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# **PATTERNS AND TRENDS**

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**NEW YORK STATE ENERGY PROFILES: 1988-2002**

**DECEMBER 2003**

**NEW YORK STATE  
ENERGY RESEARCH AND  
DEVELOPMENT AUTHORITY**



**PATTERNS AND TRENDS**  
**NEW YORK STATE ENERGY PROFILES: 1988-2002**

**NEW YORK STATE**  
**ENERGY RESEARCH AND**  
**DEVELOPMENT AUTHORITY**

17 Columbia Circle  
Albany, NY 12203-6399

[www.nyserda.org](http://www.nyserda.org)

December 2003

# MESSAGE FROM THE PRESIDENT

As we watch the changing trends in the energy industry today, and look at the changing patterns of how we consume and generate energy, it is clear that the world of energy has changed significantly with the emergence of competition. The time of local utilities supplying power within small territories is mostly gone. Today, energy can, and is transmitted across vast regions of the country to satisfy the growing need for power. We can no longer as consumers, stakeholders, or policy-makers look past the growing demands on energy that is driving our energy-intensive economy, powering our home computers, DVD players, and various electronic gadgets that we all love so well.

While maybe these things don't come to mind everyday with the press of day to day business, we are constantly reminded of the pivotal role that energy plays in our daily lives in a number of ways. For example, this year we've seen tremendous volatility in the market price for natural gas and gasoline. That affects each and everyone of us from the economic impact it has on us as consumers heating our homes or driving our cars, to the environmental impacts associated with the fuels we use to generate energy.

At NYSERDA, we are constantly focusing on the changes we see in the new energy marketplace, and looking at the policies and strategies we have in New York, to provide policymakers, stakeholders, and consumers with the information necessary to make informed energy decisions. It's critical that the most current, comprehensive, and objective data is available, to continue formulating the new policies, strategies, and programs needed to ensure a secure energy future. Armed with the knowledge and understanding of how we use our energy, we can confidently implement energy policies that will maintain the crucial balance needed between the economy and the environment.

We are proud to present the latest version of **Patterns and Trends** to help further our goals of investing in an affordable and environmentally sound energy future.

Peter R. Smith, Acting President  
New York State Energy Research and  
Development Authority

**NYSERDA**

The logo graphic for NYSERDA consists of a stylized, grey, curved line that forms an oval shape, positioned to the right of the text 'NYSERDA'.

**2002  
NEW YORK STATE  
ENERGY FAST FACTS**

**PRIMARY ENERGY CONSUMPTION**

*Increased 2% from 2001*

Primary consumption (4% of U.S. total) (trillion Btu) . . . . .	4,156.6
By fuel type:	
Petroleum . . . . . (40%) . . . . .	1,641.7
Natural gas . . . . . (31%) . . . . .	1,286.0
Nuclear . . . . . ( 9%) . . . . .	374.7
Coal . . . . . ( 7%) . . . . .	297.1
Hydro . . . . . ( 5%) . . . . .	223.0
Biofuels . . . . . ( 5%) . . . . .	211.3
Net imported electricity . . ( 3%) . . . . .	122.7
Primary consumption per capita (million Btu) . . . . .	216.9

**ENERGY AND EXPENDITURES**

	End-use Energy (trillion Btu)	Estimated Expenditures (billion dollars)
Total: . . . . .	3,182.8	37.5
By sector:		
Residential . . . . . (27%) . . . . .	849.2	12.0
Commercial . . . . . (23%) . . . . .	750.4	11.8
Industrial . . . . . (15%) . . . . .	474.7	2.6
Transportation . . . . . (35%) . . . . .	1,108.5	11.1
By fuel type:		
Petroleum . . . . . (46%) . . . . .	1,479.6	14.0
Natural gas . . . . . (29%) . . . . .	911.2	6.8
Electricity . . . . . (16%) . . . . .	501.4	16.5
Biofuels . . . . . ( 6%) . . . . .	185.8	
Coal . . . . . ( 3%) . . . . .	104.8	0.2
Estimated out-of-state energy expenditures . . . . .		17.8

**AVERAGE ENERGY PRICES**

	2001	2002
Gasoline - all grades (gallon) . . . . .	\$1.43	\$1.44
Heating oil (gallon) . . . . .	\$1.42	\$1.31
Natural gas (thousand cubic feet)		
Residential . . . . .	\$11.75	\$9.76
Commercial . . . . .	\$9.61	\$6.49
Industrial . . . . .	\$7.72	\$5.65
Electricity (kilowatthour)		
Residential . . . . .	13.9¢	13.5¢
Commercial . . . . .	12.4¢	12.1¢
Industrial . . . . .	5.0¢	4.9¢

**GREENHOUSE GAS EMISSIONS FROM FUEL COMBUSTION**

*Emissions Decreased 1% from 1990*

Total (million metric tons of carbon equivalent) . . . . .	57.5
By sector:	
Residential . . . . .	9.9
Commercial . . . . .	8.0
Industrial . . . . .	5.5
Transportation . . . . .	20.3
Electric Generation . . . . .	13.8
By fuel type:	
Petroleum . . . . .	32.1
Natural gas . . . . .	18.6
Coal . . . . .	6.6
Biofuels . . . . .	0.2
Greenhouse gas emissions per capita (metric tons of carbon equivalent) . . . . .	3.0

**ELECTRICITY**

*Sales increased 4% from 2001*

Sales to ultimate consumers (gigawatthours) . . . . .	146,973
By sector:	
Residential . . . . . (32%) . . . . .	46,540
Commercial . . . . . (49%) . . . . .	72,639
Industrial . . . . . (17%) . . . . .	24,944
Transportation . . . . . ( 2%) . . . . .	2,850
Annual average electricity use per household (Kwh) . . . . .	5,879
Generation (gigawatthours) . . . . .	158,740
By fuel type:	
Natural gas . . . . . (26%) . . . . .	40,628
Nuclear . . . . . (25%) . . . . .	40,327
Coal . . . . . (15%) . . . . .	23,066
Hydro . . . . . (15%) . . . . .	23,997
Petroleum . . . . . ( 9%) . . . . .	14,772
Net imported electricity . . ( 8%) . . . . .	13,207
Biofuels . . . . . ( 2%) . . . . .	2,743

**PETROLEUM**

*Consumption decreased 1% from 2001*

Consumption (5% of U.S. total) (million barrels) . . . . .	297.1
By sector:	
Residential . . . . . (13%) . . . . .	38.2
Commercial . . . . . ( 9%) . . . . .	24.9
Industrial . . . . . ( 2%) . . . . .	6.1
Transportation . . . . . (66%) . . . . .	201.9
Electric generation . . . . . (10%) . . . . .	26.0
Dependence on foreign oil . . . . .	85%
In-State production (thousand barrels) . . . . .	179.0
Annual average fuel oil use per household (gallons) . . . . .	743

**NATURAL GAS**

*Consumption increased 7% from 2001*

Consumption (6% of U.S. total) (billion cubic feet) . . . . .	1,253
By sector:	
Residential . . . . . (30%) . . . . .	376
Commercial . . . . . (26%) . . . . .	332
Industrial . . . . . (14%) . . . . .	170
Transportation . . . . . ( 1%) . . . . .	8
Electric generation . . . . . (29%) . . . . .	367
In-State production (billion cubic feet) . . . . .	36.8
Annual average natural gas use per household (Mcf) . . . . .	74

**ADDITIONAL NYS STATISTICS**

Population (7% of U.S. total) (million) . . . . .	19.2
Number of households (million) . . . . .	7.1
Gross State Product (billion 2001 dollars) . . . . .	\$766.5
Motor vehicle registrations (million) . . . . .	10.2
Vehicle miles of travel (billion miles) . . . . .	130.7
Heating degree days (increased 2% from 2001) . . . . .	5510
Cooling degree days (increased 18% from 2001) . . . . .	807

**DATA SOURCE**

**NEW YORK STATE  
ENERGY RESEARCH AND  
DEVELOPMENT AUTHORITY**

17 Columbia Circle  
Albany, New York 12203-6399  
www.nyserda.org • info@nyserda.org  
local: (518) 862-1090 • toll free: 1-866-NYSERDA

## INTRODUCTION

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The New York State Energy Research and Development Authority's Energy Analysis Program provides objective data and analysis to help New York State's public and private policymakers make informed energy decisions. This report presents information on statewide energy consumption, prices, expenditures, and sources for the period 1988-2002. The 2002 data are preliminary estimates. New York, with 7% of the nation's population, is one of the most energy-efficient states in the nation on a per-capita basis, accounting for 4% of the nation's total primary energy consumption. Eleven percent of New York's total energy requirements are met by resources produced within the State, primarily from hydroelectric power and biofuels such as wood and municipal waste. In 2002, New Yorkers spent nearly \$37.5 billion for energy, ranking third behind California and Texas in terms of total state energy expenditures.

While New York reduced its petroleum use as a share of primary energy use from 52% in 1988 to 39% in 2002, the State continues to rely more heavily on imported petroleum products than the nation as a whole. In 2002, New York imported an estimated 85% of its petroleum from foreign sources, compared to the nation which imported 60% of its petroleum from foreign sources.

The *New York State Energy Plan and Final Environmental Impact Statement* (State Energy Plan) issued in June 2002 calls for increasing energy resource diversity in electricity generation and transportation by improving energy efficiency and demand management and by increasing the use of indigenous renewable resources. A benefit of greater energy diversity is greater energy security in the form of reducing the risk of energy supply disruption and price volatility. Moreover, a balanced portfolio of energy resources provides greater economic development opportunities within the State, particularly in the development of indigenous energy resources, such as renewable energy resources, and greater energy service reliability. The data and information contained in *Patterns and Trends* is designed to help consumers and policy makers better understand the State's energy use and costs, and provide the best information possible to make informed decisions.

This year's edition of *Patterns & Trends* has been expanded to include additional charts in Section One, Energy Profiles for the United States and New York. In addition, two new appendices are added to highlight major energy supplier filings and greenhouse gas emissions from fuel combustion.

*Patterns and Trends* is organized in six sections:

**Section 1: Energy Profiles for the United States and New York** compares energy consumption, selected energy prices, sources of petroleum products, and other factors influencing energy demand and expenditures in the United States and New York. National petroleum statistics have been aggregated to represent the same six fuels included in the New York data, specifically gasoline, distillate fuel, kerosene, aviation fuels, residual oil, and liquefied petroleum gases.

**Section 2: New York Energy Consumption** provides historical data for primary and net energy consumption by fuel type and sector, including residential, commercial, industrial, and transportation. "Primary" represents total consumption of fuels by sector, including the electricity generation sector. "Net" is the end-use consumption by sector, including electricity sales but excluding losses incurred during generation and distribution of electricity.

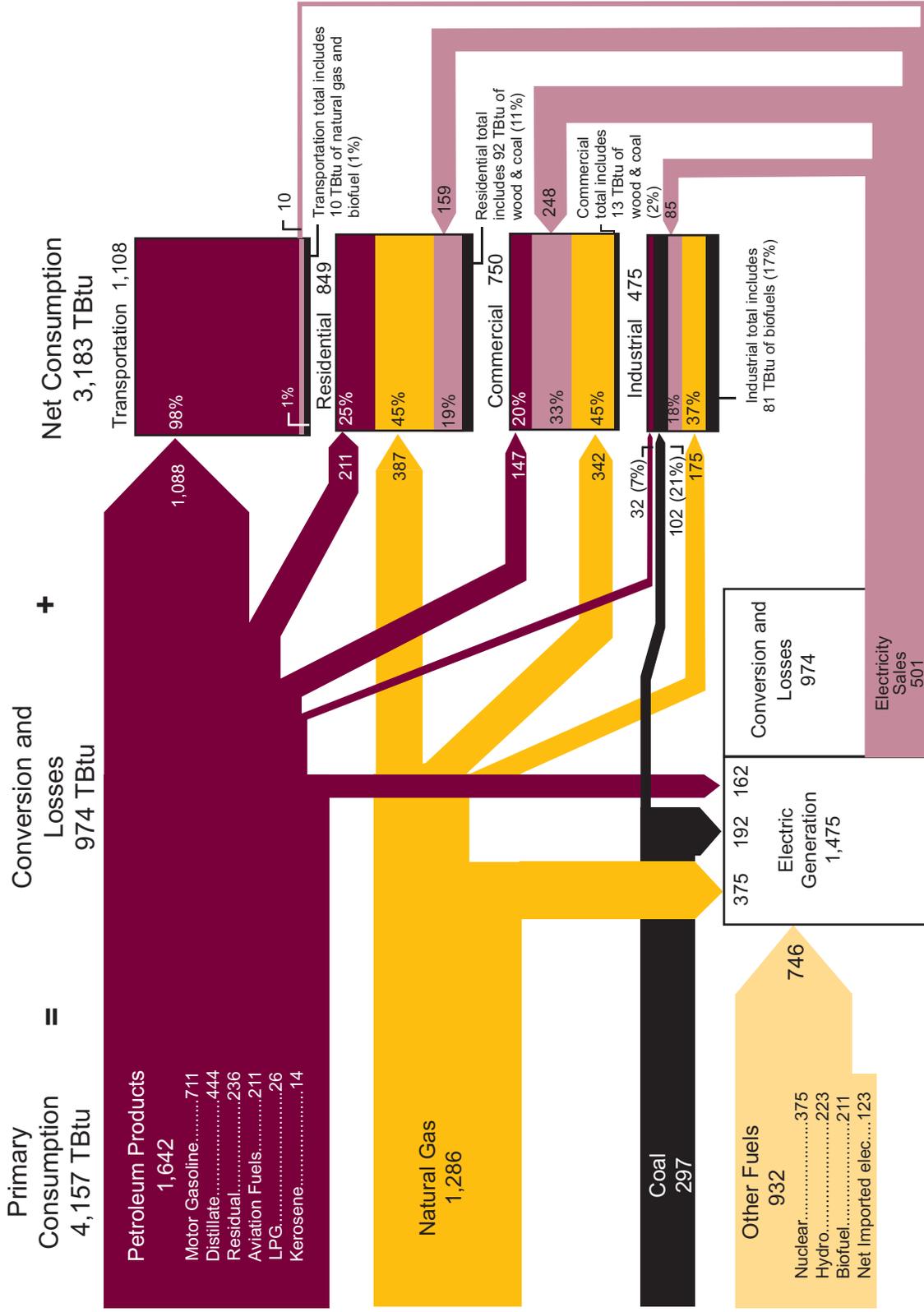
**Section 3: New York Energy Prices** presents retail energy price data. Retail energy prices are provided by fuel type for each sector in nominal dollars per physical unit and per million Btu.

**Section 4: New York Energy Expenditures** presents the estimated net energy expenditures by sector and fuel type in nominal dollars, as well as in 2002 constant dollars. Estimated expenditures were derived by multiplying consumption quantities by their respective prices.

**Section 5: New York's Sources of Energy** provides information on sources of selected New York energy supplies.

**Section 6: Appendices** provides supplemental sections that include information on major energy supplier filings, data on greenhouse gas emissions from fuel combustion, household end-use energy consumption and expenditures, gasoline consumption by county, degree-days, conversion factors, and a glossary of energy terms.

# 2002 NEW YORK STATE ENERGY FLOW



# PATTERNS AND TRENDS

## New York State Energy Profiles: 1988-2002

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**Patterns and Trends - New York State Energy Profiles: 1988-2002** presents a 15-year, historical overview of energy statistics for the State. It is an objective and reliable source of energy-related information for use by the general public, businesses, and government analysts. This report was prepared using the most recent comprehensive data available through the 2002 calendar year. Historical data prior to 1988 is available upon request for most series.

For more information, contact Communications, NYSERDA, 17 Columbia Circle, Albany, New York 12203-6399; 1-866-NYSERDA; or visit our web site at [www.nysERDA.org](http://www.nysERDA.org).

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## Section 1

# ENERGY PROFILES FOR THE UNITED STATES AND NEW YORK

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This section compares energy consumption, selected energy prices, sources of petroleum, and factors influencing energy demand and expenditures for the United States and New York. Additional statistics compare recent energy consumption and expenditure trends among all states. New York and national data in the report are comparable and exclude propane used in the chemical industry, asphalt, road oil, lubricants, petrochemical feedstocks, and miscellaneous non-energy petroleum products.

Selected New York State data are compiled from State sources and may differ slightly from statistics reported for New York in federal energy publications. For example, aviation fuel estimates developed using sales data at major New York City airports and extrapolated to derive statewide consumption figures are larger than comparable estimates appearing in federal reports.

Selected state and national energy consumption and expenditure data series are presented to illustrate regional differences in energy demand and expenditures. The data used to compile these rankings are from the U.S. Department of Energy, Energy Information Administration, *State Energy Data Report (SEDR)* and *State Energy Price and Expenditure Report (SEPER)*, and the U.S. Department of Commerce, *Statistical Abstract of the United States*.

## Key Observations about 2002 New York State Energy Data

- ✓ New York remains one of the most energy-efficient states in the continental United States on a per-capita basis accounting for 4% of the nation's total primary energy consumption; New York accounts for 7% of the nation's population.
- ✓ New York is the fourth largest energy consumer among all the states.
- ✓ Net energy demand in New York differs from national demand in several respects:
  - Residential energy use accounts for 27% of total energy demand in New York, compared to 18% nationally.
  - Commercial energy use accounts for 23% of total energy demand in New York, compared to 13% nationally.
  - Industrial energy use accounts for 15% of total energy demand in New York, compared to 26% nationally.
  - Transportation energy use accounts for 35% of total energy demand in New York, compared to 43% nationally.
- ✓ New York consumers pay more than the national average for most forms of energy on a per-unit basis.
- ✓ In terms of total energy expenditures, New York ranks third among all states, although it ranks among the lowest on an energy-expenditures-per-capita basis.
- ✓ In 2002, New York's reliance on foreign oil as a proportion of total petroleum was 85% while the United States' reliance was 60%.

# United States Primary Consumption of Energy by Fuel Type and Sector, 2002

Figure 1-1

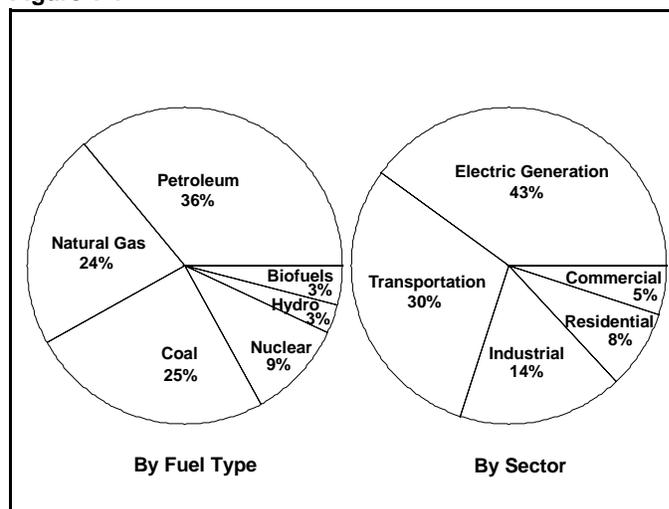


Table 1-1 (in trillion Btu)

	<u>Residential</u> TBtu	<u>Commercial</u> TBtu	<u>Industrial</u> TBtu	<u>Transportation</u> TBtu	<u>Net</u> <u>Consumption</u> TBtu	<u>Electric</u> <u>Generation</u> <sup>1</sup> TBtu	<u>Primary</u> <u>Consumption</u> TBtu
Coal	12	97	2,092	0	2,201	19,985	22,186
Natural Gas	5,058	3,238	6,758	0	15,054	5,664	20,718
Petroleum Products:	1,483	724	1,955	26,019	30,181	908	31,089
Distillate	838	477	1,164	5,334	7,813	162	7,975
Residual	0	114	222	1,093	1,429	746	2,175
Kerosene	95	31	8	0	134	0	134
LPG	550	102	560	26	1,238	0	1,238
Gasoline	0	0	0	16,002	16,002	0	16,002
Jet Fuel	0	0	0	3,564	3,564	0	3,564
Biofuels	350	88	1,677	174	2,289	466	2,755
Electric Sales	4,327	4,122	3,391	18	11,857		
Net Consumption	11,230	8,269	15,873	26,211	61,582		
						2,534	2,534
						8,145	8,145
						37,702	87,427

<sup>1</sup> Includes utility generators and non-utility generators.

<sup>2</sup> Includes net imports of electricity.

Source: Appendix I, source number 3, 4, and 9.

# New York State Primary Consumption of Energy by Fuel Type and Sector, 2002

Figure 1-2

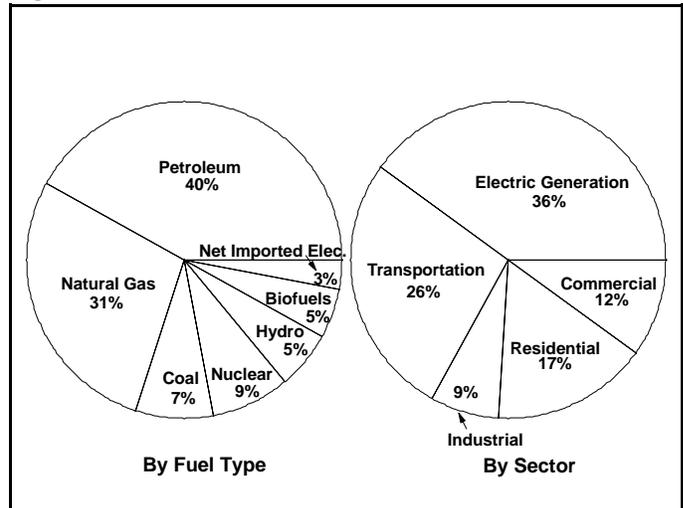


Table 1-2 (in trillion Btu)

	<u>Residential</u> TBtu	<u>Commercial</u> TBtu	<u>Industrial</u> TBtu	<u>Transportation</u> TBtu	<u>Net</u> <u>Consumption</u> TBtu	<u>Electric</u> <u>Generation</u> <sup>1</sup> TBtu	<u>Primary</u> <u>Consumption</u> TBtu	
Coal	0.3	2.6	101.9	0.0	104.8	192.3	297.1	
Natural Gas	386.5	341.6	174.5	8.6	911.2	374.8	1,286.0	
Petroleum Products:	211.5	147.5	32.2	1,088.4	1,479.6	162.1	1,641.7	
Distillate	184.9	84.3	16.2	141.0	426.4	17.5	443.9	
Residual	0.0	57.3	9.0	25.3	91.6	144.6	236.2	
Kerosene	9.3	2.8	1.3	0.0	13.4	0.0	13.4	
LPG	17.3	3.1	5.7	0.1	26.2	0.0	26.2	
Gasoline	0.0	0.0	0.0	710.6	710.6	0.0	710.6	
Jet Fuel	0.0	0.0	0.0	211.4	211.4	0.0	211.4	
Biofuels	92.1	10.9	81.0	1.8	185.8	25.5	211.3	
Electric Sales	158.8	247.8	85.1	9.7	501.4			
Net Consumption	849.2	750.4	474.7	1,108.5	3,182.8			
						Hydro Electricity	223.0	223.0
						Nuclear Electricity	374.7	374.7
						Net Imported Electricity	122.7	122.7
						Primary Consumption	1,475.1	4,156.5

<sup>1</sup> Includes utility and non-utility generators.

Source: Appendix I, source number 3, 5, 10, 12, 13, 21, 25, 26, 27, and 28.

**United States and New York State  
Selected Energy Prices  
in Nominal Dollars,  
1988-2002**

**Table 1-3a - United States**

<u>Year</u>	<u>Motor Gasoline</u> ¢/gal	<u>Resident. Distillate</u> ¢/gal	<u>Resident. Elec.</u> ¢/kWh	<u>Resident. Nat. Gas</u> \$/Mcf	<u>Comm. Elec.</u> ¢/kWh	<u>Comm. Nat. Gas</u> \$/Mcf	<u>Indus. Elec.</u> ¢/kWh	<u>Indus. Nat. Gas</u> \$/Mcf
1988	96.3	81.3	7.5	5.47	7.0	4.63	4.7	2.95
1989	106.0	90.0	7.7	5.64	7.2	4.74	4.7	2.96
1990	121.7	106.3	7.8	5.80	7.3	4.83	4.7	2.93
1991	119.6	101.9	8.0	5.82	7.5	4.81	4.8	2.69
1992	119.0	93.4	8.2	5.89	7.7	4.88	4.8	2.84
1993	117.3	91.1	8.3	6.16	7.7	5.22	4.9	3.07
1994	117.4	88.4	8.4	6.41	7.7	5.44	4.8	3.05
1995	120.5	86.7	8.4	6.06	7.7	5.05	4.7	2.71
1996	128.8	98.9	8.4	6.34	7.6	5.40	4.6	3.42
1997	129.1	98.4	8.4	6.94	7.6	5.80	4.5	3.59
1998	111.5	85.2	8.3	6.82	7.4	5.48	4.5	3.14
1999	122.1	87.6	8.2	6.69	7.3	5.33	4.4	3.12
2000	156.3	131.1	8.2	7.76	7.4	6.59	4.6	4.45
2001	153.1	125.0	8.6	9.64	7.9	8.43	5.0	5.28
2002	144.1	112.9	8.5	7.87	7.9	6.57	4.8	4.00

**Table 1-3b - New York State**

<u>Year</u>	<u>Motor Gasoline</u> ¢/gal	<u>Resident. Distillate</u> ¢/gal	<u>Resident. Elec.</u> ¢/kWh	<u>Resident. Nat. Gas</u> \$/Mcf	<u>Comm. Elec.</u> ¢/kWh	<u>Comm. Nat. Gas</u> \$/Mcf	<u>Indus. Elec.</u> ¢/kWh	<u>Indus. Nat. Gas</u> \$/Mcf
1988	89.6	89.7	10.5	6.50	9.3	5.39	4.9	4.69
1989	97.8	99.6	10.9	7.23	9.6	5.63	5.3	4.84
1990	110.4	117.1	11.4	7.41	10.0	5.60	5.8	4.86
1991	118.1	115.8	12.0	7.38	10.3	5.49	6.2	4.74
1992	116.1	106.9	12.4	7.60	10.7	5.76	6.5	4.94
1993	113.1	104.2	13.2	8.15	11.2	6.16	6.7	5.17
1994	114.1	100.4	13.6	8.77	11.3	6.52	6.8	5.23
1995	118.8	99.3	13.9	8.41	11.5	6.09	5.8	4.68
1996	123.3	110.5	14.0	8.91	11.6	6.89	5.6	5.04
1997	124.6	110.8	14.1	9.74	11.7	6.51	5.2	5.05
1998	106.2	98.6	13.7	9.64	11.2	6.12	4.9	4.04
1999	118.7	100.8	13.2	9.13	9.9	5.15	4.7	3.90
2000	160.0	149.9	14.0	9.83	12.1	7.75	5.4	6.11
2001	143.0	141.7	13.9	11.75	12.4	9.61	5.0	7.72
2002	144.3	130.6	13.5	9.76	12.1	6.49	4.9	5.65

Source: Appendix I, source number 2, 4, 5, 7, 11, and 22.

