

Student Name_____ **Class**_____



Energy Uses in Connecticut

**Science, Technology and 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://www.hydro.org/>
- **Power Matters: Hydroelectric Power**
<http://www.tva.gov/power/hydro.htm>

Biomass Energy Resources

- **Energy Efficiency and Renewable Energy**
<http://www1.eere.energy.gov/biomass/>
- **Connecticut Clean Energy Fund (click on Biomass from the list)**
<http://ctcleanenergy.com/BasicsofCleanEnergy/TypesofCleanEnergy/tabid/66/Default.aspx>

Coal Energy Resources

- **Office of Fossil Energy-U.S. Department of Energy**
<http://www.fe.doe.gov/programs/powersystems/cleancoal/index.html>
- **Coal Fired Power Generation**
<http://www.rst2.edu/ties/acidrain/IEcoal/how.htm>

Natural Gas Energy Resources

- **Adventures in Energy**
<http://www.adventuresinenergy.org/main.swf>
- **Natural Gas Supply Organization**
<http://www.naturalgas.org>

Table 7. Energy Consumption Estimates by Source, 1965-2001, Connecticut

Year	Petroleum Products													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)
	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)						
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

Use this information 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 time