.6 | 184.6 | 56.8 | 20.3 | 438.7 | 161.2 | 2.9 | 38.7 | 1.7 | 20.5 | 853.1 |