# United States and New York State Sources of Petroleum Products, 1988-2002

Figure 1-4

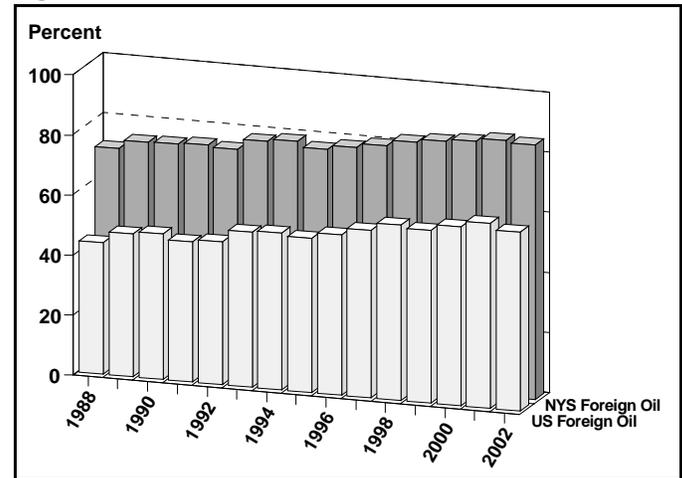


Table 1-4a - United States

Year	Total Domestic %	Total Foreign %	OPEC <sup>1</sup> %	Non-OPEC <sup>2</sup> %
1988	56.3	43.7	21.5	22.2
1989	52.3	47.7	26.1	21.6
1990	51.5	48.5	27.6	20.9
1991	53.1	46.9	26.6	20.3
1992	52.4	47.6	26.2	21.4
1993	48.1	51.9	27.8	24.1
1994	47.8	52.2	26.3	25.9
1995	48.5	51.5	25.5	26.0
1996	46.6	53.4	24.7	28.7
1997	44.0	56.0	25.9	30.1
1998	41.5	58.5	28.0	30.5
1999	42.5	57.5	27.5	30.0
2000	40.2	59.8	28.8	31.0
2001	38.3	61.7	30.5	31.2
2002	40.2	59.8	25.4	34.4

Table 1-4b - New York State

Year	Total Domestic %	Total Foreign %	OPEC <sup>1</sup> %	Non-OPEC <sup>2</sup> %
1988	28.7	71.3	37.4	33.9
1989	25.7	74.3	44.3	30.0
1990	25.5	74.5	40.3	34.2
1991	24.8	75.2	47.0	28.2
1992	25.5	74.5	45.3	29.2
1993	21.8	78.2	46.4	31.8
1994	21.1	78.9	45.0	33.9
1995	22.6	77.4	43.9	33.5
1996	21.3	78.7	40.9	37.8
1997	19.7	80.3	41.7	38.6
1998	17.6	82.4	43.4	39.0
1999	16.7	83.3	42.6	40.7
2000	15.6	84.4	43.4	41.0
2001	14.6	85.4	44.0	41.4
2002	15.0	85.0	37.9	47.1

<sup>1</sup> OPEC, the largest contributors are Saudi Arabia, Venezuela, Nigeria and Iraq.

<sup>2</sup> Non-OPEC, the largest contributors are Canada, Mexico, Norway and United Kingdom

Source: Appendix I, source number 1, 9, 10, 21, and 26.

# United States and New York State Factors Influencing Energy Demand and Expenditures, 1988-2002

**Table 1-5a - United States**

<u>Year</u>	<u>Population</u> thousands	<u>Households</u> thousands	<u>Non-Mfg.</u> <u>Employment</u> thousands	<u>Mfg.</u> <u>Employment</u> thousands	<u>GDP</u> <sup>1</sup> B/96\$	<u>Licensed</u> <u>Drivers</u> thousands	<u>Vehicle</u> <u>Registrations</u> thousands	<u>Vehicle</u> <u>Miles</u> <u>Traveled</u> billion
1988	244,499	91,066	85,895	19,314	6,386.1	162,853	184,393	2,026
1989	246,819	92,830	88,493	19,391	6,538.6	165,555	187,356	2,096
1990	248,791	93,347	90,343	19,076	6,630.7	167,015	188,798	2,144
1991	252,981	94,312	89,850	18,406	6,615.7	168,995	188,136	2,172
1992	256,514	95,669	90,550	18,104	6,774.5	173,125	190,362	2,247
1993	259,919	96,426	92,655	18,075	6,918.4	173,149	194,063	2,296
1994	263,126	97,107	95,851	18,321	7,203.0	175,403	198,045	2,358
1995	266,278	98,990	98,735	18,468	7,434.0	176,628	201,530	2,423
1996	269,394	99,627	101,272	18,282	7,715.9	179,539	206,365	2,486
1997	272,647	101,018	103,722	18,537	8,093.4	182,709	207,754	2,560
1998	275,854	102,528	107,081	18,773	8,502.7	184,980	211,617	2,619
1999	279,040	103,874	110,183	18,432	8,882.6	187,170	216,309	2,691
2000	281,422	105,480	112,981	18,437	9,298.2	190,625	221,475	2,750
2001	285,318	108,209	114,515	17,698	9,335.4	191,276	230,428	2,781
2002	288,369	109,297	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

**Table 1-5b - New York State**

<u>Year</u>	<u>Population</u> thousands	<u>Households</u> thousands	<u>Non-Mfg.</u> <u>Employment</u> thousands	<u>Mfg.</u> <u>Employment</u> thousands	<u>GSP</u> <sup>2</sup> MM96\$	<u>Licensed</u> <u>Drivers</u> thousands	<u>Vehicle</u> <u>Registrations</u> thousands	<u>Vehicle</u> <u>Miles</u> <u>Traveled</u> billion
1988	17,909	6,605	6,974.4	1,212.5	589,117	10,143	10,507	100.37
1989	17,950	6,644	7,057.8	1,189.0	589,692	10,178	10,635	106.60
1990	17,991	6,639	7,081.0	1,131.4	593,425	10,254	10,781	106.90
1991	18,123	6,662	6,827.1	1,059.6	572,563	10,267	10,364	107.66
1992	18,247	6,703	6,715.5	1,014.4	586,798	10,360	8,988	109.89
1993	18,375	6,702	6,771.5	980.5	587,982	10,327	9,110	112.24
1994	18,459	6,684	6,862.6	956.1	600,674	10,377	9,149	112.98
1995	18,524	6,709	6,927.0	944.3	609,090	10,474	9,177	115.17
1996	18,588	6,737	6,995.0	922.0	633,830	10,483	9,235	118.41
1997	18,657	6,742	7,147.1	920.7	651,107	10,529	10,027	120.79
1998	18,756	6,766	7,319.1	917.7	695,186	10,554	10,173	123.37
1999	18,883	6,908	7,561.0	893.0	717,677	10,627	10,756	126.49
2000	18,976	7,057	8,632.0	874.0	756,573	10,871	10,235	129.06
2001	19,084	7,092	7,790.0	843.0	766,526	11,015	10,196	130.72
2002	19,158	7,126	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

<sup>1</sup> Gross Domestic Product in billions of 1996 dollars

<sup>2</sup> Gross State Product in millions of 1996 dollars

n.a. - data not available

Source: Appendix I, source number 15, 16, 18, 19, 20, and 24.

# Energy Consumption & Expenditure Indicators, State Comparisons, 2000

Table 1-6

States	Primary Energy Consumption		Net Energy Expenditure		Petroleum Consumption		Natural Gas Consumption	
	per Capita MMBtu	Ranking	per Capita dollars	Ranking	per Capita MMBtu	Ranking	per Capita MMBtu	Ranking
Alabama	444.64	9	\$2,719.54	13	130.65	26	78.95	19
Alaska	1,000.48	1	\$4,340.51	3	414.19	1	532.06	1
Arizona	236.95	50	\$2,058.45	48	98.67	48	40.42	42
Arkansas	405.42	13	\$2,740.74	12	147.36	17	96.71	10
California	251.50	46	\$2,097.85	47	105.03	46	67.11	30
Colorado	278.98	41	\$2,020.44	50	105.79	45	81.05	16
Connecticut	253.38	45	\$2,429.57	31	110.39	41	38.14	45
Delaware	385.97	17	\$2,642.35	17	176.91	9	68.88	27
Dist. of Columbia	290.56	39	\$2,675.52	15	59.09	51	59.97	31
Florida	246.77	47	\$1,950.84	51	123.31	32	35.07	46
Georgia	338.37	28	\$2,416.54	35	127.02	28	49.80	39
Hawaii	218.48	51	\$2,173.35	46	183.42	8	2.48	51
Idaho	394.98	15	\$2,440.73	28	134.93	24	56.26	34
Illinois	355.74	23	\$2,425.49	32	106.86	43	83.95	15
Indiana	456.84	8	\$2,801.45	10	149.67	16	97.12	9
Iowa	375.70	19	\$2,841.42	8	142.45	21	79.97	18
Kansas	385.31	18	\$2,749.85	11	151.53	13	120.42	7
Kentucky	462.20	7	\$2,809.60	9	176.45	10	57.77	33
Louisiana	887.27	2	\$4,637.66	1	376.10	2	359.07	2
Maine	440.16	10	\$2,958.67	7	196.47	5	7.22	50
Maryland	287.03	40	\$2,227.42	45	104.49	47	40.99	41
Massachusetts	271.35	42	\$2,434.81	29	106.58	44	55.03	35
Michigan	314.14	36	\$2,284.58	39	106.86	42	95.61	11
Minnesota	343.16	25	\$2,484.98	25	138.30	22	73.12	25
Mississippi	402.04	14	\$2,622.85	18	164.75	11	103.44	8
Missouri	296.55	38	\$2,372.94	37	123.77	31	51.78	37
Montana	659.09	4	\$3,162.31	6	186.59	7	75.50	22
Nebraska	341.03	27	\$2,526.59	24	132.14	25	73.29	24
Nevada	316.72	34	\$2,419.27	34	115.17	39	93.99	12
New Hampshire	266.26	44	\$2,610.44	20	146.68	19	17.88	48
New Jersey	321.68	32	\$2,571.77	22	149.95	15	73.01	26
New Mexico	341.23	26	\$2,258.93	41	137.82	23	124.85	6
<b>New York</b>	<b>243.47</b>	<b>48</b>	<b>\$2,243.00</b>	<b>42</b>	<b>89.52</b>	<b>50</b>	<b>68.08</b>	<b>28</b>
North Carolina	310.83	37	\$2,404.19	36	121.22	34	29.32	47
North Dakota	569.16	5	\$3,234.42	5	187.07	6	91.28	13
Ohio	352.49	24	\$2,611.20	19	117.23	37	80.75	17
Oklahoma	405.82	12	\$2,705.51	14	151.12	14	156.13	5
Oregon	315.61	35	\$2,234.38	44	110.46	40	67.47	29
Pennsylvania	389.21	16	\$2,482.19	26	115.32	38	59.25	32
Rhode Island	238.93	49	\$2,271.95	40	92.75	49	77.58	20
South Carolina	368.17	21	\$2,536.44	23	119.92	36	39.78	43
South Dakota	325.83	30	\$2,584.90	21	156.95	12	53.25	36
Tennessee	356.11	22	\$2,424.33	33	126.58	29	48.55	40
Texas	555.75	6	\$3,550.96	4	263.83	4	203.98	4
Utah	321.63	33	\$2,042.59	49	123.29	33	77.34	21
Vermont	270.28	43	\$2,674.38	16	143.68	20	17.41	49
Virginia	325.41	31	\$2,371.93	38	127.66	27	39.78	44
Washington	368.82	20	\$2,236.10	43	147.18	18	50.34	38
West Virginia	411.50	11	\$2,452.54	27	120.69	35	85.29	14
Wisconsin	335.51	29	\$2,434.49	30	124.16	30	73.83	23
Wyoming	844.33	3	\$4,539.07	2	319.23	3	205.67	3
U. S.	349.00		\$2,498.70		136.46		81.74	
<b>NYS as a % of U.S.</b>	<b>70%</b>		<b>90%</b>		<b>66%</b>		<b>83%</b>	

Note: Table shows the latest years for which comparable consumption and expenditure data are available for all states.  
Source: Appendix I, source number 1, 2, 15, and 16.

## Energy Consumption & Expenditure Indicators, State Comparisons for the Residential and Commercial Sectors, 2000

**Table 1-7**

<u>States</u>	Residential Net Energy Consumption per Household MMBtu	<u>Ranking</u>	Residential Net Energy Expenditure per Household dollars	<u>Ranking</u>	Commercial Net Energy Consumption per Employee MMBtu	<u>Ranking</u>	Commercial Net Energy Expenditure per Employee dollars	<u>Ranking</u>
Alabama	98.39	37	\$1,576.80	18	66.01	40	\$999.87	19
Alaska	130.63	7	\$1,595.95	15	164.49	1	\$1,334.78	2
Arizona	72.49	49	\$1,325.67	36	58.85	47	\$953.89	26
Arkansas	102.68	35	\$1,506.14	26	77.27	20	\$857.27	39
California	74.24	48	\$1,156.69	46	47.24	50	\$929.06	29
Colorado	111.46	27	\$1,142.58	47	66.85	36	\$724.20	47
Connecticut	134.33	4	\$2,021.04	2	82.21	10	\$1,189.71	4
Delaware	111.37	28	\$1,653.51	9	66.39	38	\$857.58	37
Dist. of Columbia	95.97	40	\$1,258.87	41	82.03	11	\$1,332.81	3
Florida	64.59	50	\$1,296.91	37	50.38	49	\$809.63	42
Georgia	109.08	30	\$1,621.99	10	59.99	46	\$895.09	31
Hawaii	32.01	51	\$1,270.47	40	25.56	51	\$933.02	27
Idaho	115.53	24	\$1,275.32	39	90.26	6	\$866.94	34
Illinois	141.53	2	\$1,578.35	17	80.01	13	\$1,031.31	15
Indiana	126.41	10	\$1,421.58	30	79.66	14	\$826.52	41
Iowa	124.54	14	\$1,572.32	19	78.55	18	\$864.59	35
Kansas	123.41	18	\$1,548.27	23	79.32	16	\$997.83	20
Kentucky	106.10	33	\$1,232.56	43	74.90	23	\$795.03	44
Louisiana	96.62	39	\$1,618.48	11	65.52	43	\$1,061.12	12
Maine	134.56	3	\$1,985.52	3	71.97	29	\$1,097.16	9
Maryland	107.52	31	\$1,581.93	16	73.95	25	\$1,028.01	16
Massachusetts	128.93	8	\$1,735.52	6	65.82	42	\$1,041.50	14
Michigan	146.38	1	\$1,371.82	33	92.19	4	\$1,089.18	10
Minnesota	124.91	12	\$1,416.20	32	66.28	39	\$643.00	50
Mississippi	100.48	36	\$1,556.69	21	75.43	22	\$1,075.76	11
Missouri	114.90	25	\$1,490.02	27	73.27	27	\$901.44	30
Montana	112.53	26	\$1,194.71	45	81.52	12	\$843.21	40
Nebraska	120.57	21	\$1,330.78	35	79.29	17	\$857.32	38
Nevada	93.34	43	\$1,241.28	42	53.27	48	\$626.19	51
New Hampshire	121.05	19	\$1,934.95	4	68.07	35	\$1,134.80	8
New Jersey	126.07	11	\$1,599.38	13	86.82	7	\$1,188.16	5
New Mexico	92.92	44	\$1,092.18	50	82.21	9	\$1,023.95	17
<b>New York</b>	<b>124.73</b>	<b>13</b>	<b>\$1,816.31</b>	<b>5</b>	<b>107.96</b>	<b>3</b>	<b>\$1,650.12</b>	<b>1</b>
North Carolina	94.03	42	\$1,599.27	14	64.89	44	\$954.37	25
North Dakota	132.30	5	\$1,509.34	25	84.92	8	\$862.95	36
Ohio	128.68	9	\$1,613.38	12	79.56	15	\$1,047.41	13
Oklahoma	109.69	29	\$1,483.16	28	76.47	21	\$956.32	24
Oregon	89.13	46	\$1,115.14	49	65.88	41	\$759.26	46
Pennsylvania	123.68	16	\$1,690.56	7	74.33	24	\$997.46	21
Rhode Island	123.53	17	\$1,690.20	8	78.00	19	\$1,174.57	6
South Carolina	89.63	45	\$1,555.93	22	61.94	45	\$930.27	28
South Dakota	116.55	23	\$1,478.28	29	69.67	32	\$792.49	45
Tennessee	98.39	38	\$1,369.73	34	71.43	30	\$965.47	23
Texas	87.83	47	\$1,536.03	24	68.30	33	\$976.62	22
Utah	124.39	15	\$1,139.51	48	71.10	31	\$659.90	49
Vermont	131.54	6	\$2,080.50	1	68.13	34	\$1,144.22	7
Virginia	102.74	34	\$1,569.91	20	72.72	28	\$891.22	32
Washington	95.60	41	\$1,073.76	51	66.57	37	\$715.42	48
West Virginia	107.07	32	\$1,286.41	38	90.88	5	\$886.93	33
Wisconsin	120.96	20	\$1,420.72	31	73.91	26	\$802.19	43
Wyoming	120.10	22	\$1,221.65	44	114.04	2	\$1,000.43	18
U. S.	106.23		\$1,475.39		71.18		\$987.03	
<b>NYS as a % of U.S.</b>	<b>117%</b>		<b>123%</b>		<b>152%</b>		<b>167%</b>	

Note: Table shows the latest years for which comparable consumption and expenditure data are available for all states.  
Source: Appendix I, source number 1, 2, 15, 16, and 18.

# Energy Consumption & Expenditure Indicators, State Comparisons for the Industrial and Transportation Sectors, 2000

**Table 1-8**

<u>States</u>	Industrial Net Energy Consumption per GSP Btu/96\$	<u>Ranking</u>	Industrial Net Energy Expenditure per GSP ratio	<u>Ranking</u>	Transportation Net Consumption per vehicle per registration MMBtu	<u>Ranking</u>	Transportation Net Expenditure per vehicle per registration dollars	<u>Ranking</u>
Alabama	6,640.33	8	0.0260	11	121.92	21	\$1,242.10	25
Alaska	11,691.12	3	0.0092	44	357.24	1	\$2,961.95	1
Arizona	972.16	50	0.0078	47	122.06	20	\$1,313.97	18
Arkansas	5,804.14	12	0.0309	7	161.90	7	\$1,647.72	7
California	2,170.55	38	0.0110	39	110.44	31	\$1,183.62	36
Colorado	1,750.34	44	0.0081	46	102.10	41	\$1,140.26	44
Connecticut	1,142.46	49	0.0070	50	80.44	51	\$1,028.15	50
Delaware	3,335.42	23	0.0142	51	115.56	33	\$1,435.54	20
Dist. of Columbia	28.96	51	0.0003	28	108.68	27	\$1,287.94	12
Florida	1,488.22	48	0.0074	48	120.89	23	\$1,223.35	31
Georgia	2,576.30	31	0.0131	32	121.41	22	\$1,180.56	38
Hawaii	1,926.89	41	0.0137	30	171.68	5	\$1,486.86	9
Idaho	4,451.61	16	0.0198	18	107.81	37	\$1,236.93	27
Illinois	3,725.03	20	0.0155	24	108.36	34	\$1,219.94	32
Indiana	6,027.27	11	0.0274	9	119.64	24	\$1,253.69	24
Iowa	4,261.90	17	0.0290	8	88.22	48	\$971.47	51
Kansas	4,161.54	18	0.0254	12	122.60	17	\$1,155.57	42
Kentucky	6,344.19	10	0.0322	6	157.86	9	\$1,673.21	6
Louisiana	18,635.05	1	0.0723	1	253.13	2	\$2,021.68	2
Maine	8,065.02	7	0.0227	16	118.85	25	\$1,399.32	13
Maryland	2,287.62	36	0.0087	45	105.41	38	\$1,265.41	23
Massachusetts	1,822.55	43	0.0106	40	86.23	49	\$1,046.13	49
Michigan	2,690.12	28	0.0151	26	97.45	43	\$1,074.11	46
Minnesota	2,603.23	29	0.0152	25	111.73	30	\$1,198.53	33
Mississippi	5,478.19	14	0.0250	13	159.46	8	\$1,441.37	10
Missouri	1,526.09	46	0.0114	36	122.49	18	\$1,317.71	16
Montana	16,545.00	2	0.0450	2	105.17	40	\$1,181.77	37
Nebraska	2,362.07	34	0.0165	21	107.91	36	\$1,171.83	39
Nevada	2,179.57	37	0.0140	29	168.52	6	\$1,937.30	3
New Hampshire	1,708.05	45	0.0105	41	97.24	44	\$1,193.35	34
New Jersey	2,139.51	39	0.0105	42	144.88	11	\$1,437.14	11
New Mexico	3,084.78	25	0.0113	37	149.71	10	\$1,340.14	15
<b>New York</b>	<b>1,509.67</b>	<b>47</b>	<b>0.0073</b>	<b>49</b>	<b>94.53</b>	<b>47</b>	<b>\$1,130.48</b>	<b>45</b>
North Carolina	2,459.27	32	0.0150	27	113.95	29	\$1,239.24	26
North Dakota	10,119.76	5	0.0368	5	117.29	26	\$1,167.29	40
Ohio	3,175.70	24	0.0191	19	94.97	46	\$1,055.00	47
Oklahoma	5,145.24	15	0.0228	14	142.47	12	\$1,379.83	14
Oregon	2,347.87	35	0.0129	33	105.33	39	\$1,224.72	30
Pennsylvania	5,588.65	13	0.0180	20	109.00	32	\$1,191.51	35
Rhode Island	1,954.25	40	0.0135	31	86.18	50	\$1,049.47	48
South Carolina	4,035.19	19	0.0227	15	123.81	15	\$1,316.22	17
South Dakota	2,582.16	30	0.0158	23	107.94	35	\$1,164.44	41
Tennessee	3,080.40	26	0.0162	22	122.12	19	\$1,236.39	28
Texas	8,808.98	6	0.0446	3	185.59	4	\$1,750.01	5
Utah	3,420.44	22	0.0116	35	137.10	13	\$1,500.00	8
Vermont	1,843.37	42	0.0112	38	101.36	42	\$1,270.87	22
Virginia	2,386.94	33	0.0102	43	114.74	28	\$1,229.99	29
Washington	3,055.30	27	0.0120	34	122.62	16	\$1,304.75	19
West Virginia	6,557.54	9	0.0272	10	129.68	14	\$1,276.63	21
Wisconsin	3,577.71	21	0.0202	17	96.95	45	\$1,152.50	43
Wyoming	10,482.56	4	0.0385	4	195.22	3	\$1,889.76	4
U. S.	3,581.52		0.0171		121.27		\$1,273.06	
<b>NYS as a % of U.S.</b>	<b>42%</b>		<b>43%</b>		<b>78%</b>		<b>89%</b>	

Note: Table shows the latest years for which comparable consumption and expenditure data are available for all states.  
Source: Appendix I, source number 1, 2, 15, 16, 19, and 20.

# United States and New York State Selected Comparisons, 2002

Figure 1-9a Primary Consumption by Fuel Type, 2002

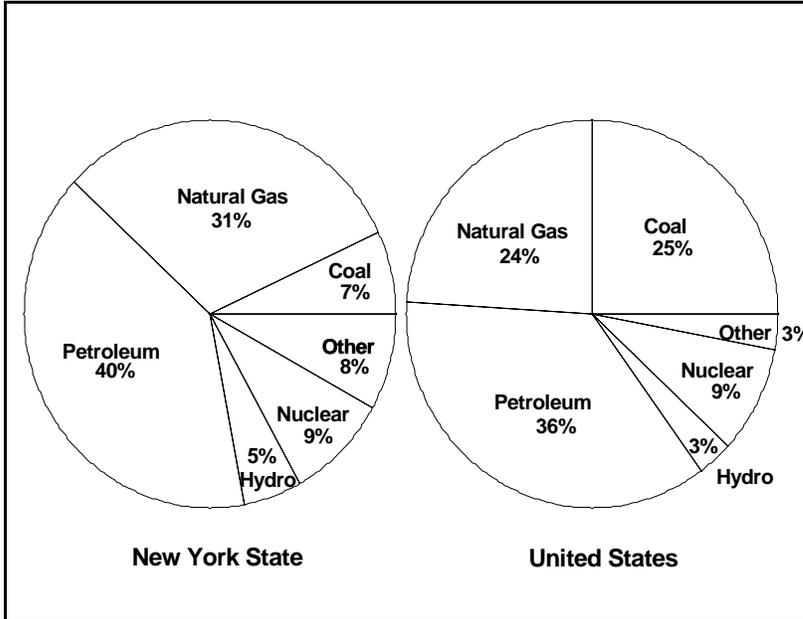
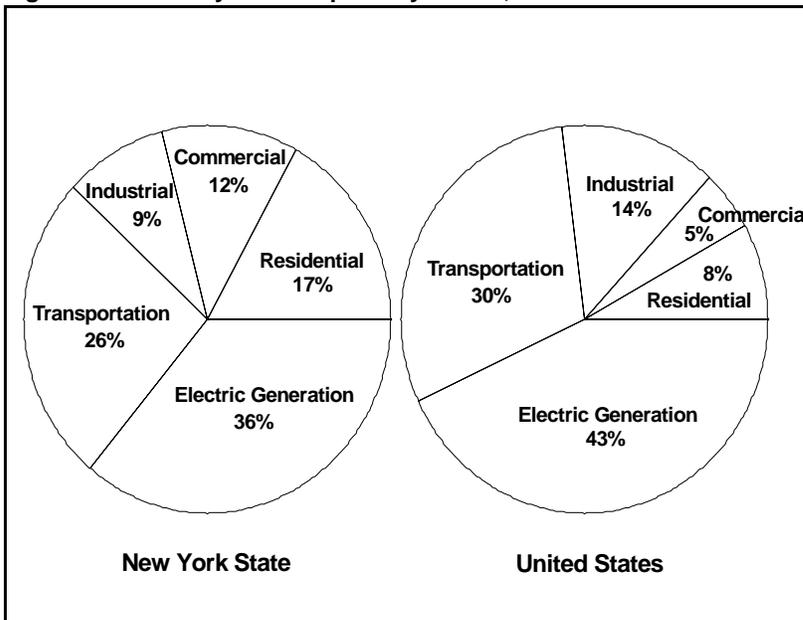


Figure 1-9b Primary Consumption by Sector, 2002



# United States and New York State Selected Comparisons, 2002

Figure 1-10a Primary Consumption for Electric Generation by Fuel Type, 2002

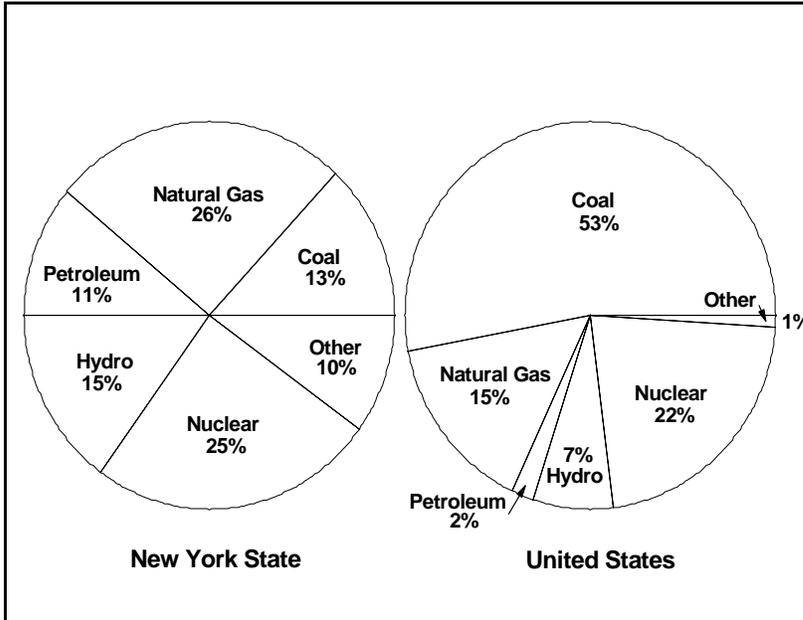
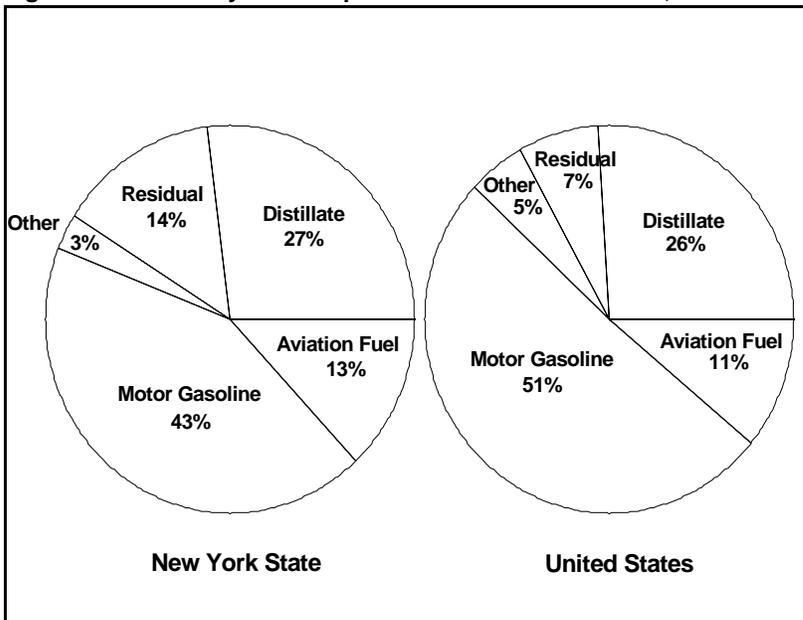


Figure 1-10b Primary Consumption of Petroleum Products, 2002



# United States and New York State Selected Comparisons, 2002

Figure 1-11a Petroleum Consumption by Sector, 2002

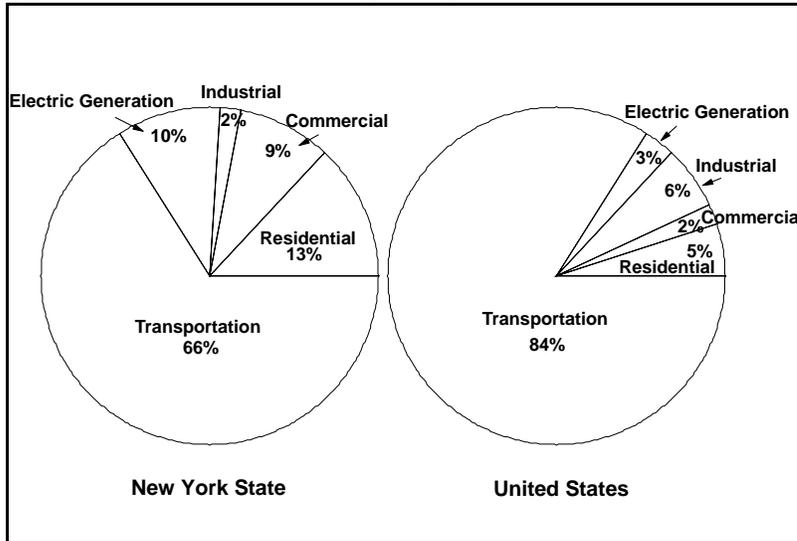
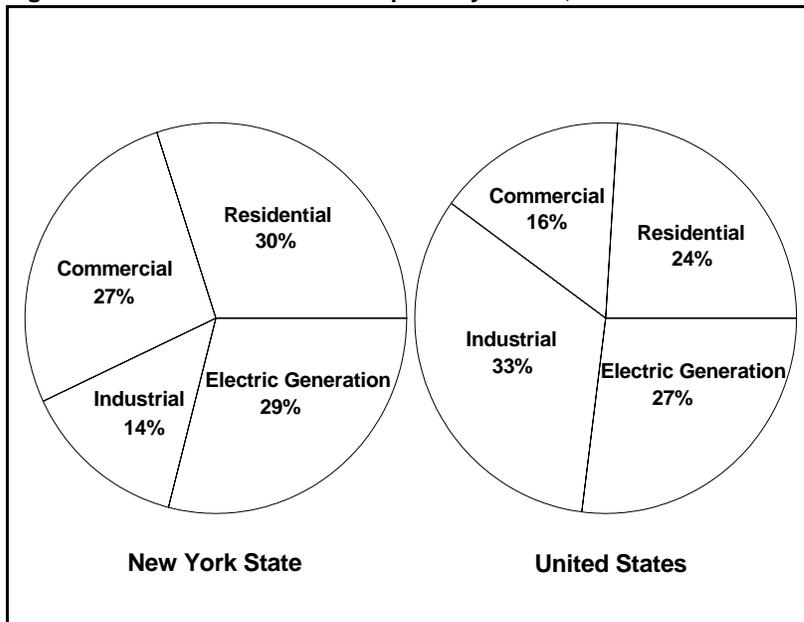


Figure 1-11b Natural Gas Consumption by Sector, 2002



# United States and New York State Selected Comparisons, 2002

Figure 1-12a Coal Consumption by Sector, 2002

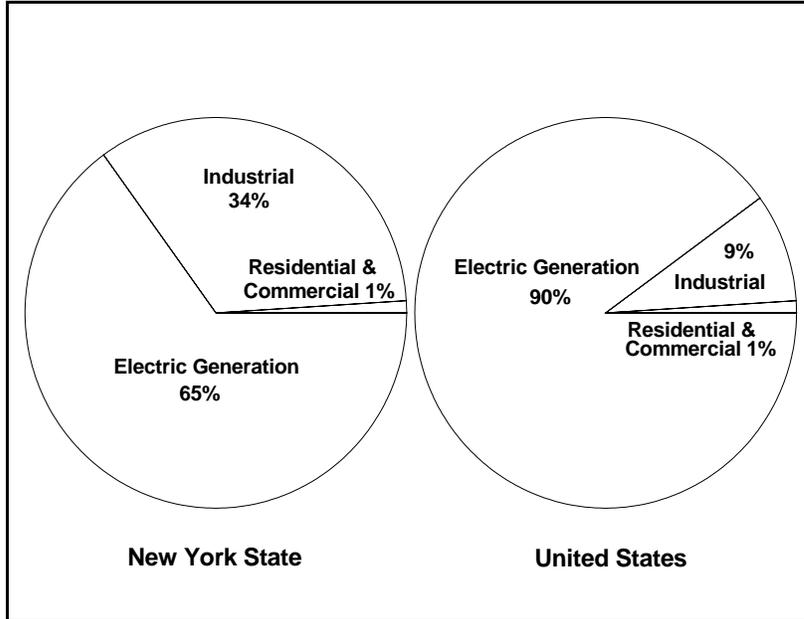
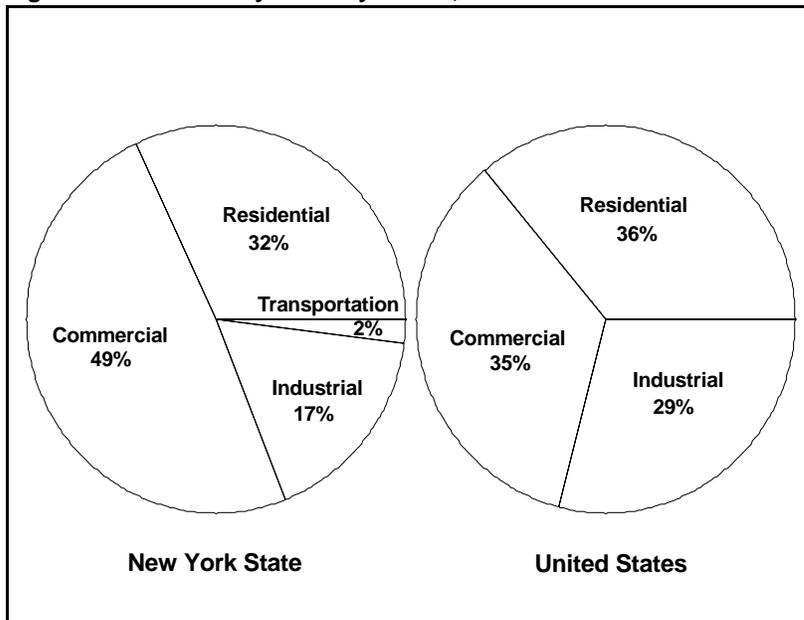


Figure 1-12b Electricity Sales by Sector, 2002



# United States and New York State Selected Energy Indicators, 1988-2002

Figure 1-13a Primary Consumption per Gross State Product/Gross Domestic Product

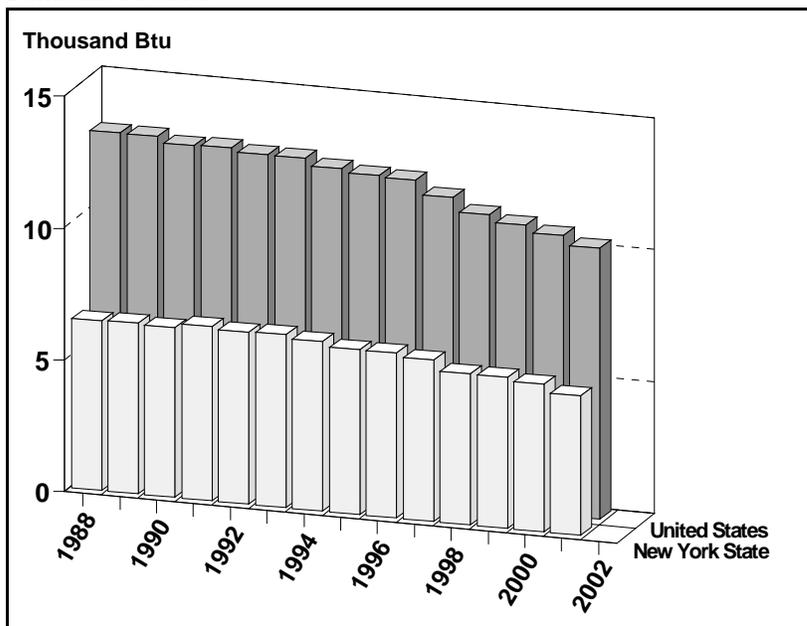
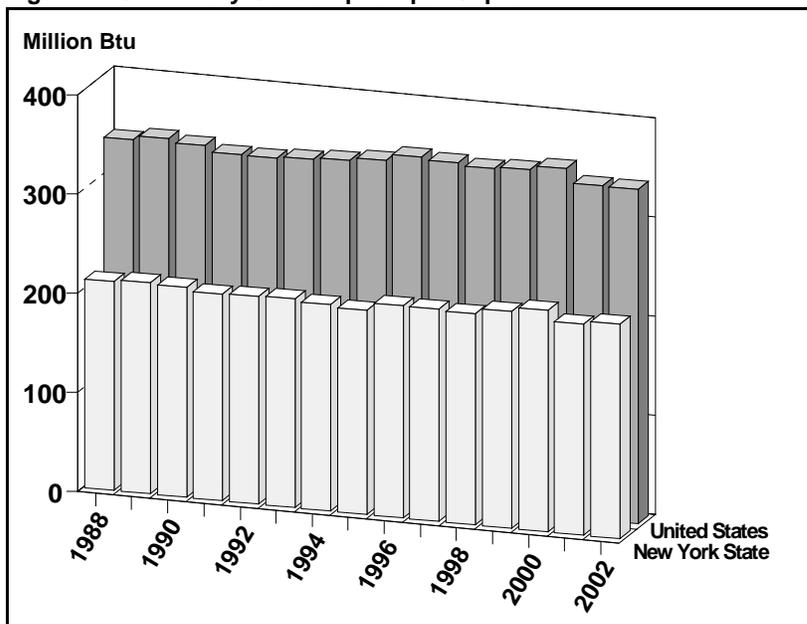


Figure 1-13b Primary Consumption per Capita



# United States and New York State Selected Energy Indicators, 1988-2002

Figure 1-14a Residential Consumption per Household

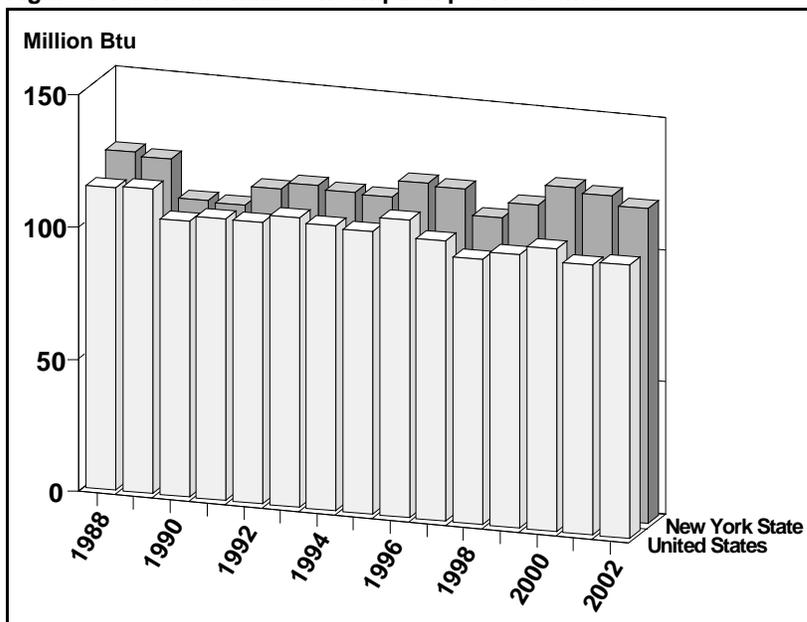
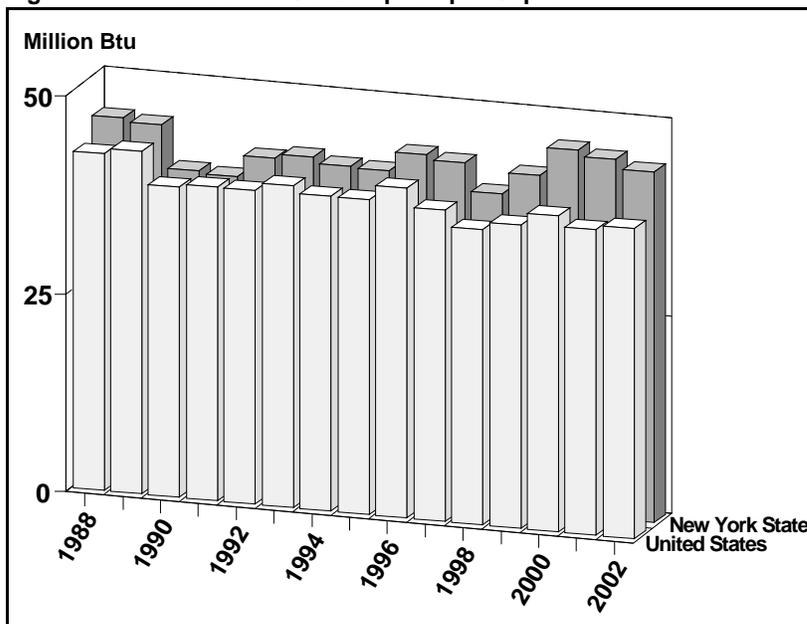


Figure 1-14b Residential Consumption per Capita



# United States and New York State Selected Energy Indicators, 1988-2002

Figure 1-15a Commercial Consumption per Non-Manufacturing Employment

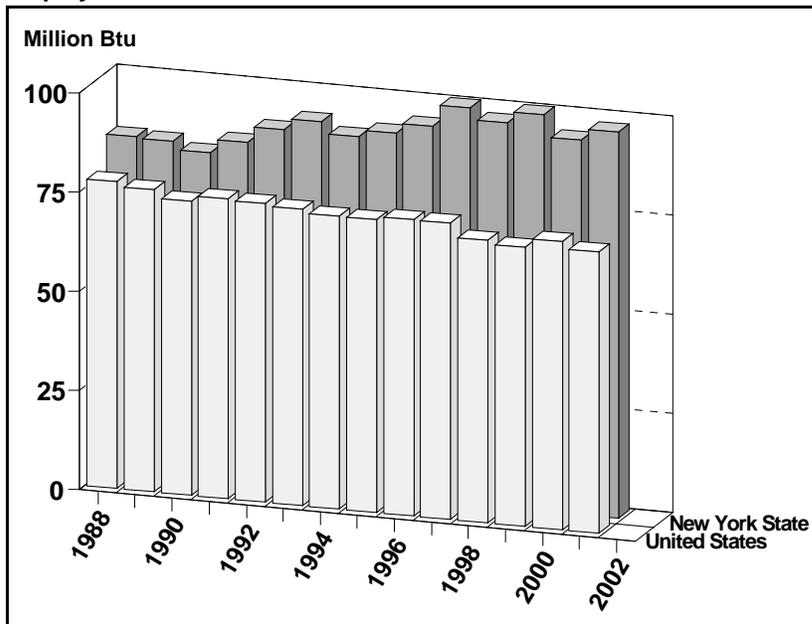
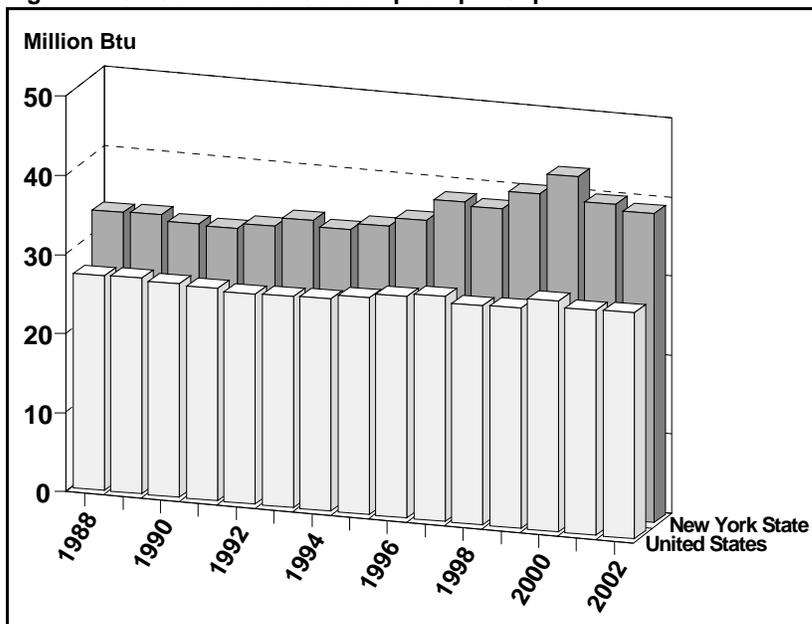


Figure 1-15b Commercial Consumption per Capita



# United States and New York State Selected Energy Indicators, 1988-2002

Figure 1-16a Industrial Consumption per Manufacturing Employment

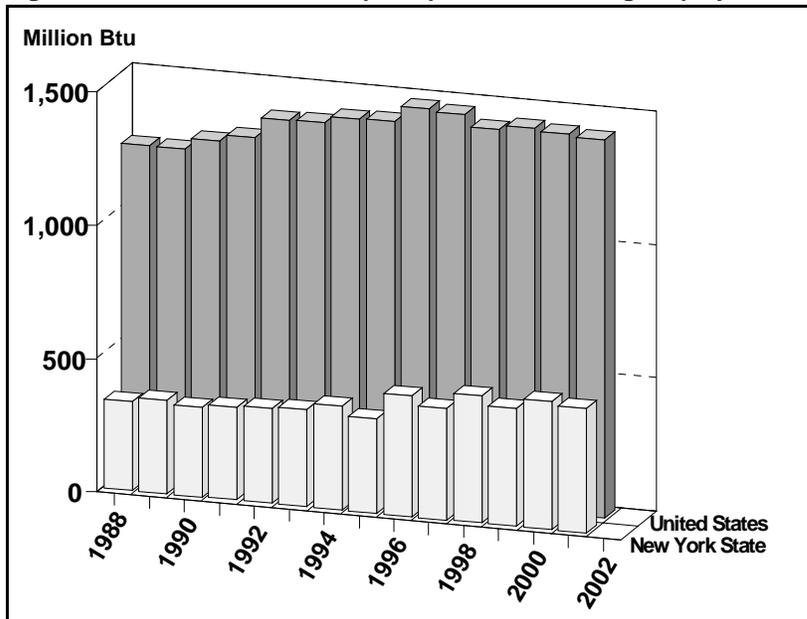
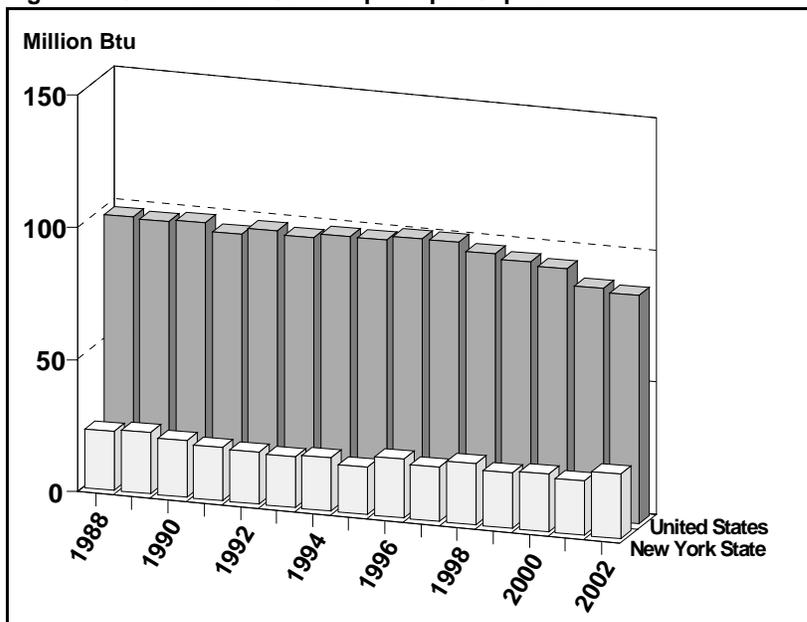


Figure 1-16b Industrial Consumption per Capita



# United States and New York State Selected Energy Indicators, 1988-2002

Figure 1-17a Transportation Consumption per Vehicle Miles Traveled

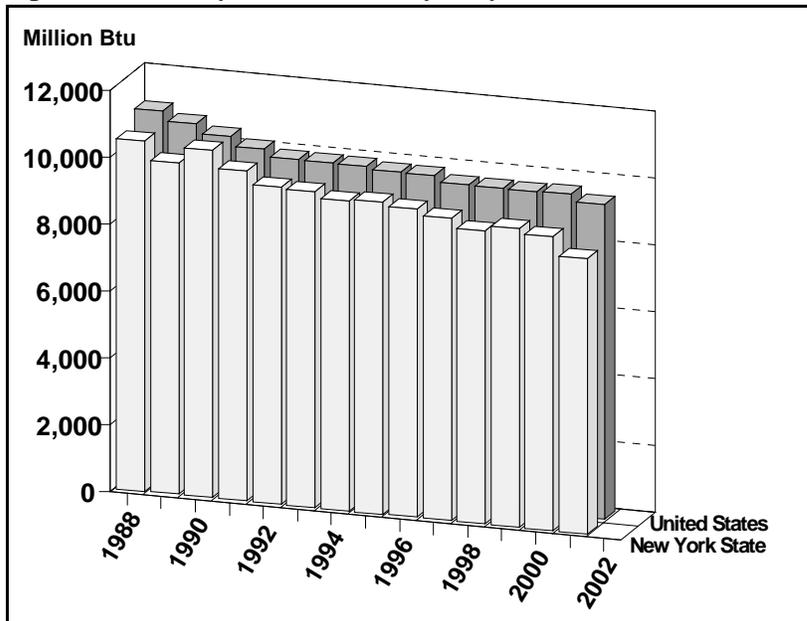
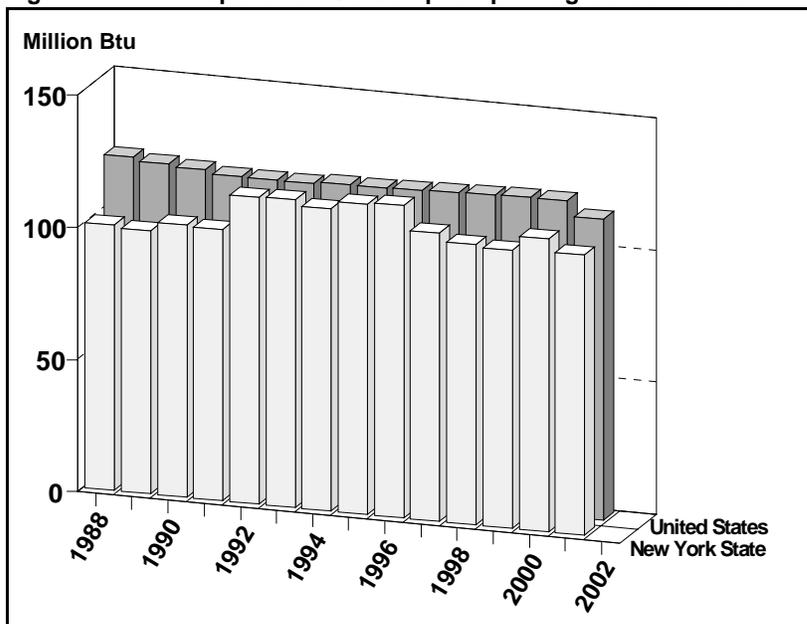


Figure 1-17b Transportation Consumption per Registered Vehicle



## **Section 2**

# **NEW YORK ENERGY CONSUMPTION**

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This section presents data on primary and net energy consumption in New York, by sector and fuel type for the 15-year period, from 1988 through 2002.

Primary consumption of energy is shown by fuel type in physical units, such as tons, cubic feet, and barrels and in trillion Btu (TBtu). Total primary energy consumption by sector, including residential, commercial, industrial, transportation, and electric generation is presented for the 15-year period.

This section also presents statistics on the State's biofuels including wood, municipal solid waste, and crop waste.

Electricity generation data does not include station use. Electricity from hydro and nuclear power, as well as biofuels and net electricity trade, have been converted to primary energy by applying an average annual heat rate (Btu per kWh generated) for fossil-fueled power plants.

Electricity sales figures are combined with end-use consumption of coal, petroleum products, natural gas, and biofuels to derive total net energy consumption in the residential, commercial, industrial, and transportation sectors. Net energy consumption is provided in TBtu and in physical units,.

End-use energy consumption by apartment buildings and institutional facilities is included in the commercial sector.

## Key Observations about 2002 New York State Energy Consumption Data

- ✓ Total primary energy consumption was 4,151 TBtu, up 2% from 2001.
- ✓ Cumulative heating degree-days were 2% more than 2001, which implies slightly colder weather in 2002 than 2001.
- ✓ Use of biofuels, natural gas, and hydropower increased by 3%, 7%, and 10%, respectively; while use of petroleum product, and coal decreased by 1% and 3%, respectively, compared to 2001 levels on a primary energy basis.
- ✓ Total demand for petroleum products of 1,642 TBtu, or 297 million barrels, represented 39% of total primary energy consumption.
- ✓ Consumption of aviation fuels, motor gasoline, and residual fuel oil were higher in 2002 than in 2001, up 2%, 2%, and 1%, respectively.
- ✓ In 2002, consumption of distillate oil fuel and kerosene declined from 2001 by 8% and 30%, respectively.
- ✓ Sales of natural gas, at 1,253 billion cubic feet, were 8% more than the 1,165 billion cubic feet sold in 2001.
- ✓ Both nuclear power and natural gas each generated 25% of New York's electric generation.
- ✓ Energy for electricity generation accounted for 35% of primary energy use.
- ✓ Sales of electricity to ultimate consumers increased by 4% from 2001 to 2002.
- ✓ Total residential energy demand was 849 TBtu, 2% below the 2001 level. The residential sector accounted for 27% of total net energy consumption.
- ✓ Total consumption in the commercial sector was 750 TBtu, representing 23% of total net consumption. While the sector's total energy demand fell 1% below the 2001 level, sales of electricity in the sector rose 4%.
- ✓ Industrial energy demand was 475 TBtu, representing 15% of total net consumption, up 19% from 2001 levels.
- ✓ Transportation energy demand was 1,108 TBtu, up 3% from a year ago. The sector accounted for 35% of total net energy consumption in 2001.

# New York State Primary Consumption of Energy by Fuel Type, 1988-2002

Figure 2-1

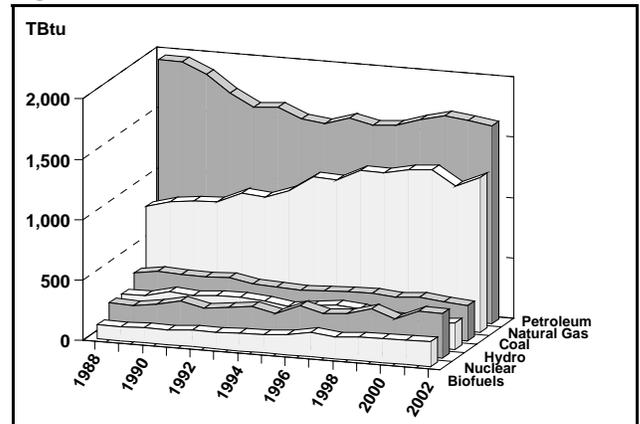


Table 2-1a (in physical units)

Year	Coal MTons	Natural Gas Bcf	Petroleum Products Mbbbl	Hydro GWh	Nuclear GWh	Net Imported Electricity GWh
1988	12,956	790	345,556	23,994	24,175	9,994
1989	14,131	846	346,039	23,918	22,847	5,539
1990	13,597	863	331,015	27,134	23,623	5,573
1991	13,641	875	309,123	26,165	28,448	10,419
1992	13,760	959	291,864	27,025	24,155	17,482
1993	12,651	944	295,123	28,308	26,889	22,688
1994	12,231	1,012	282,061	26,645	29,231	21,730
1995	11,785	1,140	279,923	24,831	26,336	14,978
1996	12,074	1,131	289,409	27,805	35,226	12,738
1997	12,458	1,228	282,956	29,525	29,570	8,050
1998	12,897	1,225	285,046	28,158	31,314	6,557
1999	12,187	1,266	296,015	23,643	37,019	9,748
2000	12,634	1,284	306,194	23,919	31,508	18,553
2001	12,087	1,165	300,797	21,831	40,395	12,891
2002	11,689	1,253	297,081	23,997	40,327	13,207

Table 2-1b (in trillion Btu)

Year	Coal TBtu	Natural Gas TBtu	Petroleum Products TBtu	Hydro TBtu	Nuclear TBtu	Net Imported Electricity TBtu	Biofuels <sup>1</sup> TBtu	Total <sup>2</sup> TBtu
1988	333.0	813.1	1,960.9	230.9	232.6	96.2	119.2	3,785.9
1989	363.3	870.4	1,959.9	234.3	223.8	54.3	119.6	3,825.6
1990	349.6	889.0	1,865.5	283.0	246.4	58.1	127.4	3,819.1
1991	352.3	899.7	1,733.7	269.9	293.5	107.5	127.2	3,783.8
1992	356.4	986.8	1,628.6	280.2	250.5	181.3	140.2	3,824.0
1993	325.9	971.2	1,646.3	286.6	272.2	229.7	141.5	3,873.4
1994	316.7	1,040.8	1,565.4	270.8	297.1	220.9	149.9	3,861.5
1995	306.9	1,172.4	1,543.4	242.2	256.9	146.1	154.8	3,822.7
1996	313.4	1,159.9	1,601.1	269.5	341.4	123.4	173.2	3,981.9
1997	325.3	1,260.3	1,560.8	286.2	286.6	78.0	202.0	3,999.2
1998	335.6	1,258.6	1,574.8	274.7	305.5	64.0	185.8	3,999.0
1999	317.0	1,298.8	1,637.9	229.7	359.7	94.7	196.2	4,134.0
2000	331.4	1,318.0	1,693.8	224.8	296.2	174.4	202.7	4,241.3
2001	309.1	1,197.3	1,665.1	201.4	372.7	118.9	205.5	4,070.2
2002	297.1	1,286.0	1,641.7	223.0	374.7	122.7	211.3	4,156.6

<sup>1</sup> Includes primarily wood, waste, and ethanol.

<sup>2</sup> Excludes non-fuel uses and steam.

Source: Appendix I, source number 1, 3, 5, 10, 12, 13, 21, 25, 26, 27, and 28.

# New York State Primary Consumption of Refined Petroleum Products, 1988-2002

Figure 2-2

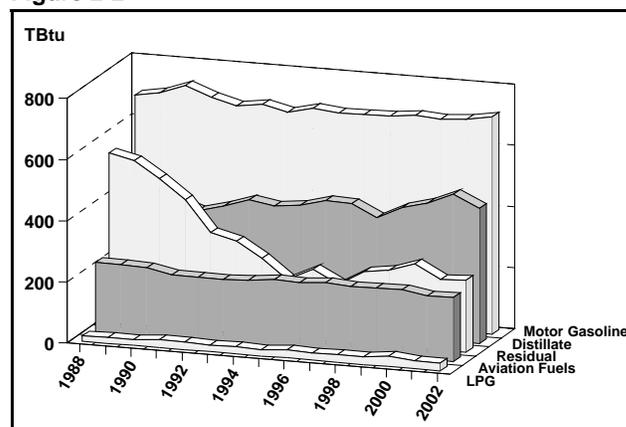


Table 2-2a (in thousand barrels)

Year	Distillate Mbbl	Residual Mbbl	Kerosene Mbbl	LPG <sup>1</sup> Mbbl	Motor Gasoline Mbbl	Aviation Fuels <sup>2</sup> Mbbl	Total Petroleum Products Mbbl
1988	75,459	88,972	5,263	5,238	130,449	40,175	345,556
1989	76,608	85,411	4,797	5,579	133,483	40,161	346,039
1990	66,310	77,570	2,283	5,606	139,180	40,066	331,015
1991	61,552	67,888	2,646	7,207	133,311	36,519	309,123
1992	65,720	51,560	1,861	7,077	129,064	36,582	291,864
1993	70,069	48,130	2,422	6,139	131,710	36,653	295,123
1994	67,740	40,402	2,289	6,352	128,228	37,050	282,061
1995	69,384	30,392	2,363	6,332	132,627	38,825	279,923
1996	73,166	36,975	2,883	7,073	130,979	38,333	289,409
1997	72,805	30,341	2,906	6,687	130,923	39,294	282,956
1998	66,205	38,127	3,358	7,306	131,469	38,581	285,046
1999	73,075	39,759	3,086	7,316	133,621	39,158	296,015
2000	76,517	44,161	3,443	9,849	132,831	39,393	306,194
2001	82,878	37,090	3,445	7,111	133,724	36,549	300,797
2002	76,211	37,566	2,373	7,253	136,398	37,280	297,081

Table 2-2b (in trillion Btu)

Year	Distillate TBtu	Residual TBtu	Kerosene TBtu	LPG <sup>1</sup> TBtu	Motor Gasoline TBtu	Aviation Fuels <sup>2</sup> TBtu	Total Petroleum Products TBtu
1988	439.5	559.4	29.8	19.1	685.2	227.8	1,960.9
1989	446.2	537.0	27.2	20.5	701.2	227.7	1,959.9
1990	386.3	487.7	12.9	20.3	731.1	227.2	1,865.5
1991	358.5	426.8	15.0	26.0	700.3	207.1	1,733.7
1992	382.8	324.2	10.6	25.6	678.0	207.4	1,628.6
1993	408.2	302.6	13.7	22.1	691.9	207.8	1,646.3
1994	394.6	254.0	13.0	23.1	670.6	210.1	1,565.4
1995	404.2	191.1	13.4	22.9	691.6	220.1	1,543.4
1996	426.2	232.5	16.3	25.6	683.2	217.3	1,601.1
1997	424.1	190.8	16.5	24.2	682.5	222.8	1,560.8
1998	385.6	239.7	19.0	26.4	685.2	218.8	1,574.8
1999	425.7	250.0	17.5	26.5	696.3	222.0	1,637.9
2000	445.7	277.6	19.5	35.5	692.0	223.4	1,693.8
2001	482.8	233.2	19.5	25.6	696.7	207.2	1,665.1
2002	443.9	236.2	13.5	26.2	710.6	211.4	1,641.7

<sup>1</sup> Excludes non-fuels use.

<sup>2</sup> Kerosene-type jet fuel and aviation gasoline.

Source: Appendix I, source number 1, 10, 21, 25, and 26.

# New York State Primary Consumption of Energy by Sector, 1988-2002

Figure 2-3

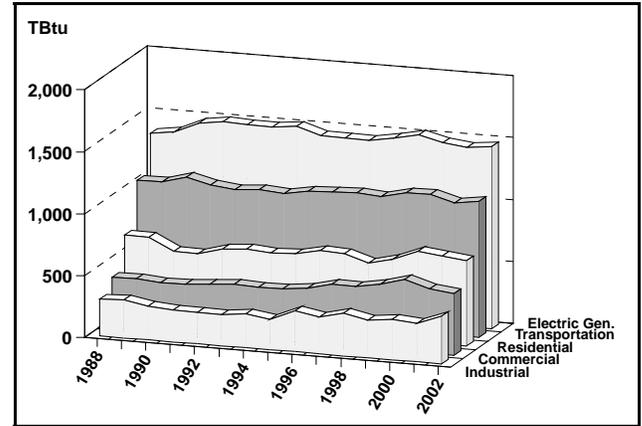


Table 2-3 (in trillion Btu)

Year	Residential TBtu	Commercial TBtu	Industrial TBtu	Transportation TBtu	Electric Generation TBtu	Total TBtu
1988	679.8	405.3	301.7	1,045.1	1,354.1	3,785.9
1989	673.3	406.3	310.3	1,048.1	1,387.5	3,825.6
1990	574.8	395.3	276.4	1,102.7	1,469.9	3,819.1
1991	574.1	396.4	263.7	1,053.7	1,496.0	3,783.8
1992	630.5	414.4	258.0	1,033.7	1,487.4	3,824.0
1993	642.9	434.3	255.7	1,053.2	1,487.3	3,873.4
1994	630.3	418.6	271.8	1,039.1	1,501.7	3,861.5
1995	631.2	424.5	251.4	1,067.9	1,447.6	3,822.7
1996	679.1	447.6	332.8	1,083.6	1,438.8	3,981.9
1997	672.4	497.1	300.1	1,086.4	1,443.2	3,999.2
1998	609.8	487.8	350.6	1,073.5	1,477.3	3,999.0
1999	658.9	528.4	307.9	1,122.8	1,515.9	4,134.0
2000	732.5	575.4	333.6	1,127.6	1,472.2	4,241.3
2001	719.1	522.0	311.9	1,071.3	1,445.9	4,070.2
2002	690.5	502.6	389.7	1,098.7	1,475.1	4,156.6

Source: Appendix I, source number 1, 3, 5,10,12,13, 21, 25, 26, 27, and 28.

# New York State Primary Consumption of Energy for Electric Generation, 1988-2002

Figure 2-4

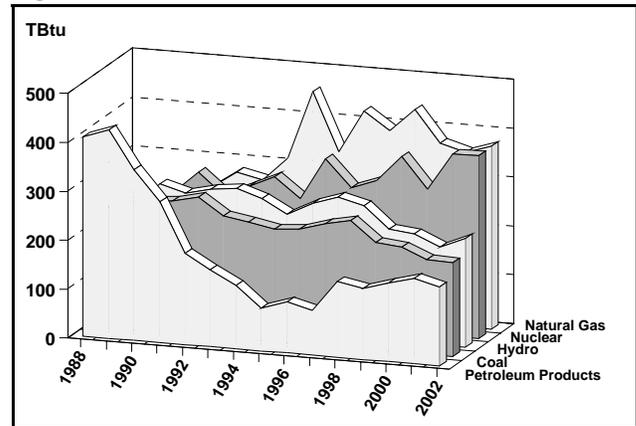


Table 2-4a (in physical units)

Year	Coal <sup>1</sup> MTons	Natural Gas Bcf	Distillate <sup>2</sup> Mbbl	Residual Mbbl	Total Petroleum Mbbl	Hydro GWh	Nuclear GWh	Net Imported Electricity GWh	Other Fuels <sup>3</sup> GWh
1988	9,120	148	2,162	62,840	65,002	23,994	24,175	9,994	n.a.
1989	10,158	182	3,636	64,636	68,272	23,918	22,847	5,539	n.a.
1990	10,528	236	1,016	54,531	55,547	27,134	23,623	5,573	2,066
1991	10,642	237	884	45,081	45,965	26,165	28,448	10,419	2,033
1992	11,146	272	417	29,567	29,984	27,025	24,155	17,482	2,320
1993	9,872	261	567	24,470	25,037	28,308	26,889	22,688	2,374
1994	9,512	307	941	19,733	20,674	26,645	29,231	21,730	2,602
1995	9,076	446	1,146	13,054	14,200	24,831	26,336	14,978	2,632
1996	9,245	329	1,079	15,578	16,657	27,805	35,226	12,738	2,863
1997	9,713	414	1,031	13,707	14,738	29,525	29,570	8,050	2,809
1998	10,143	379	1,282	23,696	24,978	28,158	31,314	6,557	2,754
1999	9,493	427	1,775	21,476	23,251	23,643	37,019	9,748	2,950
2000	9,938	365	1,485	24,223	25,708	23,919	31,508	18,553	2,968
2001	9,404	350	3,010	25,146	28,156	21,831	40,395	12,891	2,743
2002	9,238	367	3,000	22,997	25,997	23,997	40,327	13,207	2,743

Table 2-4b (in trillion Btu)

Year	Coal <sup>1</sup> TBtu	Natural Gas TBtu	Distillate <sup>2</sup> TBtu	Residual TBtu	Total Petroleum TBtu	Hydro TBtu	Nuclear TBtu	Net Imported Electricity TBtu	Other Fuels <sup>3</sup> TBtu	Total <sup>4</sup> TBtu
1988	233.7	153.1	12.6	395.1	407.7	230.9	232.6	96.2	n.a.	1,354.1
1989	260.5	187.1	21.2	406.4	427.5	234.3	223.8	54.3	n.a.	1,387.5
1990	268.0	244.0	5.9	342.8	348.8	283.0	246.4	58.1	21.5	1,469.9
1991	271.4	244.1	5.1	283.4	288.6	269.9	293.5	107.5	21.0	1,496.0
1992	283.5	279.4	2.4	185.9	188.3	280.2	250.5	181.3	24.1	1,487.4
1993	249.3	268.3	3.3	153.8	157.1	286.6	272.2	229.7	24.0	1,487.3
1994	241.0	316.0	5.5	124.1	129.5	270.8	297.1	220.9	26.4	1,501.7
1995	231.5	456.4	6.7	82.1	88.7	242.2	256.9	146.1	25.7	1,447.6
1996	235.5	337.1	6.3	97.9	104.2	269.5	341.4	123.4	27.7	1,438.8
1997	249.3	423.6	6.0	86.2	92.2	286.2	286.6	78.0	27.2	1,443.2
1998	260.9	388.9	7.5	149.0	156.4	274.7	305.5	64.0	26.9	1,477.3
1999	220.8	437.1	10.3	135.0	145.4	229.7	359.7	94.7	28.7	1,515.9
2000	215.7	372.3	8.7	152.3	160.9	224.8	296.2	174.4	27.9	1,472.2
2001	194.2	357.6	17.5	158.1	175.6	201.4	372.7	118.9	25.3	1,445.9
2002	192.3	374.8	17.5	144.6	162.1	223.0	374.7	122.7	25.5	1,475.1

<sup>1</sup> Bituminous coal only.

<sup>2</sup> Includes small quantities of kerosene-type jet fuel.

<sup>3</sup> Includes renewable and indigenous fuels used by generators.

<sup>4</sup> Excludes utility consumption of fuels used in the production of steam distributed for space heating.

n.a. - data not available

Source: Appendix I, source number 1, 3, 5, 10, 12, 13, and 27.

# New York State Electric Generation by Fuel Type, 1988-2002

Figure 2-5

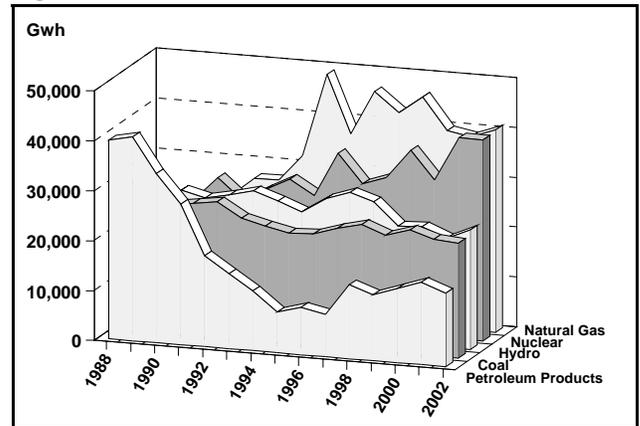


Table 2-5 (in gigawatt hours)

Year	Coal GWh	Natural Gas GWh	Petroleum Products GWh	Hydro GWh	Nuclear GWh	Net Imported Electricity GWh	Other fuels <sup>1</sup> GWh	Total <sup>2,3</sup> GWh
1988	28,698	13,936	39,931	23,994	24,175	9,994	n.a.	140,728
1989	31,228	17,141	40,963	23,918	22,847	5,539	n.a.	141,636
1990	25,913	22,724	33,885	27,134	23,623	5,573	2,066	140,919
1991	26,660	23,074	28,221	26,165	28,448	10,419	2,033	145,019
1992	27,280	26,850	18,319	27,025	24,155	17,482	2,320	143,431
1993	24,502	27,075	15,073	28,308	26,889	22,688	2,374	146,909
1994	23,291	32,230	12,030	26,645	29,231	21,730	2,602	147,760
1995	22,289	49,057	8,268	24,831	26,336	14,978	2,632	148,391
1996	22,672	37,449	9,717	27,805	35,226	12,738	2,863	148,470
1997	24,059	46,281	8,588	29,525	29,570	8,050	2,809	148,882
1998	25,265	42,472	14,901	28,158	31,314	6,557	2,754	151,420
1999	23,366	45,999	13,304	23,643	37,019	9,748	2,950	156,029
2000	25,010	39,729	14,945	23,919	31,508	18,553	2,968	156,632
2001	23,472	38,827	16,537	21,831	40,395	12,891	2,743	156,696
2002	23,066	40,628	14,772	23,997	40,327	13,207	2,743	158,740

<sup>1</sup> Includes renewable and indigenous fuels used by generators.

<sup>2</sup> Electricity generated from combined heat and power is included.

<sup>3</sup> Generation data are net of station use.

n.a. - data not available

Source: Appendix I, source number 1, 5, and 27.

# New York State Sales of Electricity to Ultimate Consumers, 1988-2002

Figure 2-6

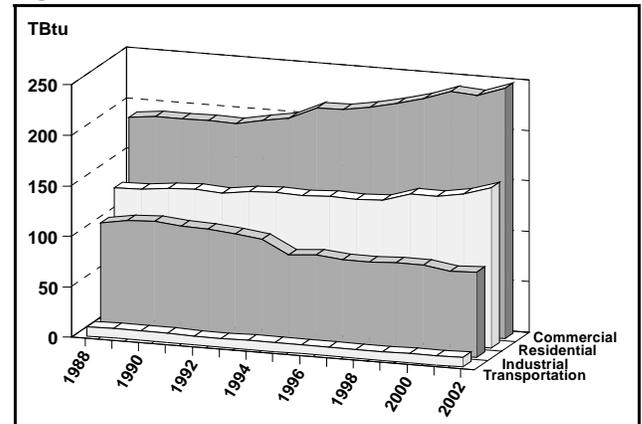


Table 2-6a (in gigawatt hours)

Year	Residential GWh	Commercial GWh	Industrial GWh	Transportation GWh	Total GWh
1988	37,460	55,305	30,155	2,722	125,642
1989	37,878	56,051	31,448	2,825	128,202
1990	38,574	56,026	31,929	2,795	129,324
1991	39,177	56,408	31,112	2,714	129,411
1992	38,720	56,079	31,027	2,644	128,470
1993	39,897	57,410	30,187	2,676	130,170
1994	40,105	58,802	29,467	2,803	131,177
1995	39,887	62,509	25,317	2,757	130,471
1996	40,285	62,663	25,947	2,632	131,527
1997	40,059	64,033	25,285	2,567	131,944
1998	40,563	65,834	25,218	2,580	134,196
1999	42,919	67,969	25,835	2,654	139,378
2000	43,018	70,418	25,838	2,753	142,027
2001	44,048	69,861	24,689	2,800	141,399
2002	46,540	72,639	24,944	2,850	146,973

Table 2-6b (in trillion Btu)

Year	Residential TBtu	Commercial TBtu	Industrial TBtu	Transportation TBtu	Total TBtu
1988	127.8	188.7	102.9	9.3	428.7
1989	129.2	191.2	107.3	9.6	437.4
1990	131.6	191.2	108.9	9.5	441.3
1991	133.7	192.5	106.2	9.3	441.6
1992	132.1	191.3	105.9	9.0	438.3
1993	136.1	195.9	103.0	9.1	444.1
1994	136.8	200.6	100.5	9.6	447.6
1995	136.1	213.3	86.4	9.4	445.2
1996	137.5	213.8	88.5	9.0	448.8
1997	136.7	218.5	86.3	8.8	450.2
1998	138.4	224.6	86.0	8.8	457.9
1999	146.4	231.9	88.2	9.1	475.6
2000	146.8	240.3	88.2	9.4	484.6
2001	150.3	238.4	84.2	9.6	482.5
2002	158.8	247.8	85.1	9.7	501.5

Source: Appendix I, source number 1, 5, and 6.

# New York State Net Consumption of Energy by Sector, 1988-2002

Figure 2-7

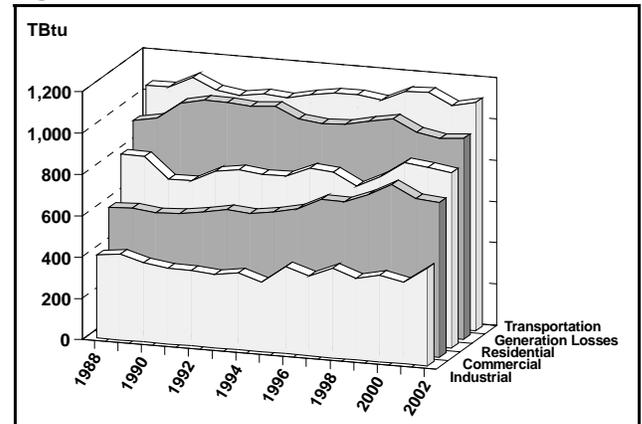


Table 2-7 (in trillion Btu)

Year	Residential TBtu	Commercial TBtu	Industrial TBtu	Transportation TBtu	Net Consumption TBtu	Electric Generation Losses <sup>1</sup> TBtu	Primary Consumption TBtu
1988	807.6	594.0	404.6	1,054.4	2,860.5	925.4	3,785.9
1989	802.6	597.5	417.6	1,057.7	2,875.5	950.1	3,825.6
1990	706.4	586.5	385.4	1,112.2	2,790.5	1,028.6	3,819.1
1991	707.8	588.8	369.9	1,062.9	2,729.4	1,054.4	3,783.8
1992	762.6	605.8	363.9	1,042.7	2,775.0	1,049.0	3,824.0
1993	779.1	630.2	358.7	1,062.3	2,830.2	1,043.2	3,873.4
1994	767.1	619.3	372.3	1,048.6	2,807.3	1,054.2	3,861.5
1995	767.3	637.8	337.8	1,077.4	2,820.2	1,002.4	3,822.7
1996	816.5	661.4	421.3	1,092.6	2,991.8	990.0	3,981.9
1997	809.1	715.6	386.4	1,095.2	3,006.2	993.0	3,999.2
1998	748.2	712.4	436.7	1,082.3	2,979.6	1,019.4	3,999.0
1999	805.4	760.3	396.1	1,131.8	3,093.6	1,040.4	4,134.0
2000	879.3	815.6	421.8	1,137.0	3,253.7	987.6	4,241.3
2001	869.4	760.3	396.1	1,080.9	3,106.8	963.4	4,070.2
2002	849.3	750.4	474.8	1,108.4	3,183.0	973.6	4,156.6

<sup>1</sup> Conversion and transmission losses.

Source: Appendix I, source number 1, 3, 5, 10, 12, 13, 21, 25, 26, and 28.

# New York State Net Residential Consumption of Energy by Fuel Type, 1988-2002

Figure 2-8

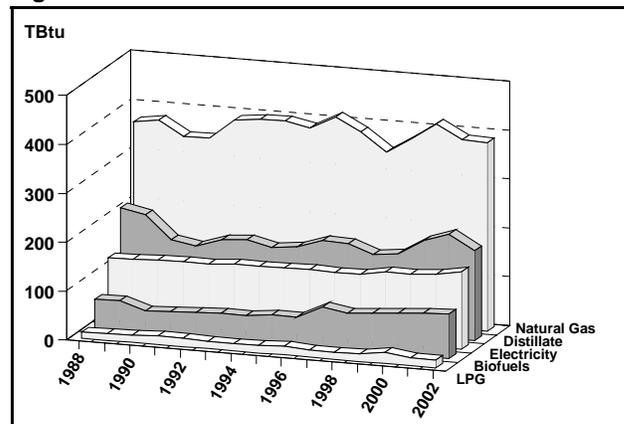


Table 2-8a (in physical units)

Year	Coal MTons	Natural Gas Bcf	Distillate Mbbl	Kerosene Mbbl	LPG Mbbl	Total Petroleum Mbbl	Wood MCords	Electricity GWh
1988	62	357	36,422	4,163	3,718	44,303	3,066	37,460
1989	57	365	34,788	2,771	3,931	41,490	3,181	37,878
1990	49	338	26,529	1,765	4,079	32,373	2,325	38,574
1991	45	339	25,021	2,098	5,051	32,170	2,450	39,177
1992	47	379	27,997	1,252	4,965	34,214	2,577	38,720
1993	39	384	28,707	1,565	4,293	34,565	2,758	39,897
1994	28	385	26,760	1,396	4,350	32,506	2,704	40,105
1995	29	375	27,713	1,240	4,516	33,469	3,001	39,887
1996	34	403	30,674	1,450	4,937	37,061	2,996	40,285
1997	28	376	30,303	1,744	4,379	36,426	4,202	40,059
1998	16	340	27,159	1,866	4,323	33,348	3,804	40,563
1999	22	371	28,502	2,327	4,691	35,520	4,067	42,919
2000	11	404	33,569	2,344	6,211	42,124	4,258	43,018
2001	12	376	36,502	2,390	4,698	43,590	4,428	44,048
2002	12	376	31,749	1,642	4,792	38,183	4,605	46,540

Table 2-8b (in trillion Btu)

Year	Coal TBtu	Natural Gas TBtu	Distillate TBtu	Kerosene TBtu	LPG TBtu	Total Petroleum TBtu	Wood TBtu	Electricity TBtu	Total TBtu
1988	1.6	367.5	212.2	23.6	13.6	249.3	61.3	127.8	807.6
1989	1.5	375.4	202.6	15.7	14.5	232.8	63.6	129.2	802.6
1990	1.2	347.8	154.5	10.0	14.8	179.3	46.5	131.6	706.4
1991	1.1	348.1	145.7	11.9	18.3	175.9	49.0	133.7	707.8
1992	1.2	389.6	163.1	7.1	18.0	188.2	51.5	132.1	762.6
1993	1.0	395.2	167.2	8.9	15.5	191.6	55.2	136.1	779.1
1994	0.7	395.9	155.9	7.9	15.8	179.6	54.1	136.8	767.1
1995	0.7	385.7	161.4	7.0	16.4	184.8	60.0	136.1	767.3
1996	0.8	413.6	178.7	8.2	17.8	204.7	59.9	137.5	816.5
1997	0.7	385.4	176.5	9.9	15.8	202.2	84.0	136.7	809.1
1998	0.4	348.9	158.2	10.6	15.6	184.4	76.1	138.4	748.2
1999	0.5	380.9	166.0	13.2	17.0	196.2	81.3	146.4	805.4
2000	0.3	415.8	195.5	13.3	22.4	231.2	85.2	146.8	879.3
2001	0.3	387.1	212.6	13.6	16.9	243.1	88.6	150.3	869.4
2002	0.3	386.5	184.9	9.3	17.3	211.5	92.1	158.8	849.3

Source: Appendix I, source number 1, 3, 5,10,12,13, and 28.

# New York State Net Commercial Consumption of Energy by Fuel Type, 1988-2002

Figure 2-9

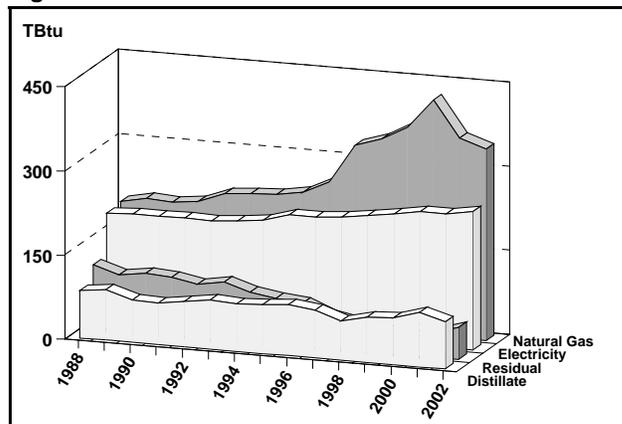


Table 2-9a (in physical units)

Year	Coal MTons	Natural Gas Bcf	Distillate Mbbl	Residual Mbbl	Kerosene Mbbl	LPG Mbbl	Total Petroleum Mbbl	Wood M cords	Electricity GWh
1988	247	188	14,720	18,154	207	656	33,737	111	55,305
1989	242	196	15,473	15,878	519	694	32,564	125	56,051
1990	224	195	12,947	16,912	269	720	30,875	154	56,026
1991	234	200	12,758	16,453	213	891	30,315	164	56,408
1992	228	217	13,899	15,168	408	876	30,351	176	56,079
1993	193	221	15,123	16,491	616	758	32,988	231	57,410
1994	157	223	14,592	14,292	538	768	30,190	232	58,802
1995	191	231	15,210	12,963	714	797	29,684	232	62,509
1996	249	253	15,754	12,349	751	871	29,725	254	62,663
1997	226	321	14,794	9,413	801	773	25,781	480	64,033
1998	131	335	12,148	8,167	981	763	22,059	473	65,834
1999	158	360	14,023	8,846	682	828	24,379	514	67,969
2000	90	410	14,415	7,640	948	1,096	24,099	522	70,418
2001	102	347	16,865	7,193	874	829	25,761	532	69,861
2002	101	332	14,479	9,118	493	846	24,936	543	72,639

Table 2-9b (in trillion Btu)

Year	Coal TBtu	Natural Gas TBtu	Distillate TBtu	Residual TBtu	Kerosene TBtu	LPG TBtu	Total Petroleum TBtu	Wood Tbtu	Electricity TBtu	Total TBtu
1988	6.2	193.4	85.7	114.1	1.2	2.4	203.4	2.2	188.7	594.0
1989	6.2	202.1	90.1	99.8	2.9	2.6	195.5	2.5	191.2	597.5
1990	5.6	200.6	75.6	106.3	1.5	2.6	186.0	3.1	191.2	586.5
1991	5.9	205.0	74.3	103.4	1.2	3.2	182.2	3.3	192.5	588.8
1992	5.6	223.5	81.0	95.4	2.3	3.2	181.8	3.5	191.3	605.8
1993	4.7	227.0	88.1	103.7	3.5	2.7	198.0	4.6	195.9	630.2
1994	3.9	229.4	85.0	89.9	3.1	2.8	180.7	4.6	200.6	619.3
1995	4.8	238.0	88.6	81.5	4.0	2.9	177.0	4.6	213.3	637.8
1996	6.2	259.5	91.8	77.6	4.3	3.1	176.8	5.1	213.8	661.4
1997	5.6	329.2	86.2	59.2	4.5	2.8	152.7	9.6	218.5	715.6
1998	3.2	344.7	70.8	51.3	5.6	2.8	130.4	9.5	224.6	712.4
1999	3.9	370.1	81.7	55.6	3.9	3.0	144.2	10.3	231.9	760.3
2000	2.3	421.3	84.0	48.0	5.4	4.0	141.3	10.4	240.3	815.6
2001	2.6	357.3	98.2	45.2	5.0	3.0	151.4	10.6	238.4	760.3
2002	2.6	341.6	84.3	57.3	2.8	3.1	147.5	10.9	247.8	750.4

Source: Appendix I, source number 1, 3, 5,10,12,13, and 28.

# New York State Net Industrial Consumption of Energy by Fuel Type, 1988-2002

Figure 2-10

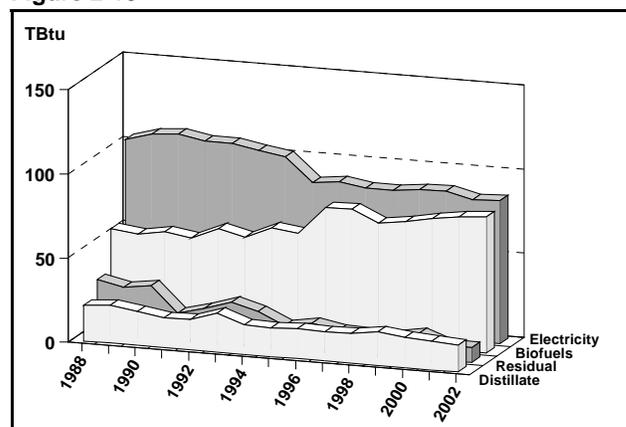


Table 2-10a (in physical units)

Year	Coal MTons	Natural Gas Bcf	Distillate Mbbl	Residual Mbbl	Kero Mbbl	LPG Mbbl	Total Petroleum Mbbl	Electricity GWh
1988	3,527	92	3,705	4,919	893	742	10,259	30,155
1989	3,674	98	3,846	4,366	1,507	800	10,519	31,448
1990	2,796	89	3,428	4,750	249	657	9,084	31,929
1991	2,720	94	3,043	2,383	335	1,107	6,868	31,112
1992	2,339	85	3,117	3,095	201	1,092	7,505	31,027
1993	2,547	72	4,047	3,911	241	961	9,160	30,187
1994	2,534	91	3,066	3,208	355	948	7,577	29,467
1995	2,489	80	2,973	2,021	409	881	6,284	25,317
1996	2,546	138	3,097	2,498	682	1,142	7,419	25,947
1997	2,491	109	3,015	2,006	361	1,445	6,827	25,285
1998	2,607	163	3,075	1,986	511	1,687	7,259	25,218
1999	2,514	99	3,460	1,949	77	1,772	7,258	25,835
2000	2,595	97	3,130	2,419	151	2,308	8,008	25,838
2001	2,569	84	2,981	1,544	181	1,559	6,265	24,689
2002	2,338	170	2,783	1,431	238	1,590	6,042	24,944

Table 2-10b (in trillion Btu)

Year	Coal TBtu	Natural Gas TBtu	Distillate TBtu	Residual TBtu	Kero TBtu	LPG TBtu	Total Petroleum TBtu	Wood & Waste TBtu	Electricity TBtu	Total <sup>1,2</sup> TBtu
1988	91.5	94.2	21.6	30.9	5.1	2.7	60.3	55.7	102.9	404.6
1989	95.1	100.4	22.4	27.4	8.5	2.9	61.3	53.5	107.3	417.6
1990	74.8	91.7	20.0	29.9	1.4	2.4	53.6	56.3	108.9	385.4
1991	73.9	97.3	17.7	15.0	1.9	4.0	38.6	54.0	106.2	369.9
1992	66.1	88.2	18.2	19.5	1.1	4.0	42.7	61.1	105.9	363.9
1993	70.9	74.4	23.6	24.6	1.4	3.5	53.0	57.4	103.0	358.7
1994	71.1	93.2	17.9	20.2	2.0	3.4	43.5	64.0	100.5	372.3
1995	69.9	83.9	17.3	12.7	2.3	3.2	35.5	62.1	86.4	337.8
1996	70.9	141.6	18.0	15.7	3.9	4.1	41.7	78.5	88.5	421.3
1997	69.7	113.8	17.6	12.6	2.0	5.2	37.4	79.2	86.3	386.4
1998	71.1	168.2	17.9	12.5	2.9	6.1	39.4	72.0	86.0	436.7
1999	91.8	102.1	20.2	12.3	0.4	6.4	39.3	74.7	88.2	396.1
2000	113.1	100.0	18.2	15.2	0.9	8.3	42.6	77.9	88.2	421.8
2001	112.0	86.7	17.4	9.7	1.0	5.6	33.7	79.5	84.2	396.1
2002	101.9	174.5	16.2	9.0	1.3	5.7	32.3	81.0	85.1	474.8

<sup>1</sup> Excludes non-fuel uses (e.g., feedstock).

<sup>2</sup> Includes those fuels used by industry to generate electricity and process steam.

Source: Appendix I, source number 1, 3, 5, 10, 12, 13, and 28.

# New York State Net Transportation Consumption of Energy by Fuel Type, 1988-2002

Figure 2-11

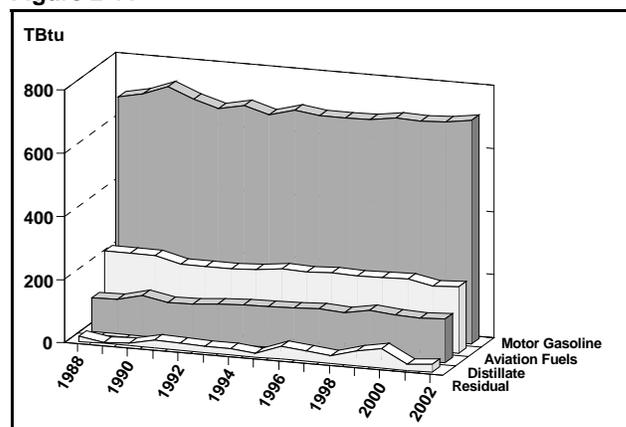


Table 2-11a (in physical units)

Year	Natural Gas Bcf	Distillate Mbbl	Residual Mbbl	Motor Gasoline Mbbl	Aviation Fuels <sup>1</sup> Mbbl	LPG Mbbl	Total Petroleum Mbbl	Ethanol Mbbl	Electricity GWh
1988	5	18,450	3,059	130,449	40,175	122	192,255	0	2,722
1989	5	18,865	531	133,483	40,161	154	193,194	0	2,825
1990	5	22,363	1,377	139,180	40,066	150	203,136	0	2,795
1991	5	19,846	3,971	133,311	36,519	158	193,805	0	2,714
1992	6	20,290	3,730	129,064	36,582	144	189,810	0	2,644
1993	6	21,625	3,258	131,710	36,653	127	193,373	83	2,676
1994	6	22,381	3,169	128,228	37,050	286	191,114	205	2,803
1995	8	22,342	2,354	132,627	38,825	138	196,286	654	2,757
1996	8	22,562	6,550	130,979	38,333	123	198,547	552	2,632
1997	8	23,662	5,215	130,923	39,294	90	199,184	532	2,567
1998	8	22,541	4,278	131,469	38,581	533	197,402	394	2,580
1999	8	25,315	7,488	133,621	39,158	25	205,607	341	2,654
2000	8	23,918	9,879	132,831	39,393	234	206,255	377	2,753
2001	8	23,520	3,207	133,724	36,549	25	197,025	434	2,800
2002	8	24,200	4,020	136,398	37,280	25	201,923	499	2,850

Table 2-11b (in trillion Btu)

Year	Natural Gas TBtu	Distillate TBtu	Residual TBtu	Motor Gasoline TBtu	Aviation Fuels <sup>1</sup> TBtu	LPG TBtu	Total Petroleum TBtu	Ethanol TBtu	Electricity TBtu	Total TBtu
1988	4.9	107.5	19.2	685.2	227.8	0.4	1,040.2	0	9.3	1,054.4
1989	5.4	109.9	3.3	701.2	227.7	0.6	1,042.7	0	9.6	1,057.7
1990	4.9	130.3	8.7	731.1	227.2	0.5	1,097.8	0	9.5	1,112.2
1991	5.2	115.6	25.0	700.3	207.1	0.6	1,048.5	0	9.3	1,062.9
1992	6.1	118.2	23.5	678.0	207.4	0.5	1,027.6	0	9.0	1,042.7
1993	6.3	126.0	20.5	691.9	207.8	0.5	1,046.6	0.3	9.1	1,062.3
1994	6.3	130.4	19.9	670.6	210.1	1.0	1,032.0	0.7	9.6	1,048.6
1995	8.4	130.1	14.8	691.6	220.1	0.5	1,057.2	2.3	9.4	1,077.4
1996	8.1	131.4	41.2	683.2	217.3	0.4	1,073.6	2.0	9.0	1,092.6
1997	8.3	137.8	32.8	682.5	222.8	0.3	1,076.2	1.9	8.8	1,095.2
1998	8.0	131.3	26.9	685.2	218.8	1.9	1,064.1	1.4	8.8	1,082.3
1999	8.6	147.5	47.1	696.3	222.0	0.1	1,113.0	1.2	9.1	1,131.8
2000	8.6	139.3	62.1	692.0	223.4	0.8	1,117.7	1.3	9.4	1,137.0
2001	8.6	137.0	20.2	696.7	207.2	0.1	1,061.2	1.5	9.6	1,080.9
2002	8.6	141.0	25.3	710.6	211.4	0.1	1,088.3	1.8	9.7	1,108.4

<sup>1</sup> Consists of aviation gasoline and kerosene-type jet fuel.  
Source: Appendix I, source number 1, 3, 5, 10, 21, 25, and 26.

### **Section 3**

## **NEW YORK ENERGY PRICES**

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This section presents data on retail energy prices for the 15-year period, 1988 through 2002. Energy prices are provided by fuel type in nominal dollars per physical unit and per million Btu for the residential, commercial, industrial, and transportation sectors.

This section includes a column in the price tables displaying gross domestic product (GDP) implicit price deflators for easily converting nominal (current) dollars into constant 2002 (real) dollars. To convert the energy prices displayed in this section from nominal dollars to constant 2002 dollars, simply divide the nominal energy price by the GDP price deflator for that particular year.

Historical petroleum, electricity, coal, and natural gas prices were compiled from U.S. DOE's *State Energy Price and Expenditure Report (SEPER)*.

## Key Observations about 2002 New York State Energy Price Data

- ✓ Residential sector statewide average nominal fuel prices:
  - Home heating oil decreased 7% from an average \$1.41 in 2001 to \$1.31 per gallon;
  - Natural gas decreased 17% from an average \$11.75 in 2001 to \$9.76 per thousand cubic feet; and
  - Electricity decreased 3% from 13.9¢ to 13.5¢ per kilowatt hour from 2001 to 2002.
  
- ✓ Average prices were \$0.83 per gallon for commercial distillate fuel oil and \$27.38 per barrel for commercial residual fuel oil.
  
- ✓ Average prices for commercial electricity and natural gas were 12.1¢ per kilowatt hour and \$6.49 per thousand cubic feet.
  
- ✓ Average industrial sector residual fuel oil prices rose 7% during the past year, from \$25.59 to \$27.38 per barrel; natural gas prices fell 27%, from \$7.72 to \$5.65 per thousand cubic feet; and electricity prices fell 2% from 5.0¢ to 4.9¢ per kilowatt hour.
  
- ✓ The average retail price for all grades of gasoline was \$1.44 per gallon, up 1¢ per gallon from the \$1.43 per gallon 2001 average price.

# New York State Residential Energy Prices in Nominal Dollars, 1988-2002

Figure 3-1

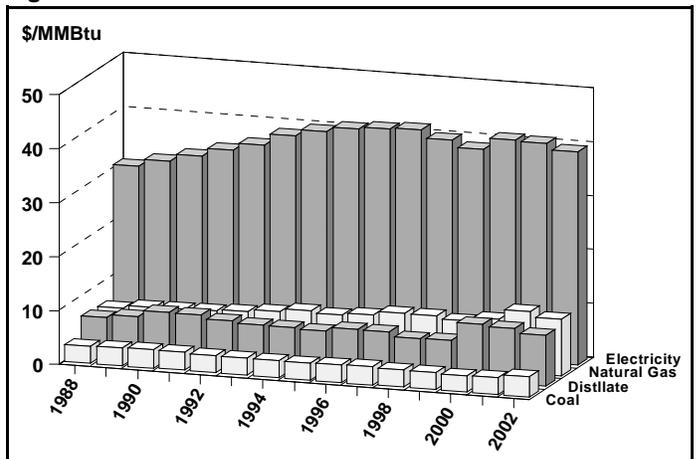


Table 3-1a (in physical units)

Year	Coal <sup>1</sup> \$/Ton	Distillate <sup>2</sup> ¢/gal	Kerosene ¢/gal	LPG <sup>3</sup> ¢/gal	Natural Gas \$/Mcf	Electricity ¢/kWh	GDP Deflators 2002=1.0
1988	77.51	89.73	85.19	82.88	6.50	10.46	0.710
1989	79.47	99.58	73.04	101.19	7.23	10.93	0.752
1990	82.95	117.05	92.21	117.68	7.41	11.44	0.781
1991	79.58	115.81	84.11	125.55	7.38	11.97	0.810
1992	74.23	106.93	78.30	124.54	7.60	12.43	0.830
1993	74.76	104.16	75.06	114.59	8.15	13.17	0.850
1994	76.04	100.41	75.87	126.01	8.77	13.55	0.867
1995	73.52	99.30	72.63	123.10	8.41	13.90	0.886
1996	77.78	110.54	81.41	128.43	8.91	14.04	0.903
1997	80.30	110.81	84.51	129.32	9.74	14.12	0.921
1998	73.52	98.61	59.94	119.18	9.64	13.66	0.932
1999	76.65	100.83	73.58	121.05	9.13	13.23	0.946
2000	72.12	149.92	127.44	152.35	9.83	13.97	0.966
2001	75.36	141.74	117.99	159.88	11.75	13.90	0.988
2002	90.89	130.56	109.73	133.41	9.76	13.50	1.000

Table 3-1b (in \$/million Btu)

Year	Coal <sup>1</sup> \$/MMBtu	Distillate <sup>2</sup> \$/MMBtu	Kerosene \$/MMBtu	LPG <sup>3</sup> \$/MMBtu	Natural Gas \$/MMBtu	Electricity \$/MMBtu	GDP Deflators 2002=1.0
1988	3.29	6.47	6.31	9.53	6.32	30.67	0.710
1989	3.36	7.18	5.41	11.54	7.01	32.03	0.752
1990	3.59	8.44	6.83	13.64	7.19	33.54	0.781
1991	3.44	8.35	6.23	14.59	7.16	35.09	0.810
1992	3.21	7.71	5.80	14.43	7.37	36.43	0.830
1993	3.25	7.51	5.56	13.35	7.92	38.61	0.850
1994	3.29	7.24	5.62	14.56	8.52	39.72	0.867
1995	3.18	7.16	5.38	14.27	8.19	40.73	0.886
1996	3.38	7.97	6.03	14.93	8.68	41.14	0.903
1997	3.57	7.99	6.26	15.02	9.48	41.38	0.921
1998	3.25	7.11	4.44	13.85	9.33	40.03	0.932
1999	3.21	7.27	5.45	14.06	8.88	38.78	0.946
2000	3.02	10.81	9.44	17.74	9.58	40.95	0.966
2001	3.16	10.22	8.74	18.58	11.45	40.74	0.988
2002	3.81	9.41	8.13	15.50	9.51	39.57	1.000

<sup>1</sup> Anthracite

<sup>2</sup> Home heating oil

<sup>3</sup> Propane

Source: Appendix I, source number 2, 4, 5, 6, 7, 8, 12, 19, and 22.

# New York State Commercial Energy Prices in Nominal Dollars, 1988-2002

Figure 3-2

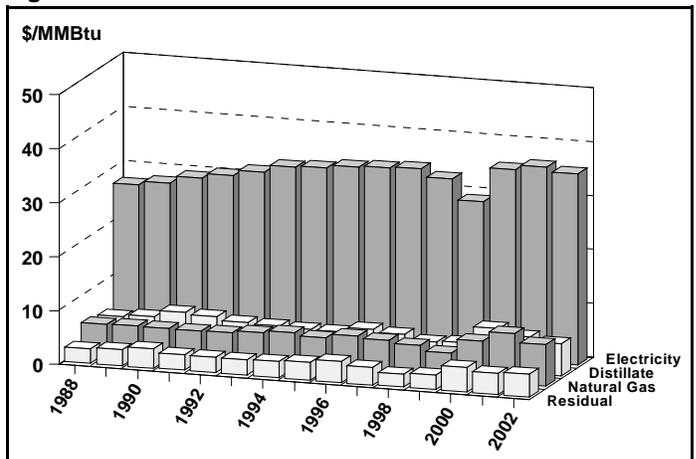


Table 3-2a (in physical units)

Year	Coal \$/Ton	Distillate ¢/gal	Residual \$/bbl	Kerosene ¢/gal	LPG <sup>1</sup> ¢/gal	Natural Gas \$/Mcf	Electricity ¢/kWh	GDP Deflators 2002=1.0
1988	40.31	65.88	16.82	85.19	101.39	5.39	9.26	0.710
1989	41.45	73.23	19.61	73.04	88.74	5.63	9.55	0.752
1990	40.64	90.70	23.59	92.21	92.70	5.60	10.05	0.781
1991	40.22	83.35	17.78	84.11	99.21	5.49	10.34	0.810
1992	40.43	75.86	18.17	78.30	85.25	5.76	10.74	0.830
1993	38.39	73.37	18.11	75.06	83.28	6.16	11.21	0.850
1994	38.60	71.43	19.36	75.87	94.08	6.52	11.25	0.867
1995	38.61	70.18	21.00	72.63	91.61	6.09	11.45	0.886
1996	36.82	83.35	25.40	81.41	102.02	6.89	11.60	0.903
1997	37.12	76.28	21.63	84.51	98.06	6.51	11.68	0.921
1998	33.03	60.89	14.96	59.94	86.91	6.12	11.19	0.932
1999	33.91	65.32	17.48	73.58	88.59	5.15	9.91	0.946
2000	34.63	110.40	28.92	127.44	113.45	7.75	12.11	0.966
2001	36.18	93.62	25.59	117.99	120.21	9.61	12.40	0.988
2002	43.64	83.32	27.38	109.73	99.77	6.49	12.10	1.000

Table 3-2b (in \$/million Btu)

Year	Coal \$/MMBtu	Distillate \$/MMBtu	Residual \$/MMBtu	Kerosene \$/MMBtu	LPG <sup>1</sup> \$/MMBtu	Natural Gas \$/MMBtu	Electricity \$/MMBtu	GDP Deflators 2002=1.0
1988	1.71	4.75	2.67	6.31	11.66	5.24	27.13	0.710
1989	1.75	5.28	3.12	5.41	10.12	5.46	27.99	0.752
1990	1.76	6.54	3.75	6.83	10.74	5.43	29.44	0.781
1991	1.74	6.01	2.83	6.23	11.53	5.33	30.31	0.810
1992	1.75	5.47	2.89	5.80	9.88	5.59	31.48	0.830
1993	1.67	5.29	2.88	5.56	9.70	5.99	32.87	0.850
1994	1.67	5.15	3.08	5.62	10.87	6.34	32.98	0.867
1995	1.67	5.06	3.34	5.38	10.62	5.93	33.57	0.886
1996	1.60	6.01	4.04	6.03	11.86	6.71	33.99	0.903
1997	1.65	5.50	3.44	6.26	11.39	6.34	34.22	0.921
1998	1.46	4.39	2.38	4.44	10.10	5.92	32.79	0.932
1999	1.42	4.71	2.78	5.45	10.29	5.01	29.03	0.946
2000	1.45	7.96	4.60	9.44	13.21	7.55	35.50	0.966
2001	1.52	6.75	4.07	8.74	13.97	9.37	36.34	0.988
2002	1.83	6.01	4.35	8.13	11.60	6.33	35.46	1.000

<sup>1</sup> Propane

Source: Appendix I, source number 2, 4, 5, 6, 7, 8, 12 and 19.

# New York State Industrial Energy Prices in Nominal Dollars, 1988-2002

Figure 3-3

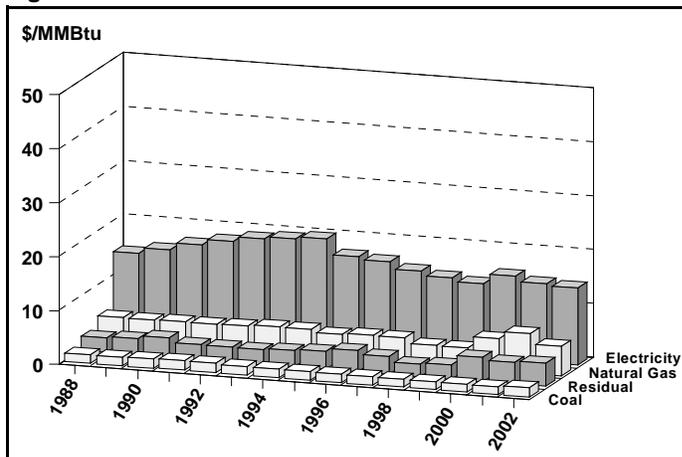


Table 3-3a (in physical units)

Year	Coal \$/Ton	Distillate ¢/gal	Residual \$/bbl	Kerosene ¢/gal	LPG ¢/gal	Natural Gas \$/Mcf	Electricity ¢/kWh	GDP Deflators 2002=1.0
1988	40.71	59.22	16.82	59.94	101.39	4.69	4.94	0.710
1989	42.12	65.74	19.61	71.28	88.74	4.84	5.29	0.752
1990	42.61	94.03	23.59	87.21	92.70	4.86	5.78	0.781
1991	42.68	77.67	17.78	78.30	99.21	4.74	6.17	0.810
1992	42.43	76.42	18.17	65.88	85.25	4.94	6.50	0.830
1993	41.34	70.32	18.11	65.34	83.28	5.17	6.67	0.850
1994	41.29	70.45	19.36	69.53	74.78	5.23	6.78	0.867
1995	40.95	67.13	21.00	60.21	73.93	4.68	5.79	0.886
1996	39.61	81.55	25.40	77.22	78.20	5.04	5.62	0.903
1997	41.14	74.75	21.63	70.74	86.44	5.05	5.20	0.921
1998	38.70	57.97	14.96	54.14	80.37	4.04	4.95	0.932
1999	35.44	64.77	17.48	62.51	82.05	3.90	4.74	0.946
2000	36.44	105.27	28.92	111.51	110.79	6.11	5.37	0.966
2001	38.08	91.67	25.59	90.86	109.80	7.72	5.00	0.988
2002	45.92	81.59	27.38	84.50	91.13	5.65	4.90	1.000

Table 3-3b (in \$/million Btu)

Year	Coal \$/MMBtu	Distillate \$/MMBtu	Residual \$/MMBtu	Kerosene \$/MMBtu	LPG \$/MMBtu	Natural Gas \$/MMBtu	Electricity \$/MMBtu	GDP Deflators 2002=1.0
1988	1.66	4.27	2.67	4.44	11.66	4.56	14.47	0.710
1989	1.71	4.74	3.12	5.28	10.12	4.69	15.52	0.752
1990	1.73	6.78	3.75	6.46	10.74	4.72	16.95	0.781
1991	1.73	5.60	2.83	5.80	11.53	4.60	18.07	0.810
1992	1.73	5.51	2.89	4.88	9.88	4.79	19.06	0.830
1993	1.69	5.07	2.88	4.84	9.70	5.03	19.53	0.850
1994	1.69	5.08	3.08	5.15	8.64	5.08	19.86	0.867
1995	1.68	4.84	3.34	4.46	8.57	4.56	16.97	0.886
1996	1.62	5.88	4.04	5.72	9.09	4.91	16.48	0.903
1997	1.68	5.39	3.44	5.24	10.04	4.92	15.23	0.921
1998	1.53	4.18	2.38	4.01	9.34	3.91	14.50	0.932
1999	1.42	4.67	2.78	4.63	9.53	3.79	13.89	0.946
2000	1.46	7.59	4.60	8.26	12.90	5.96	15.75	0.966
2001	1.53	6.61	4.07	6.73	12.76	7.52	14.65	0.988
2002	1.84	5.88	4.35	6.26	10.59	5.51	14.36	1.000

Source: Appendix I, source number 2, 4, 5, 6, 7, 8, 12 and 19.

# New York State Transportation Energy Prices in Nominal Dollars, 1988-2002

Figure 3-4

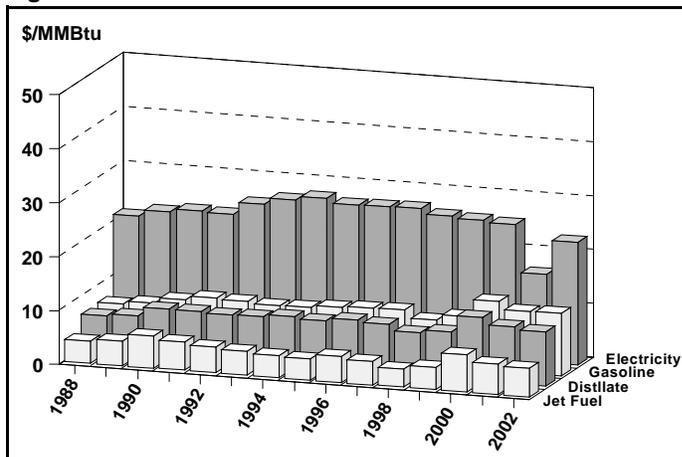


Table 3-4a (in physical units)

Year	Motor Gasoline ¢/gal	Distillate <sup>1</sup> ¢/gal	Jet Fuel <sup>2</sup> ¢/gal	Residual <sup>3</sup> \$/bbl	Electricity <sup>4</sup> ¢/kWh	GDP Deflators 2002=1.0
1988	89.55	94.03	56.00	13.74	7.30	0.710
1989	97.81	102.08	63.40	16.50	7.73	0.752
1990	110.44	124.68	81.40	19.70	7.96	0.781
1991	118.07	125.65	69.90	14.94	7.89	0.810
1992	116.07	123.30	65.30	14.64	8.71	0.830
1993	113.06	125.38	60.30	14.41	9.14	0.850
1994	114.06	128.29	55.89	15.09	9.31	0.867
1995	118.83	125.10	54.54	16.72	9.07	0.886
1996	123.32	134.11	65.88	19.80	9.13	0.903
1997	124.62	128.84	61.16	17.67	9.17	0.921
1998	106.23	113.73	45.90	12.20	8.85	0.932
1999	118.74	122.05	57.11	15.47	8.74	0.946
2000	159.65	165.32	93.15	33.38	8.66	0.966
2001	143.03	145.90	78.17	19.93	5.60	0.988
2002	144.28	140.03	72.69	21.32	7.80	1.000

Table 3-4b (in \$/million Btu)

Year	Motor Gasoline \$/MMBtu	Distillate <sup>1</sup> \$/MMBtu	Jet Fuel <sup>2</sup> \$/MMBtu	Residual <sup>3</sup> \$/MMBtu	Electricity <sup>4</sup> \$/MMBtu	GDP Deflators 2002=1.0
1988	7.16	6.78	4.15	2.18	21.39	0.710
1989	7.82	7.36	4.70	2.63	22.65	0.752
1990	8.83	8.99	6.03	3.13	23.33	0.781
1991	9.44	9.06	5.18	2.38	23.12	0.810
1992	9.28	8.89	4.84	2.33	25.54	0.830
1993	9.04	9.04	4.47	2.29	26.78	0.850
1994	9.16	9.25	4.14	2.40	27.28	0.867
1995	9.57	9.02	4.04	2.66	26.59	0.886
1996	9.93	9.67	4.88	3.15	26.75	0.903
1997	10.04	9.29	4.53	2.81	26.88	0.921
1998	8.56	8.20	3.40	1.94	25.94	0.932
1999	9.57	8.80	4.23	2.46	25.62	0.946
2000	12.87	11.92	6.90	5.31	25.39	0.966
2001	11.53	10.52	5.79	3.17	16.41	0.988
2002	11.63	10.10	5.38	3.39	22.86	1.000

<sup>1</sup> Diesel

<sup>2</sup> Kerosene-based

<sup>3</sup> Bunker fuel

<sup>4</sup> Railroad use

Source: Appendix I, source number 2, 4, 5, 6, 11 and 19.

## **Section 4**

# **NEW YORK ENERGY EXPENDITURES**

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This section presents the estimated costs of net energy consumed by sector and fuel type in nominal dollars and in constant 2002 dollars for selected years - 1988, 1993, and 1998 through 2002. Estimated costs were derived by multiplying quantities of fuels consumed (TBtu) by their prices.

## Key Observations about 2002 New York State Energy Expenditures Data

- ✓ In nominal dollars, New York's 2002 energy bill of \$37.5 billion was down 4% from 2001, and 57% more than the \$23.9 billion spent in 1988.
- ✓ In constant 2002 dollars, New York's energy bill fell by 6%, or \$2.2 billion from a year ago, and was \$3.8 billion, or 11%, greater than in 1988.
- ✓ New Yorkers spent \$12 billion for household energy. The residential sector experienced a decline in spending of 8% from the 2001 level in nominal dollars and 10% in constant dollars.
- ✓ Cumulative heating degree-days in 2002 were 2% higher than 2001, which implies New York's weather was slightly colder than the previous year.
- ✓ The total commercial customer energy bill was \$11.8 billion, 9% less than 2001 in nominal dollars and 10% less in constant dollars.
- ✓ Industrial customers paid \$2.5 billion for energy, 12% more than 2001 in nominal dollars and 11% more in constant dollars.
- ✓ The annual energy bill for transporting people and goods was \$11.1 billion, an increase of 2% from 2001 levels in nominal dollars and an increase of 1% in constant dollars.
- ✓ Statewide expenditures for electricity in nominal dollars increased by 2% and natural gas decreased 19% from the previous year.

# New York State Energy Expenditure Estimates by Fuel Type and Sector in Nominal Dollars, 1988-2002

Figure 4-1

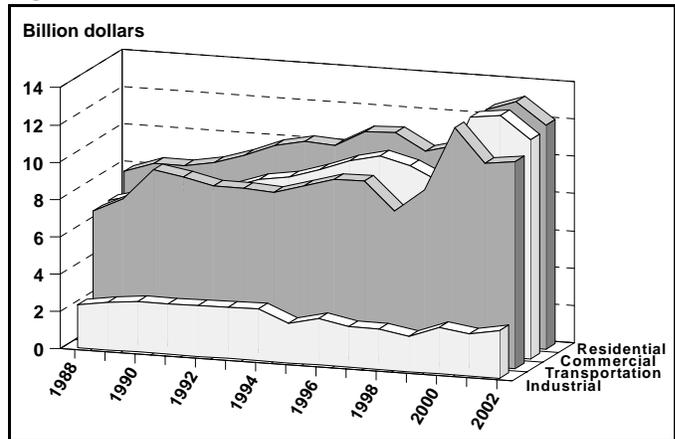


Table 4-1 (in million dollars)

	1988	1993	1998	1999	2000	2001	2002
<b>RESIDENTIAL</b>							
Coal	\$5.3	\$3.3	\$1.3	\$1.6	\$0.9	\$1.1	\$1.3
Petroleum	1,651.0	1,511.8	1,388.2	1,517.4	2,636.7	2,606.3	2,083.9
Distillate	1,372.7	1,255.8	1,124.8	1,207.0	2,113.8	2,173.0	1,740.3
Kerosene	148.9	49.3	47.0	71.9	125.5	118.4	75.7
LPG	129.4	206.7	216.4	238.5	397.4	314.9	267.9
Natural Gas	2,322.6	3,130.0	3,255.2	3,382.4	3,983.4	4,432.1	3,675.6
Electricity	3,920.0	5,256.0	5,540.2	5,679.0	6,010.5	6,122.9	6,283.5
<b>Total</b>	<b>\$7,898.9</b>	<b>\$9,901.0</b>	<b>\$10,184.9</b>	<b>\$10,580.4</b>	<b>\$12,631.4</b>	<b>\$13,162.4</b>	<b>\$12,044.2</b>
<b>COMMERCIAL</b>							
Coal	\$10.6	\$7.8	\$4.7	\$5.5	\$3.3	\$4.0	\$4.7
Petroleum	747.4	810.5	483.3	588.9	991.1	928.6	811.3
Distillate	407.3	466.0	310.6	384.7	668.4	663.1	506.9
Residual	304.7	298.6	122.2	154.6	220.9	184.1	249.4
Kerosene	7.4	19.4	24.7	21.1	50.7	43.3	22.7
LPG	27.9	26.5	25.8	28.5	51.0	38.2	32.3
Natural Gas	1,013.4	1,359.7	2,040.6	1,854.2	3,180.8	3,348.1	2,162.6
Electricity	5,119.4	6,438.6	7,365.5	6,732.4	8,529.4	8,662.2	8,798.5
<b>Total</b>	<b>\$6,890.8</b>	<b>\$8,616.7</b>	<b>\$9,894.1</b>	<b>\$9,181.0</b>	<b>\$12,704.6</b>	<b>\$12,942.9</b>	<b>\$11,777.1</b>
<b>INDUSTRIAL</b>							
Coal	\$151.9	\$119.8	\$108.8	\$130.4	\$165.1	\$171.3	\$187.5
Petroleum	228.8	230.6	173.2	191.3	322.8	232.9	203.6
Distillate	92.2	119.5	74.9	94.1	138.4	114.8	95.3
Residual	82.6	70.8	29.7	34.1	70.0	39.5	39.1
Kerosene	22.5	6.6	11.6	2.0	7.1	6.9	8.4
LPG	31.6	33.6	56.9	61.1	107.4	71.8	60.7
Natural Gas	429.6	374.3	657.5	387.1	595.9	652.3	961.4
Electricity	1,488.8	2,011.6	1,247.6	1,224.4	1,388.5	1,234.1	1,222.2
<b>Total</b>	<b>\$2,299.0</b>	<b>\$2,736.1</b>	<b>\$2,187.0</b>	<b>\$1,933.2</b>	<b>\$2,472.4</b>	<b>\$2,290.7</b>	<b>\$2,574.7</b>
<b>TRANSPORTATION</b>							
Petroleum	\$6,627.5	\$8,373.6	\$7,756.1	\$9,017.1	\$12,449.3	\$10,739.2	\$10,912.3
Distillate	728.7	1,138.7	1,076.7	1,297.6	1,660.7	1,441.3	1,423.7
Residual	41.9	46.9	52.2	115.8	329.8	63.9	85.7
Motor Gasoline	4,906.4	6,254.5	5,865.5	6,663.6	8,906.7	8,033.0	8,264.7
Aviation	945.3	929.0	743.8	939.2	1,541.2	1,199.9	1,137.2
LPG	5.2	4.4	18.0	0.9	10.9	1.2	1.0
Electricity	198.7	244.5	228.3	232.0	238.5	156.8	222.3
<b>Total</b>	<b>\$6,826.2</b>	<b>\$8,618.1</b>	<b>\$7,984.4</b>	<b>\$9,249.1</b>	<b>\$12,687.8</b>	<b>\$10,896.0</b>	<b>\$11,134.6</b>
<b>TOTAL</b>							
Coal	\$167.8	\$130.9	\$114.7	\$137.6	\$169.4	\$176.3	\$193.5
Petroleum	9,254.7	10,926.5	9,800.7	11,314.7	16,399.8	14,507.1	14,011.1
Distillate	2,600.8	2,980.1	2,587.0	2,983.5	4,581.3	4,392.2	3,766.2
Residual	429.2	416.3	204.1	304.5	620.7	287.5	374.2
Motor Gasoline	4,906.4	6,254.5	5,865.5	6,663.6	8,906.7	8,033.0	8,264.7
Kerosene	178.8	75.4	83.3	95.0	183.3	168.7	106.9
Aviation	945.3	929.0	743.8	939.2	1,541.2	1,199.9	1,137.2
LPG	194.1	271.2	317.1	329.0	566.7	425.9	361.9
Natural Gas	3,765.6	4,864.0	5,953.3	5,623.7	7,760.1	8,432.6	6,799.6
Electricity	10,727.0	13,950.7	14,381.7	13,867.7	16,166.9	16,176.0	16,526.4
<b>Total</b>	<b>\$23,914.9</b>	<b>\$29,872.0</b>	<b>\$30,250.5</b>	<b>\$30,943.6</b>	<b>\$40,496.2</b>	<b>\$39,292.0</b>	<b>\$37,530.6</b>

Source: Appendix I, source number 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 21, 22, 25, 26, and 28.

# New York State Energy Expenditure Estimates by Fuel Type and Sector in Constant 2002 Dollars, 1988-2002

Figure 4-2

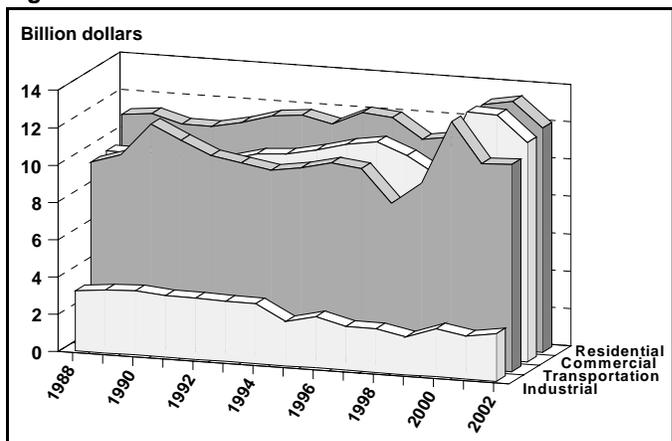


Table 4-2 (in million dollars)

	1988	1993	1998	1999	2000	2001	2002
<b>RESIDENTIAL</b>							
Coal	\$7.4	\$3.8	\$1.4	\$1.7	\$0.9	\$1.1	\$1.3
Petroleum	2,325.4	1,778.8	1,489.5	1,604.0	2,729.5	2,638.0	2,083.9
Distillate	1,933.3	1,477.4	1,206.9	1,275.9	2,188.2	2,199.4	1,740.3
Kerosene	209.8	58.0	50.4	76.0	129.9	119.9	75.7
LPG	182.3	243.1	232.2	252.1	411.4	318.7	267.9
Natural Gas	3,271.3	3,682.3	3,492.7	3,575.5	4,123.6	4,486.0	3,675.6
Electricity	5,521.2	6,183.5	5,944.4	6,003.1	6,222.0	6,197.3	6,283.5
<b>Total</b>	<b>\$11,125.2</b>	<b>\$11,648.3</b>	<b>\$10,928.0</b>	<b>\$11,184.3</b>	<b>\$13,076.0</b>	<b>\$13,322.3</b>	<b>\$12,044.2</b>
<b>COMMERCIAL</b>							
Coal	\$14.9	\$9.2	\$5.0	\$5.9	\$3.5	\$4.0	\$4.7
Petroleum	1,052.6	953.6	518.6	622.6	1,025.9	939.9	811.3
Distillate	573.6	548.2	333.3	406.7	691.9	671.2	506.9
Residual	429.2	351.3	131.1	163.4	228.7	186.3	249.4
Kerosene	10.4	22.8	26.5	22.3	52.5	43.8	22.7
LPG	39.3	31.2	27.6	30.2	52.8	38.6	32.3
Natural Gas	1,427.3	1,599.7	2,189.5	1,960.0	3,292.8	3,388.8	2,162.6
Electricity	7,210.5	7,574.9	7,902.9	7,116.7	8,829.6	8,767.4	8,798.5
<b>Total</b>	<b>\$9,705.4</b>	<b>\$10,137.3</b>	<b>\$10,616.0</b>	<b>\$9,705.1</b>	<b>\$13,151.8</b>	<b>\$13,100.1</b>	<b>\$11,777.1</b>
<b>INDUSTRIAL</b>							
Coal	\$213.9	\$140.9	\$116.7	\$137.9	\$170.9	\$173.4	\$187.5
Petroleum	322.3	271.2	185.8	202.2	334.2	235.8	203.6
Distillate	129.8	140.6	80.3	99.5	143.3	116.2	95.3
Residual	116.3	83.3	31.9	36.0	72.4	40.0	39.1
Kerosene	31.7	7.8	12.5	2.1	7.3	7.0	8.4
LPG	44.5	39.5	61.1	64.5	111.2	72.6	60.7
Natural Gas	605.0	440.3	705.5	409.2	616.9	660.3	961.4
Electricity	2,096.9	2,366.5	1,338.7	1,294.3	1,437.4	1,249.1	1,222.2
<b>Total</b>	<b>\$3,238.1</b>	<b>\$3,219.0</b>	<b>\$2,346.6</b>	<b>\$2,043.5</b>	<b>\$2,559.4</b>	<b>\$2,318.5</b>	<b>\$2,574.7</b>
<b>TRANSPORTATION</b>							
Petroleum	\$9,334.5	\$9,851.3	\$8,321.9	\$9,531.8	\$12,887.4	\$10,869.6	\$10,912.3
Distillate	1,026.3	1,339.7	1,155.2	1,371.7	1,719.2	1,458.8	1,423.7
Residual	59.1	55.2	56.0	122.4	341.4	64.7	85.7
Motor Gasoline	6,910.4	7,358.3	6,293.4	7,044.0	9,220.2	8,130.5	8,264.7
Aviation	1,331.5	1,092.9	798.0	992.8	1,595.4	1,214.5	1,137.2
LPG	7.3	5.2	19.3	0.9	11.3	1.2	1.0
Electricity	279.8	287.7	245.0	245.2	246.9	158.7	222.3
<b>Total</b>	<b>\$9,614.3</b>	<b>\$10,138.9</b>	<b>\$8,567.0</b>	<b>\$9,777.0</b>	<b>\$13,134.3</b>	<b>\$11,028.3</b>	<b>\$11,134.6</b>
<b>TOTAL</b>							
Coal	\$236.3	\$153.9	\$123.1	\$145.4	\$175.3	\$178.5	\$193.5
Petroleum	13,034.7	12,854.7	10,515.7	11,960.6	16,977.0	14,683.3	14,011.1
Distillate	3,663.0	3,506.0	2,775.7	3,153.8	4,742.5	4,445.5	3,766.2
Residual	604.6	489.8	219.0	321.9	642.6	291.0	374.2
Motor Gasoline	6,910.4	7,358.3	6,293.4	7,044.0	9,220.2	8,130.5	8,264.7
Kerosene	251.9	88.7	89.4	100.4	189.7	170.7	106.9
Aviation	1,331.5	1,092.9	798.0	992.8	1,595.4	1,214.5	1,137.2
LPG	273.4	3,19.1	340.2	347.7	586.7	431.1	361.9
Natural Gas	5,303.6	5,722.3	6,387.7	5,944.7	8,033.2	8,535.0	6,799.6
Electricity	15,108.4	16,412.6	15,431.0	14,659.3	16,735.9	16,372.5	16,526.4
<b>Total</b>	<b>\$33,683.0</b>	<b>\$35,143.5</b>	<b>\$32,457.6</b>	<b>\$32,710.0</b>	<b>\$41,921.5</b>	<b>\$39,769.3</b>	<b>\$37,530.6</b>

Source: Appendix I, source number 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 21, 22, 25, 26, and 28.

## **Section 5**

# **NEW YORK'S SOURCES OF ENERGY**

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New York is the fourth largest energy user of all the states, and 11 percent of its total primary energy requirements are met from in-state resources as compared to 75 percent for the nation. Hydroelectric power is produced at various locations throughout New York, including 28 large projects and approximately 340 small (less than 10 MW) projects. Crude oil and natural gas production are mostly located in the western region of the State. Biofuels are derived primarily from wood, wastes, and agricultural products.

Households, businesses, industries, and electric utilities in New York rely largely on fuels that originate elsewhere in the United States or from abroad. In estimating New York sources of petroleum products, state-level data on shipments of domestic crude, refined oil, and final destination of imported oil are unavailable. Consequently, New York oil dependence is estimated by applying Petroleum Administration for Defense Districts 1, which includes all East Coast states, fuel-specific reliance estimates to the New York petroleum-product mix.

## Key Observations about 2002 New York State Source of Energy Data

- ✓ Eleven percent (11%) of New York's total primary energy requirements were met from in-state resources, including 5% from hydropower and 5% from biofuels.
- ✓ Hydroelectric power and energy from biofuels account for 47% and 45%, respectively, of New York's in-state primary energy production, while crude oil and natural gas comprise the remaining 8%.
- ✓ Indigenous crude oil and natural gas production represent 0.1% and 2.9%, respectively of the State's use of these fuels. New York consumers rely 100% on external sources for refined petroleum fuel products because there are no petroleum refineries in the State.
- ✓ Hydroelectric power production has been relatively low the past four years due to low water volume, ranging from 5% to 10% below normal.
- ✓ In-state production of natural gas increased 32% from 2001, while hydroelectric power and biofuels production rose 10% and 3%, respectively.
- ✓ In 2002, natural gas production in the state experienced a near-record level (36.8 Bcf) and accounted for 0.9% of total Statewide energy annual use. Natural gas peak production in New York occurred in 1938 at nearly 40 Bcf.
- ✓ New York's reliance on foreign oil as a proportion of total petroleum use was 85% in 2002 (about the same as 2001), which was greater than the 71% level of 1988.
- ✓ The share of New York's oil provided by Organization of Petroleum Exporting Countries (OPEC) decreased from 44% in 2001 to 38%, while the share from non-OPEC sources increased from 41% to 47%.

# New York State Primary Energy Production by Fuel Type, 1988-2002

Figure 5-1

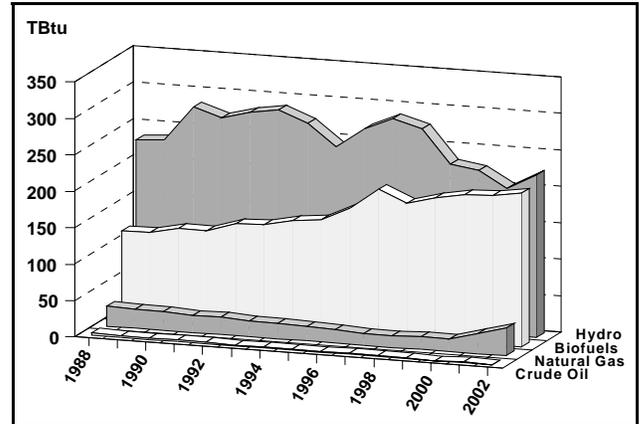


Table 5-1a (in physical units)

Year	Hydro- electricity GWh	Natural Gas MMcf	Crude Oil Mbbbl
1988	23,994	28,125	567
1989	23,918	25,673	496
1990	27,134	25,112	417
1991	26,165	23,438	426
1992	27,025	23,600	406
1993	28,308	21,929	341
1994	26,645	21,551	299
1995	24,831	19,312	304
1996	27,805	18,244	309
1997	29,525	16,189	276
1998	28,158	16,608	217
1999	23,643	16,836	193
2000	23,919	17,784	179
2001	21,831	27,948	183
2002	23,997	36,814	179

Table 5-1b (in trillion Btu)

Year	Hydro- electricity TBtu	Natural Gas TBtu	Crude Oil TBtu	Biofuels <sup>1</sup> TBtu	Energy Production TBtu
1988	230.9	28.9	3.3	119.2	382.3
1989	234.3	26.5	2.9	119.6	383.2
1990	283.0	25.9	2.4	127.4	438.7
1991	269.9	24.1	2.5	127.2	423.7
1992	280.2	24.3	2.4	140.2	447.1
1993	286.6	22.5	2.0	141.5	452.6
1994	270.8	22.2	1.7	149.9	444.6
1995	242.2	19.8	1.8	154.8	418.6
1996	269.5	18.7	1.8	173.2	463.2
1997	286.2	16.6	1.6	202.0	506.4
1998	274.7	17.1	1.3	185.8	478.9
1999	229.7	17.3	1.1	196.2	444.3
2000	224.8	18.2	1.0	202.7	446.8
2001	201.4	28.6	1.1	205.5	436.6
2002	223.0	37.7	1.0	211.3	473.1

<sup>1</sup> Includes primarily wood, wastes, and ethanol.  
Source: Appendix I, source number 3, 5, and 23.

# New York State Estimated Sources of Petroleum Products, 1988-2002

Figure 5-2

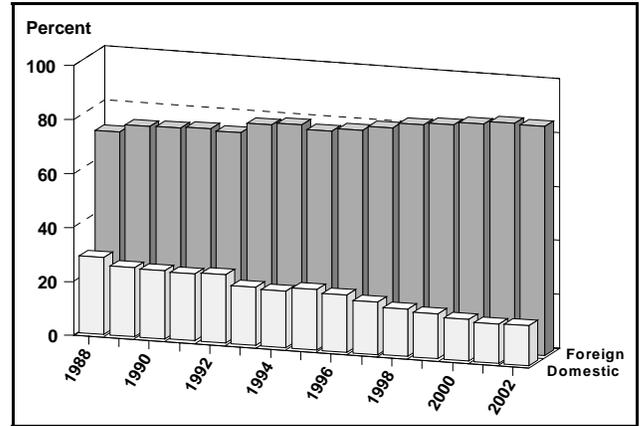


Table 5-2 - New York State

Year	Total Domestic %	Total Foreign %	OPEC <sup>1</sup> %	Non-OPEC <sup>2</sup> %
1988	28.7	71.3	37.4	33.9
1989	25.7	74.3	44.3	30.0
1990	25.5	74.5	40.3	34.2
1991	24.8	75.2	47.0	28.2
1992	25.5	74.5	45.3	29.2
1993	21.8	78.2	46.4	31.8
1994	21.1	78.9	45.0	33.9
1995	22.6	77.4	43.9	33.5
1996	21.3	78.7	40.9	37.8
1997	19.7	80.3	41.7	38.6
1998	17.6	82.4	43.4	39.0
1999	16.7	83.3	42.6	40.7
2000	15.6	84.4	43.4	41.0
2001	14.6	85.4	44.0	41.4
2002	15.0	85.0	37.9	47.1

<sup>1</sup> OPEC, the largest contributors are Saudi Arabia, Venezuela, Nigeria and Iraq.

<sup>2</sup> Non-OPEC, the largest contributors are Canada, Mexico, Norway and United Kingdom  
Source: Appendix I, source number 1, 5, 9, 10, 21, and 26.

## Section 6

# APPENDICES

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## **Appendix A**

### **Major Energy Supplier Filings**

Prior to the expiration of Article 6 of the Energy Law on January 1, 2003, major energy suppliers in New York were required to file information and data with the New York State Planning Board (Planning Board).<sup>1</sup> The information was required to be filed by July 1 each year, however, certain forecast and petroleum data were required to be filed only in even-numbered years. Regulations promulgated by the Planning Board<sup>2</sup> identified the specific types of information which major energy suppliers in various categories were required to file, including:

1. A twenty-year forecast of energy demand and supply requirements,
2. An assessment of existing supply resources,
3. An inventory of electric generation and transmission facilities,
4. Research and development plans,
5. Energy price projections,
6. Load forecasting methodologies, and
7. Proposed policies, objectives, and strategies for meeting the State's future electricity needs.

With the expiration of Article 6, several proposals to continue this effort have been introduced in the State Legislature. In lieu of a legislative mandate, NYSERDA, which had served as the records access and secretariat organization to the Planning Board, sought voluntary compliance with Planning Board regulations until such time as new energy planning legislation is adopted. Such voluntary filings will help maintain a consistent data set for planning and policy purposes and continue the good working relationship that the Planning Board agencies and authority staffs have developed over the years with major energy suppliers.

The response to the call for voluntary filings was very positive and the discussion below briefly summarizes the information and data provided in 2003<sup>3</sup> by major energy suppliers in the electricity, petroleum, natural gas, and coal industries.

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<sup>1</sup> Separate filing requirements applied to the following groups of energy suppliers: the New York Power Pool (precursor to the New York Independent System Operator); the New York Gas Group; petroleum suppliers; petroleum pipeline and barge operators; coal suppliers; alternative power producers; intrastate natural gas pipeline companies; and municipally operated electric utilities.

<sup>2</sup> Title 9 NYCRR Parts 7840-7863.

<sup>3</sup> Data and information filed by major energy suppliers are reported for the preceding calendar year, in this case, for the year 2002. For major petroleum suppliers for which data and information is filed only in even numbered years, two preceding calendar years of data and information are reported.

## **Electricity (9 NYCRR Parts 7857,7861, and 7863)**

Alternative power producers, transmission facility owners, municipal electric utilities, and the New York Independent System Operator (NYISO)<sup>4</sup> filed information with the Planning Board. The NYISO's *2003 Load and Capacity Data* filing provides electricity system information, including:

- Forecasts of peak load, energy requirements, and demandside management,
- Existing resource capacity and planned changes,
- Existing and proposed transmission facilities, and
- Normal power transfer limits.

2002 Electricity Requirements. The filings show that New York's total electric energy requirements for 2002 were 158,740 gigawatt hours, with net imports providing approximately 15,400 gigawatt hours or 10 percent of the total. Imports accounted for only 7.5 percent of New York's electric requirements in 2001.

Growth Forecast. The transmission owners, in aggregate, forecast a 1.1 percent annual peak load growth rate and a 1.3 percent annual energy requirement growth rate for the years 2003 through 2022. This compares to the 2002 State Energy Plan's (Energy Plan's)<sup>5</sup> forecasted annual growth bandwidths of 0.75 to 1.23 percent for peak and 0.76 to 1.32 percent for energy from 2002 through 2020.

Generation Reserves. Assuming the 18 percent reserve margin requirement established by the New York State Reliability Council (NYSRC) remains in effect, the NYISO projects that in-state existing and planned generation capacity plus known purchases and sales with neighboring control areas should provide sufficient generation capacity to meet the reserve requirement through 2015. The NYISO projection assumed approximately 9,582 megawatts of new capacity would become available through 2007. The 9,582 megawatts represent the capacity of units approved by the Article X Siting Board, proposed units with applications accepted but not yet approved by the Siting Board, and other smaller projects as of the date of the NYISO's filing. For comparison, the Energy Plan's "Reference Resource Scenario" assumed that 5,224 megawatts of new Article X capacity could become available, along with another 1,000 megawatts of out-of-state capacity committed to New York, to satisfy the resource requirements of the State through most of the planning period, for a total addition of 6,224 megawatts of new capacity additions.

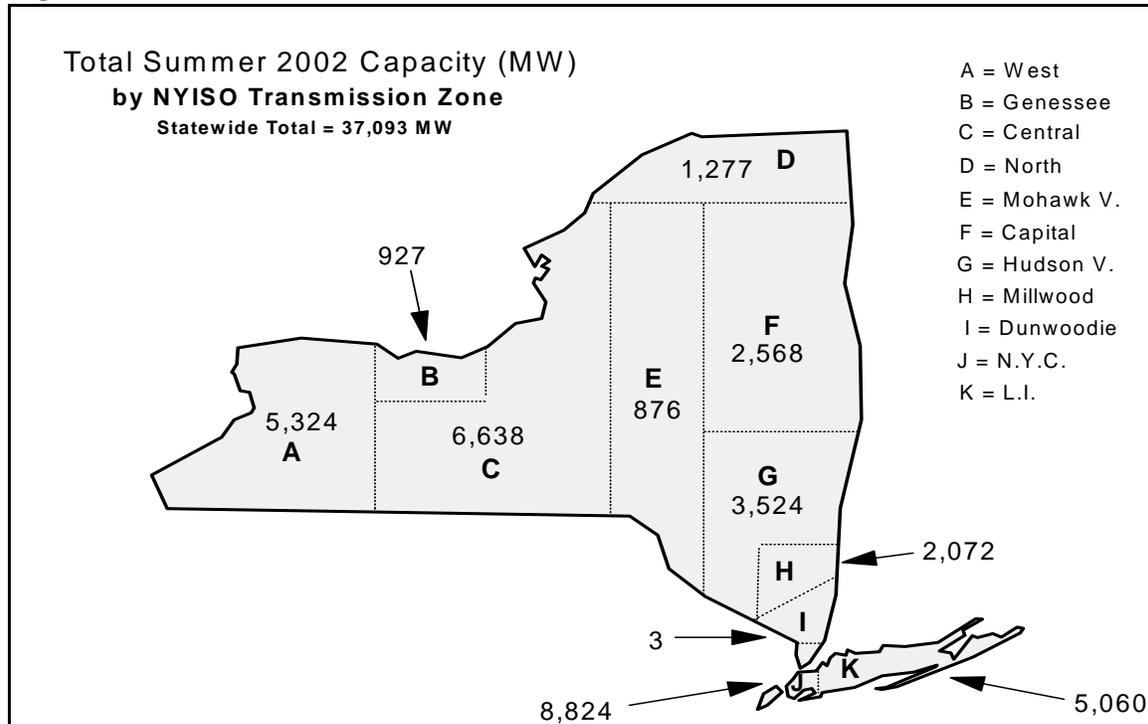
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<sup>4</sup> On December 1, 1999, the NYISO assumed responsibility for the operation of New York State's bulk power system and the newly established wholesale electric energy markets. Prior to December 1, 1999, operation of the bulk power system was the responsibility of the New York Power Pool (NYPP) which had specific statutory and regulatory responsibility for filing electric system information with the Board. Since its inception, the NYISO has fulfilled the filing responsibilities of the former NYPP.

<sup>5</sup> New York State Energy Planning Board, *New York State Energy Plan and Final Environmental Impact Statement*, June 2002.

Figure A-1 provides New York's in-state 2002 summer electricity generating capacity by NYISO transmission zone. Long Island, Zone K, showed the greatest zonal capacity increase from 2001, a 541 megawatts increase. New York City and Long

**Figure A-1**



Island, Zones J & K collectively, were home to approximately 37 percent of New York State's summer 2002 electricity generating capacity, up from 36 percent in 2001. For comparison purposes, the summer 2002 systemwide integrated peak hour demand was 30,662 megawatts and New York City and Long Island were responsible for 15,393 megawatts of that demand or 50 percent. In 2003, New York City and Long Island accounted for 15,233 megawatts of the integrated summer peak demand of 30,333 megawatts, also 50 percent. Table A-1 provides a breakdown of summer generation capacity by fuel source and NYISO transmission zone as of January 1, 2003.

Response to Request for Voluntary Filing. Alternative power producers, transmission owners, and municipal electric utilities filed information regarding generation units they owned and operated during 2002. A total of 91 filings, representing more than 600 generating units, has been received as of December 16, 2003. Some electricity generators submitted a single filing providing data for all their facilities, while others provided separate filings for individual generating stations. Generation owners have submitted filings representing approximately 84 percent of New York State's summer 2002 generation capacity.

**Table A-1**

<b>Approximate 2002 Summer Capacity by Type &amp; Transmission Zone (megawatts)</b>												
<b>Type</b>	<b>NYISO Transmission Zone</b>											
	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>NYS</b>
<b>Natural Gas Only</b>	315	131	449	320	331	300	0	0	0	1,360	796	4,002
<b>Petroleum Only (#2 or #6)</b>	1	14	1,689	2	0	0	41	46	0	810	1,150	3,753
<b>Duel-Fueled (NG &amp; Oil)</b>	192	0	1,034	0	0	779	2,651	0	0	6,654	2,994	14,304
<b>Nuclear</b>	0	498	2,606	0	0	0	0	1,975	0	0	0	5,079
<b>Coal</b>	2,087	247	674	0	52	0	723	0	0	0	0	3,783
<b>Hydro</b>	2,692	30	122	937	465	1,477	100	0	3	0	0	5,826
<b>Other (Wood, Refuse, Wind)</b>	37	7	64	18	28	12	9	51	0	0	120	346
<b>Totals</b>	5,324	927	6,638	1,277	876	2,568	3,524	2,072	3	8,824	5,060	37,093

**Petroleum (9 NYCRR Part 7859)**

Under Planning Board regulations, major petroleum product suppliers and transporters were required to file reports with the Board in alternate years. The reports would provide data covering the previous two calendar years. Since such suppliers filed reports with the Energy Planning Board in 2002, NYSERDA did not request voluntary reports from them in 2003. However, the following summary information comes from NYSERDA's regular petroleum industry monitoring activities. In 2002, the use of refined petroleum products accounted for 40 percent of total statewide primary energy consumption. Motor gasoline use represents the largest share (43%) of petroleum use, followed by distillate fuel oil (27%) which is also used for transportation and for space heating. Considering all petroleum products used in New York, 66 percent is used to transport goods and people, 13 percent is used in residences, 10 percent is used for electricity generation, and 9 percent is used in the commercial sector.

**Natural Gas (9 NYCRR Parts 7858 and 7862)**

On January 1, 2003, the New York Gas Group and the New England Gas Association joined to form the Northeast Gas Association. As the successor to the New York Gas Group, the Northeast Gas Association voluntarily filed an annual energy supplier report on behalf of its New York members.<sup>6</sup> Six major interstate natural gas

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<sup>6</sup> The Northeast Gas Association is the natural gas association for the local distribution companies (LDCs) in New York State and New England. The New York members of the Northeast Gas Association Planning include: Central Hudson Gas and Electric Corp.; Consolidated Edison Company of New York, Inc.; Corning Natural Gas Corp.; KeySpan Energy Delivery (both New York and Long Island); National Fuel Gas Distribution Co.; New York State Electric & Gas Corp.; Niagara Mohawk, a National Grid Company; Orange & Rockland Utilities, Inc.; Rochester Gas & Electric Corp.; and St. Lawrence Gas Company, Inc.

reports with NYSERDA.<sup>7</sup> As was allowed by the Planning Board's regulations, the pipeline companies submitted a copy of their respective Federal Energy Regulatory Commission (FERC) Form 2, which includes detailed information on pipeline capacity, contract quantities, and deliveries. The following are some highlights of the natural gas information provided to NYSERDA.

Customers Served. As of October 31, 2002, New York had approximately 4.6 million natural gas customers. Residential customers numbered approximately 4.16 million; commercial and industrial customers numbered 398,098. By contract type, New York had 4,181,526 firm customers,<sup>8</sup> 1,593 interruptible customers,<sup>9</sup> and 371,127 transportation service customers.<sup>10</sup>

Natural Gas Prices. In the twelve-month period that ended October 31, 2002, the composite delivered cost of natural gas to all firm sales customers ranged from \$5.58 to \$11.04 per dekatherm (one million Btu). The range for firm sales residential heating customers was \$6.22 to \$12.76 per dekatherm, and for firm sales commercial/industrial customers was \$5.12 to 9.36 per dekatherm. The composite average delivered cost for interruptible gas service ranged from \$4.24 to \$5.99 per dekatherm.

Natural Gas Demand. In the twelve month period that ended October 31, 2002, total demand equaled 1,206,346 thousand dekatherms (MDT), with firm service demand totaling 449,489 MDT, interruptible demand at 70,564 MDT, electricity generation demand at 370,530MDT, and transportation service demand at 240,719 MDT.

Other information of interest from previous years filings and still relevant today include the following:

- Net interstate natural gas pipeline capacity is approximately 5.1 billion cubic feet per day.
- The majority of New York's natural gas comes from U.S. domestic supplies,

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<sup>7</sup> The pipeline companies that filed information in 2003 are: Columbia Gas Transmission; Dominion Transmission, Inc.; Iroquois Gas Transmission System; National Fuel Gas Supply Co.; Texas Eastern Pipeline Co.; and Transcontinental Gas Pipe Line Corp.

<sup>8</sup> Firm service refers to the delivery of natural gas without interruption to a customer. This service generally is the highest priority and provided at a higher cost. Residential and small commercial and industrial customers are usually firm service customers and transportation customers can be firm service customers as well.

<sup>9</sup> Interruptible service refers to the delivery of natural gas to a customer, subject to interruption of service at the discretion of the utility, generally because of system supply or capacity limitations. Interruption may be manually controlled by the utility or may be automatic, based on outside temperatures. Interruptible customers generally pay a discounted rate for natural gas service.

<sup>10</sup> Transportation service customers purchase natural gas from a supplier other than their local gas distribution company (LDC), but the LDC transports and delivers the gas through its pipeline system.

primarily from the Gulf Coast. A significant portion of the remainder comes from western Canada. New York is also interconnected with a pipeline network that now has access to offshore supplies in eastern Canada.

- New York has over 54,000 miles of natural gas pipeline, an increase of nearly 16 percent since 1990.

**Coal (9 NYCRR Part 7860)**

Under the former Planning Board's regulations, coal suppliers were required to file information only at the request of the Chair of the Planning Board. No information was required to be submitted in 2003. However, NYSERDA monitors coal use in New York by reviewing data regularly compiled by the U.S. DOE EIA. In 2002, coal comprised 7 percent of total statewide primary energy consumption. In particular, coal accounts for 13 percent of electricity generation in New York, compared to more than 53 percent in the United States as a whole.

**Appendix B**  
**New York State**  
**Greenhouse Gas Emissions from Fuel Combustion,**  
**1990, 2000 and 2002**

**Table B-1 (in million metric tons carbon equivalent)**

By Sector	1990		2000		2002		Percent Change 1990 - 2002
	CO <sub>2</sub>	Total GHG	CO <sub>2</sub>	Total GHG	CO <sub>2</sub>	Total GHG	Total GHG
Electric Generation	17.75	17.82	14.27	14.32	13.72	13.76	-23%
Residential	8.53	8.67	10.49	10.72	9.70	9.94	+15%
Commercial	6.86	6.90	8.98	9.03	7.98	8.03	+16%
Industrial	3.96	4.01	4.81	4.88	5.46	5.53	+38%
Transportation	19.79	20.62	19.22	20.01	19.44	20.25	-2%
<b>Total</b>	<b>56.89</b>	<b>58.01</b>	<b>57.77</b>	<b>58.96</b>	<b>56.29</b>	<b>57.51</b>	<b>-1%</b>

**Table B-2 (in million metric tons carbon equivalent)**

By Fuel Type	1990		2000		2002		Percent Change 1990 - 2002
	CO <sub>2</sub>	Total GHG	CO <sub>2</sub>	Total GHG	CO <sub>2</sub>	Total GHG	Total GHG
Coal	8.19	8.25	7.36	7.41	6.59	6.64	-20%
Natural Gas	12.80	12.83	18.97	19.02	18.51	18.55	+45%
Petroleum Products	35.90	36.80	31.44	32.28	31.19	32.05	-13%
Wood	0.00	0.13	0.00	0.25	0.00	0.27	+108%
<b>Total</b>	<b>56.89</b>	<b>58.01</b>	<b>57.77</b>	<b>58.96</b>	<b>56.29</b>	<b>57.51</b>	<b>-1%</b>

Notes:

1. Total Greenhouse Gas (GHG) emissions from fuel combustion include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).
2. CO<sub>2</sub> and total GHG emissions are expressed in millions of metric tons of carbon equivalent. One metric ton equals approximately 2,200 pounds. One metric ton of carbon equivalent equals approximately 3.67 metric tons of CO<sub>2</sub>. The carbon equivalent refers to the portion of the CO<sub>2</sub> molecule that is comprised of carbon.

**Appendix C**  
**New York State**  
**Household Consumption and Expenditures by End Use, 2001**

**Table C-1 Total Household Energy**

	Households <sup>1</sup> (MM)	Average per Household	
		Consumption	Expenditure
Electricity	7.1	5,973 kWh	\$870
Natural Gas	5.4	69 Mcf	\$829
Fuel Oil	2.2	511 gallons	\$624
Kerosene	0.2	163 gallons	\$219
LPG	0.5	Q	\$314
Wood	0.7	4 cords	Q

**Table C-2 Space-Heating**

	Households <sup>1</sup> (MM)	Average per Household	
		Consumption	Expenditure
Electricity	0.5	3,544 kWh	\$473
Natural Gas	4.2	63 Mcf	\$737
Fuel Oil	2.1	389 gallons	\$478

**Table C-3 Water-Heating**

	Households <sup>1</sup> (MM)	Average per Household	
		Consumption	Expenditure
Electricity	0.9	2,390 kWh	\$273
Natural Gas	4.4	17 Mcf	\$205
Fuel Oil	1.7	179 gallons	\$206

**Table C-4 Electric Air Conditioning**

	Households <sup>1</sup> (MM)	Average per Household	
		Consumption	Expenditure
Central Air	1.3	961 kWh	\$138
Room/Wall	3.4	593 kWh	\$96

<sup>1</sup> The 7.1 million households represent New York single family, mobile home, and multifamily housing units.

Note: Some households may use multiple space heating fuels.

Q = Data has been withheld.

Source: Appendix I, source number 14.

## Appendix D

### Estimated Annual Gasoline Consumption by County, 1997-2002

Table D-1 (in thousand gallons)

County	1997	1998	1999	2000	2001	2002
<b>New York State</b>	<b>5,627,351</b>	<b>5,641,370</b>	<b>5,766,518</b>	<b>5,639,889</b>	<b>5,678,637</b>	<b>5,808,184</b>
<b>New York City</b>	<b>1,072,005</b>	<b>1,094,937</b>	<b>1,131,514</b>	<b>1,170,409</b>	<b>1,067,498</b>	<b>1,103,253</b>
<b>Rest of State</b>	<b>4,555,346</b>	<b>4,546,433</b>	<b>4,635,004</b>	<b>4,469,480</b>	<b>4,611,139</b>	<b>4,704,931</b>
Albany	151,215	145,182	158,949	166,571	161,353	151,685
Allegany	22,634	20,758	23,632	20,459	19,656	16,553
Broome	106,428	103,589	100,705	102,659	106,609	105,749
Cattaraugus	30,932	28,438	30,222	28,849	26,712	25,771
Cayuga	38,734	37,409	37,957	37,328	40,182	41,591
Chautauqua	49,662	45,952	47,472	44,440	43,811	44,005
Chemung	32,938	33,957	33,921	31,894	30,154	29,583
Chenango	23,855	22,637	21,187	19,127	17,609	19,054
Clinton	39,672	38,690	40,595	38,530	39,337	39,019
Columbia	36,078	36,004	37,449	37,378	41,395	41,858
Cortland	29,640	29,370	29,942	27,418	28,216	28,432
Delaware	17,804	17,305	17,316	16,722	16,004	21,674
Dutchess	104,202	104,901	109,229	111,171	119,057	118,291
Erie	389,595	381,306	403,948	371,092	384,624	378,554
Essex	18,378	17,933	20,140	18,736	19,113	18,945
Franklin	19,210	17,754	18,392	18,111	19,125	17,920
Fulton	21,446	18,693	20,417	22,515	25,796	26,368
Genesee	46,394	50,236	54,292	61,463	58,960	60,403
Greene	28,978	28,687	31,201	28,439	29,762	31,188
Hamilton	3,093	3,165	3,635	3,328	3,481	3,429
Herkimer	30,746	29,680	32,148	30,493	31,372	32,956
Jefferson	52,054	51,113	51,419	49,642	46,696	47,121
Lewis	12,438	12,258	13,727	11,789	12,727	13,458
Livingston	37,478	36,919	38,780	38,024	35,466	35,638
Madison	23,660	22,944	25,642	23,429	22,118	21,351
Monroe	306,444	301,102	303,912	289,886	295,559	295,862
Montgomery	34,689	36,234	35,251	34,225	38,032	37,722
Nassau	555,507	561,483	563,340	511,090	542,526	562,498
Niagara	75,509	70,751	71,755	64,989	63,223	62,885
Oneida	105,837	103,337	105,862	100,703	102,982	106,022
Onondaga	202,664	201,478	201,285	196,684	205,041	214,850
Ontario	58,163	57,026	58,256	63,065	66,168	64,096
Orange	134,804	138,709	145,006	136,916	142,036	148,960
Orleans	16,345	15,641	14,834	13,479	13,999	13,995
Oswego	45,505	53,860	59,838	53,821	53,345	57,282
Otsego	28,363	27,794	26,851	29,252	30,343	30,523
Putnam	39,095	40,480	39,191	42,458	40,946	38,569
Rensselaer	61,935	58,236	60,462	69,046	65,917	65,224
Rockland	56,274	55,608	57,584	59,904	53,624	63,929
St. Lawrence	40,578	39,610	40,945	41,101	42,807	39,292
Saratoga	85,752	78,743	83,761	88,098	91,897	97,650
Schenectady	69,618	57,264	64,746	61,742	63,683	63,168
Schoharie	12,741	12,481	12,901	12,000	12,935	13,634
Schuyler	7,344	8,164	8,099	8,385	8,977	9,604
Seneca	14,081	14,275	15,192	14,838	15,509	16,444
Steuben	47,380	48,304	49,701	50,325	48,969	49,664
Suffolk	628,699	661,438	647,105	595,715	646,923	694,013
Sullivan	35,197	38,852	37,545	35,699	40,072	36,761
Tioga	19,861	20,990	20,316	19,807	20,672	20,572
Tompkins	37,548	36,677	36,141	34,198	36,539	36,993
Ulster	77,801	76,546	80,222	80,144	83,198	84,705
Warren	37,996	37,357	37,721	39,055	40,212	41,022
Washington	21,072	20,434	20,456	19,958	21,365	21,023
Wayne	43,334	41,937	42,175	40,375	41,736	40,412
Westchester	260,562	268,686	264,286	275,833	276,994	280,905
Wyoming	18,786	18,939	18,899	18,835	17,640	17,691
Yates	8,601	9,113	9,046	8,248	7,936	8,367

Source: Appendix I, source number 22 and 25.

Individual county data for New York City is not available.

## Appendix E

### Housing Units by Type of Space Heating Fuel by County, 2000

Table E-1 (in housing units)

County	Total Occupied Housing Units	Utility Gas	Bottled Tank or LP Gas	Electricity	Fuel Oil, Kerosene, etc.	Coal or Coke	Wood	Solar Energy	Other	No Fuel Used
<b>New York State</b>	7,056,860	3,651,779	237,949	615,685	2,336,714	9,563	82,613	2,539	73,671	46,347
<b>New York City</b>	3,021,588	1,601,078	80,585	246,026	996,605	2,394	465	1,757	53,822	38,856
Bronx	463,212	200,824	12,685	48,312	182,853	679	78	371	10,287	7,123
Kings	880,727	531,682	31,026	45,733	248,020	443	175	812	11,740	11,096
New York	738,644	278,978	14,530	104,981	300,758	852	128	289	23,937	14,191
Queens	782,664	463,057	20,406	42,258	243,152	402	63	265	7,189	5,872
Richmond	156,341	126,537	1,938	4,742	21,822	18	21	20	669	574
<b>Rest of State</b>	4,035,272	2,050,701	157,364	369,659	1,340,109	7,169	82,148	782	19,849	7,491
Albany	120,512	80,854	2,739	15,788	19,563	47	879	35	379	228
Allegany	18,009	10,430	1,681	1,433	2,233	113	1,977	2	126	14
Broome	80,749	53,678	3,833	7,265	13,582	196	1,625	16	440	114
Cattaraugus	32,023	17,929	3,369	3,327	4,165	80	2,842	-	288	23
Cayuga	30,558	15,263	3,504	2,686	7,329	132	1,401	3	201	39
Chautauqua	54,515	39,645	3,591	5,670	2,360	39	2,452	2	740	16
Chemung	35,049	26,366	1,263	2,792	3,107	247	960	15	233	66
Chenango	19,926	3,041	1,952	2,206	10,405	126	2,012	6	138	40
Clinton	29,423	592	740	9,348	17,246	13	1,392	-	34	58
Columbia	24,796	2,775	1,145	3,661	15,985	50	1,060	22	90	8
Cortland	18,210	9,224	1,319	1,874	4,411	133	1,090	3	138	18
Delaware	19,270	1,905	1,938	1,781	11,219	48	2,287	4	83	5
Dutchess	99,536	21,259	3,122	11,695	61,351	199	1,283	30	479	118
Erie	380,873	343,172	5,944	19,377	7,841	162	2,237	36	1,527	577
Essex	15,028	63	1,076	2,281	10,435	14	1,123	4	20	12
Franklin	17,931	129	665	2,682	12,729	5	1,608	3	85	25
Fulton	21,884	8,824	1,431	1,496	8,823	3	1,161	14	91	41
Genesee	22,770	13,098	2,140	2,238	4,379	70	653	-	166	26
Greene	18,256	993	1,188	2,167	12,780	71	1,016	4	75	22
Hamilton	2,362	2	437	130	1,423	0	359	-	9	2
Herkimer	25,734	11,024	1,172	2,479	9,476	26	1,364	12	110	71
Jefferson	40,068	16,471	3,252	5,963	11,548	53	2,243	-	369	169
Lewis	10,040	267	779	695	5,827	23	2,415	-	25	9
Livingston	22,150	10,400	2,862	2,814	4,572	152	1,176	2	149	23
Madison	25,368	10,103	1,891	2,941	8,849	77	1,299	-	157	51
Monroe	286,512	230,558	3,820	35,776	12,273	80	1,475	92	1,721	717
Montgomery	20,038	9,181	881	1,737	7,365	26	713	-	87	48
Nassau	447,387	171,500	4,268	21,212	247,586	241	157	79	1,645	699
Niagara	87,846	67,198	3,598	6,474	9,317	86	793	-	269	111
Oneida	90,496	52,374	3,200	8,743	22,464	47	2,501	9	966	192
Onondaga	181,153	137,401	4,332	24,670	10,784	206	1,655	30	1,500	575
Ontario	38,370	21,897	4,251	4,444	5,881	235	1,412	13	221	16
Orange	114,788	51,420	4,885	10,257	46,430	155	930	15	533	163
Orleans	15,363	6,345	2,086	1,685	4,445	26	689	5	74	28
Oswego	45,522	19,374	8,160	3,991	10,957	111	2,502	11	340	76
Otsego	23,291	3,393	2,581	2,264	12,652	78	2,119	-	164	40
Putnam	32,703	1,062	1,029	7,249	22,653	41	503	5	136	25
Rensselaer	59,894	25,701	2,385	7,355	22,000	66	2,009	11	173	194
Rockland	92,675	82,333	934	5,875	2,956	0	109	-	243	225
St. Lawrence	40,506	12,693	2,407	3,583	17,922	13	3,532	4	209	143
Saratoga	78,165	39,998	5,690	8,492	20,942	85	2,482	20	338	118
Schenectady	59,684	43,228	1,146	5,866	8,755	0	429	29	144	87
Schoharie	11,991	154	1,141	1,607	7,756	29	1,205	14	72	13
Schuyler	7,374	1,571	1,539	713	2,624	208	695	-	18	6
Seneca	12,630	5,676	2,250	1,169	2,740	307	350	4	111	23
Steuben	39,071	21,489	5,147	3,104	5,574	705	2,869	2	160	21
Suffolk	469,299	129,887	8,920	30,153	297,010	498	826	98	1,434	473
Sullivan	27,661	381	3,208	3,743	18,636	78	1,349	15	212	39
Tioga	19,725	5,519	1,922	1,924	8,467	440	1,397	-	23	33
Tompkins	36,420	19,214	3,098	6,144	5,696	343	1,696	7	163	59
Ulster	67,499	10,510	5,071	6,613	42,362	159	2,406	25	259	94
Warren	25,726	10,343	1,629	2,934	9,307	45	1,343	6	106	13
Washington	22,458	4,183	1,586	2,286	12,108	105	2,099	20	49	22
Wayne	34,908	18,156	3,523	3,705	7,483	106	1,783	9	95	48
Westchester	337,142	140,518	6,298	27,770	158,438	302	263	46	2,114	1,393
Wyoming	14,906	7,329	1,690	1,951	2,555	88	1,194	-	93	6
Yates	9,029	2,668	1,676	1,381	2,333	181	749	-	25	16

Source: Appendix I, source number 16.

# Appendix F

## New York State Degree-Days, 1988-2002

Figure F-1

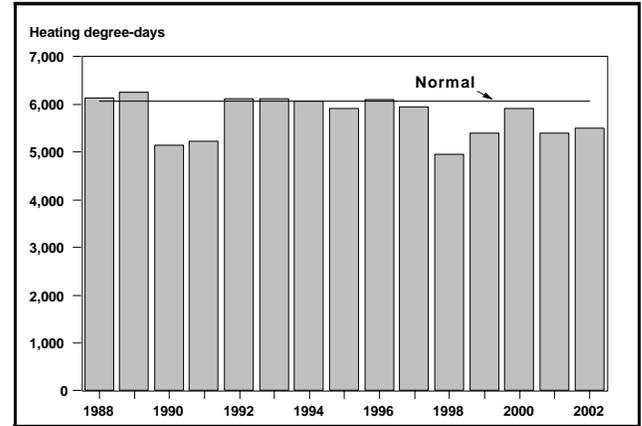


Table F-1 (monthly heating degree-days)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1988	1,229	995	843	531	198	43	1	5	113	507	621	1,048	6,134
1989	1,018	1,024	880	571	221	23	3	16	84	342	699	1,377	6,258
1990	895	864	779	479	281	29	4	12	97	260	590	845	5,135
1991	1,115	856	764	404	100	14	3	7	104	307	627	924	5,225
1992	1,079	942	940	581	246	56	18	26	97	464	685	978	6,112
1993	1,037	1,143	966	501	185	36	2	8	106	427	675	1,027	6,113
1994	1,388	1,135	915	448	269	15	1	21	101	375	532	869	6,069
1995	969	1,078	760	564	248	19	1	5	111	259	761	1,136	5,911
1996	1,196	1,008	963	535	258	21	9	9	75	377	786	858	6,095
1997	1,157	846	862	552	316	27	7	19	100	379	728	948	5,941
1998	925	808	767	458	125	35	5	7	54	328	623	813	4,948
1999	1,115	892	854	463	166	11	0	15	52	391	531	914	5,404
2000	1,185	913	692	539	188	32	17	18	97	360	693	1,176	5,910
2001	1,128	942	937	469	170	21	13	3	85	328	513	799	5,408
2002	932	836	797	420	286	25	1	4	43	415	699	1,052	5,510
<b>Normal</b>	<b>1,188</b>	<b>1,017</b>	<b>852</b>	<b>510</b>	<b>216</b>	<b>35</b>	<b>5</b>	<b>14</b>	<b>113</b>	<b>405</b>	<b>678</b>	<b>1,016</b>	<b>6,064</b>

Table F-2 (monthly cooling degree-days)

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1988	0	0	0	0	19	99	303	281	43	0	0	0	745
1989	0	0	0	0	15	132	220	195	64	4	0	0	630
1990	0	0	0	15	7	110	240	217	54	16	0	0	659
1991	0	0	0	0	71	164	260	258	50	13	0	0	816
1992	0	0	0	0	11	69	163	143	51	0	0	0	437
1993	0	0	0	0	23	113	295	231	51	0	0	0	713
1994	0	0	0	0	7	162	317	153	50	0	0	0	689
1995	0	0	0	0	9	127	301	262	49	13	0	0	761
1996	0	0	0	0	8	128	179	203	68	0	0	0	586
1997	0	0	0	0	3	108	227	177	54	0	0	0	569
1998	0	0	0	0	44	93	254	258	100	5	0	0	754
1999	0	0	0	0	26	176	362	216	95	0	0	0	875
2000	0	0	0	0	20	112	146	171	53	0	0	0	502
2001	0	0	0	0	26	142	160	291	58	5	0	0	682
2002	0	0	0	0	7	121	302	277	100	0	0	0	807
<b>Normal</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>108</b>	<b>240</b>	<b>208</b>	<b>64</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>643</b>

Note: Normal is a 30-year degree day average value for the period 1971-2000.  
 Source: Appendix I, source number 17.

## **Appendix G**

### **Abbreviations and Conversion Factors**

#### **ABBREVIATIONS**

M	thousand or 10 <sup>3</sup>
MM	million or 10 <sup>6</sup>
B	billion or 10 <sup>9</sup>
T	trillion or 10 <sup>12</sup>
bbl	barrel
Btu	British thermal unit
cf	cubic foot
CO <sub>2</sub>	carbon dioxide
gal	gallon
GDP	gross domestic product
GSP	gross state product
GWh	gigawatt hour or million kWh
kWh	kilowatt hour
LPG	liquefied petroleum gas
OPEC	Organization of Petroleum Exporting Countries
N/A	Not applicable
n.a.	Not available

#### **CONVERSION FACTORS**

Approximate heat content of various fuels (2002)

Coal	20,814,000	Btu/ton
Natural gas		
Electric utility	1,020	Btu/cf
Non-utility	1,029	Btu/cf
Wood	20,000,000	Btu/cord
Electricity	3,412	Btu/kWh
Petroleum products		
Distillate fuel oil	5,825,000	Btu/barrel
Ethanol	3,539,000	Btu/barrel
Jet fuel, kerosene-type	5,670,000	Btu/barrel
Kerosene	5,670,000	Btu/barrel
Motor gasoline	5,208,000	Btu/barrel
LPG (propane)	3,613,000	Btu/barrel
Residual fuel oil	6,287,000	Btu/barrel
(one barrel equals 42 gallons)		

## Appendix H

### Glossary

#### **GLOSSARY**

**Anthracite coal** - The highest rank coal; used primarily for residential and commercial space heating. It is a hard, brittle, and black lustrous coal, often referred to as hard coal, containing a high percentage of fixed carbon and a low percentage of volatile matter.

**Barrel (bbl)** - Liquid volume measure equal to 42 gallons, commonly used in expressing quantities of petroleum or petroleum products.

**Biofuels** - Non-fossil biomass energy sources that are essentially unprocessed; they are burned or gasified to produce thermal energy or electricity. Examples are fuel wood, waste wood, garbage, and crop waste. Different mixes of biofuels are used by each consuming sector. The residential sector burns wood for space heating. The transportation sector uses ethanol as an additive to motor gasoline. Some electric generation uses wood or municipal waste as co-firing or primary fuels.

**Bituminous coal** - Often referred to as "soft coal," is more volatile than anthracite, and has a higher heat content than lignite. It has a heating value of 11,450-13,010 Btu per pound and is the most commonly used coal.

**British thermal unit (Btu)** - The quantity of heat necessary to raise the temperature of one pound of water one degree Fahrenheit. Because different energy types use different standards of measurement, they often are converted into Btu to facilitate comparison. One Btu is equal to 252 calories of heat energy.

**Coke** - A solid carbonaceous residue derived from low-ash, low-sulfur bituminous coal from the volatile constituents are driven off by baking in an oven at temperatures as high as 2,000 degrees Fahrenheit so that the fixed carbon and residual ash are fused together.

**Combined Heat and Power (CHP)** - Includes plants designed to produce both heat and electricity from a single heat source.

**Commercial sector** - The sector of the economy that engages primarily in providing services and goods. Apartment and office buildings, governmental units, schools, institutions, churches, restaurants, and retail stores are included.

**Cord of wood** - A cord of wood measures 4 feet by 4 feet by 8 feet, or 128 cubic feet.

**Crude oil** - A mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs. Refined crude oil produces a number of different fuels, including residual fuel, motor gasoline, and distillate fuels.

**Degree-days, cooling** - A measure of temperature as it affects energy demand for space cooling. It is similar to heating degree-days, although the relationship is not as precise. If the average of a day's high and low temperature extremes is below 65°F, then the cooling degree-days for that day are zero; otherwise, they are equal to the difference between the average and 65°F.

**Degree-days, heating** - A measure of temperature as it affects energy demand for space heating. It is based on the fact that most buildings require no heat to maintain an inside temperature of at least 70°F when the daily mean is 65°F or higher. If the average of a day's high and low temperature extremes is above 65°F, the heating degree-days for that day are taken to be zero; otherwise, they are equal to the difference between the average and 65°F. Note that a larger number of heating degree-days implies cooler temperatures.

**Distillate fuel** - A category of fuels comprised of No. 1 and 2 heating oils, diesel fuels, and No. 4 fuel oil. These products are used primarily for space heating, on-highway and off-road diesel engine fuel (including railroad engine fuel), and electric power generation.

**Electric generation** - Includes both publicly and privately owned generating plants in New York State.

**End-use** - Any ultimate consumption of any type of fossil fuel (petroleum, coal, natural gas) or electricity, whether generated by fossil fuel or other energy sources. End-users are often classified by economic sector, such as residential, commercial, industrial, and transportation.

**Feedstock** - The raw material furnished to a machine or process. Fossil fuels sometimes are used as feedstocks for their chemical properties, rather than their values as fuel (e.g., oil used to produce plastics and synthetic fabrics).

**Gallon (gal)** - A unit of volume, the U.S. gallon contains 3.785 liters and is .083 times the imperial gallon. One U.S. gallon of water weighs 8.3 pounds.

**Gigawatt (GW)** - One million kilowatts, or one billion watts.

**Gigawatt hour (GWh)** - One million kilowatt hours, or one billion watt hours.

**Hydro** - A prefix used to identify a type of generating station, power, or energy output in which the prime mover is water.

**Industrial sector** - That section of the economy involved in either mining, construction, or manufacturing.

**Jet fuel** - Includes both naphtha- and kerosene-type jet fuels that meet standards for use in aircraft turbine engines. Some jet fuel is used for generating electricity in gas turbines.

**Kerosene** - A petroleum middle distillate with burning properties suitable for use as an illuminant when burned in wick lamps. Kerosene also is used in space heaters, cooking stoves, and water heaters and to reduce viscosity of distillate fuels during winter.

**Kilowatt (kW)** - One thousand watts.

**Kilowatt hour (kWh)** - The amount of electrical energy involved with a one kilowatt demand over a period of one hour. One kilowatt hour is equivalent to 3,412 Btu.

**Liquefied petroleum gases (LPG)** - Propane, propylene, butane, and propane-butane mixtures produced at a refinery or natural gas-processing plant, including plants that fractionate raw natural gas-processing plant liquids. These are derived by refining and processing natural gas, crude oil, or unfinished oil.

**Mcf** - One thousand cubic feet.

**Megawatt (MW)** - One thousand kilowatts or one million watts.

**Megawatt hour (MWh)** - One thousand kilowatt hours, or one million watt hours.

**Motor gasoline** - A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives, that have been blended to form a fuel suitable for use in spark-ignition engines. Included are leaded and unleaded refinery products.

**Natural gas** - A mixture of hydrocarbon compounds and small quantities of various nonhydrocarbons existing in the gaseous phase ("gas well" gas) or in solution with crude oil ("oil well" gas) in natural underground reservoirs at reservoir conditions. It comes from the ground with or without accompanying crude oil and is generally much higher in heat content than manufactured gas.

**Naphtha** - A general term applied to a petroleum fraction with an approximate boiling range between 122 and 400° F.

**Nuclear** - The energy liberated by fission, fusion, or radioactive decay.

**Organization of Petroleum Exporting Countries (OPEC)** - OPEC includes Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

**Petroleum** - A general term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oil, and refined nonhydrocarbon compounds blended into finished petroleum products.

**Propane** - A colorless, highly volatile hydrocarbon that is readily recovered as a liquefied gas at natural gas-processing plants and refineries. It is used primarily for residential and commercial heating and cooling, and also as a fuel for transportation and industrial uses, including petrochemical feedstocks. Propane is the first product refined from crude petroleum.

**Refined petroleum** - Products made from processing crude oil, unfinished oils, natural gas liquids, and other miscellaneous hydrocarbon compounds. Includes aviation gasoline, motor gasoline, naphtha- and kerosene-type jet fuels, kerosene, distillate fuel oil, residual fuel oil, ethane, liquefied petroleum gases, petrochemical feedstocks, special naphthas, lubricants, paraffin wax, petroleum coke, asphalt, road oil, till gas, and miscellaneous products.

**Residential sector** - Includes private households. Specifically included are the following end-uses: space heating and cooling, water heating, cooking, lighting, clothes drying, and refrigeration.

**Residual fuel** - The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations. Included are products known as No. 5 and 6 fuel oil, heavy diesel oil, Navy Special Fuel Oil, Bunker C oil, and acid sludge and pitch used as refinery fuels. Residual fuel oil is used for production of electric power, space heating, vessel bunkering, and various industrial purposes.

**Short Ton (Coal)** - A unit of weight equal to 2,000 pounds.

**Therm** - 100,000 Btu.

**Trillion (T)** - 1,000,000,000,000, or  $10^{12}$ .

**Ton** - In the United States, Canada, and Union of South Africa, a unit of weight equal to 2,000 pounds. The American ton is often called the "short ton". The metric or "long ton" equals 2,204.62 pounds.

**Watt (W)** - The unit of measure for electric power or rate of doing work. The rate of energy transfer equivalent to one ampere flowing under a pressure of one volt at unity power factor. It is analogous to horsepower or foot-pounds per minute of mechanical power. One horsepower is equivalent to approximately 746 watts.

**Watt-hour (Wh)** - An electrical energy unit of measure equal to one watt of power supplied to, or taken from, an electrical circuit operating continuously for one hour.

## **Appendix I** **Data Sources**

### **Source Number**

1. ***State Energy Data Report*** - U.S. Department of Energy, Energy Information Administration (U.S. DOE/EIA)
2. ***State Energy Price & Expenditure Report*** - U.S. DOE/EIA
3. ***Annual Energy Review*** - U.S. DOE/EIA
4. ***Monthly Energy Review*** - U.S. DOE/EIA
5. ***Electric Power Annual*** - U.S. DOE/EIA
6. ***Electric Power Monthly*** - U.S. DOE/EIA
7. ***Natural Gas Annual*** - U.S. DOE/EIA
8. ***Natural Gas Monthly*** - U.S. DOE/EIA
9. ***Petroleum Supply Annual*** - U.S. DOE/EIA
10. ***Sales of Fuel Oil and Kerosene*** - U.S. DOE/EIA
11. ***Retail Motor Gasoline Price Report*** - U.S. DOE/EIA
12. ***Quarterly Coal Report*** - U.S. DOE/EIA
13. ***Coal Distribution Report*** - U.S. DOE/EIA
14. ***Residential Energy Consumption Survey*** - U.S. DOE/EIA
15. ***Detailed Population Characteristics*** - U.S. Bureau of the Census
16. ***Detailed Housing Characteristics*** - U.S. Bureau of the Census
17. ***Heating and Cooling Degree-day Report*** - U.S. National Climatic Data Center
18. ***Employment and Earnings*** - U.S. Bureau of Labor Statistics
19. ***Survey of Current Business*** - U.S. Bureau of Economic Analysis
20. ***United States Highway Statistics*** - U.S. Federal Highway Administration
21. ***Motor Gasoline Reported by State*** - U.S. Federal Highway Administration
22. ***State Heating Oil & Propane Program*** - N.Y.S. Energy Research and Development Authority
23. ***New York State, Gas and Mineral Resources*** - N.Y.S. Department of Environmental Conservation
24. ***Highway Statistics for New York State*** - N.Y.S. Department of Motor Vehicles
25. ***Motor Fuel Gallonage & Revenue Report*** - N.Y.S. Department of Taxation & Finance
26. ***Aviation Statistics*** - Port Authority of New York & New Jersey,
27. ***Load & Capacity Data Report*** - New York Independent System Operator
28. ***Annual Report to N.Y.S. Public Service Commission*** -
  - Brooklyn Union Gas Co./Keyspan,
  - Central Hudson Gas & Electric Corp.,
  - Consolidated Edison Co. of N. Y., Inc.,
  - Corning Natural Gas Corp.,
  - National Fuel Gas Corp.,
  - New York State Electric & Gas Corp.,
  - Niagara Mohawk Power Corp.,
  - Orange & Rockland Utilities, Inc.,
  - Rochester Gas & Electric Corp.,
  - St. Lawrence Gas Company.

For information on other  
NYSERDA reports, contact:

New York State Energy Research and  
Development Authority  
17 Columbia Circle  
Albany, New York 12203-6399

toll-free 1-866-NYSERDA  
local: (518) 862-1090  
fax: (518) 862-1091

[info@nysesda.org](mailto:info@nysesda.org)  
[www.nysesda.org](http://www.nysesda.org)

**PATTERNS AND TRENDS**  
**NEW YORK STATE ENERGY PROFILES: 1988-2002**  
**DECEMBER 2003**

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**STATE OF NEW YORK**  
**GEORGE E. PATAKI, GOVERNOR**

**NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY**  
**VINCENT A. DEIORIO, ESQ., CHAIRMAN**  
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