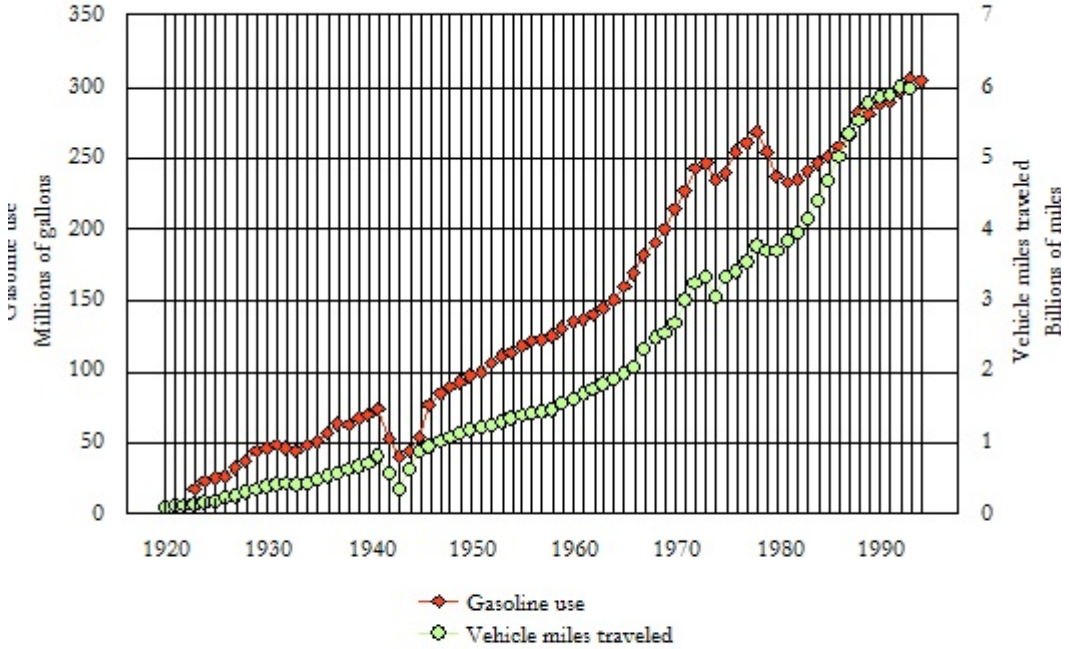
FUELING VERMONT'S FUTURE
COMPREHENSIVE ENERGY PLAN
AND
GREENHOUSE GAS ACTION PLAN

Figures from Chapter 3 Section 1, II, III

Figure 3.I.2 Vt. Gasoline Use and Vehicle Miles Traveled, 1920-1994

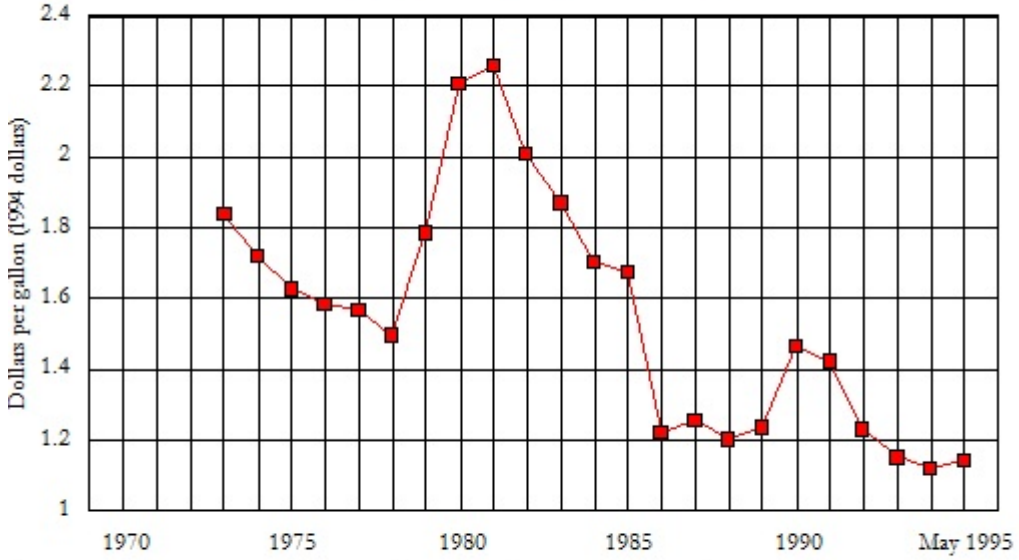


	1920	1923	1930	1940	1950	1960	1970	1980	1990	1993	1994
Gas consumption		18.3	47.0	70.0	97.1	135.6	214.5	237.2	287.7		304.2
Vehicle miles	0.10		0.40	0.73	1.19	1.63	2.69	3.72	5.86	5.98	

Source: VT ACT, 1991, 44 and Dept. of Motor Vehicles Fuel Report. Vehicle miles for these years are estimates: 1921-24, 1926-29, 1931, 1934, 1936-39, 1942, 1944, 1946-47, and 1949.

Figure 3.I.3 Vermont Gasoline Prices, 1973-1995

Average dollars per gallon (1994 dollars)

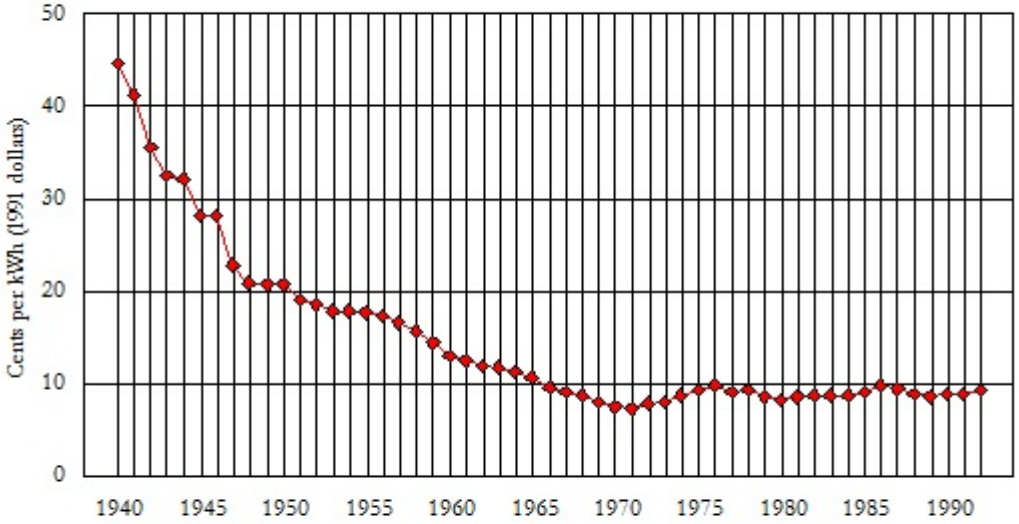


	1973	1975	1980	1985	1990	May 1995
Dollars per gallon (1994 $)	1.84	1.63	2.21	1.67	1.47	1.14
Dollars per gallon (nominal $)	0.55	0.59	1.23	1.22	1.29	1.17

Source: VT DPS Fuel Price Survey

Figure 3.I.4 Vermont Residential Electricity Prices, 1940-1992

Cents per kWh per year (1991 dollars)

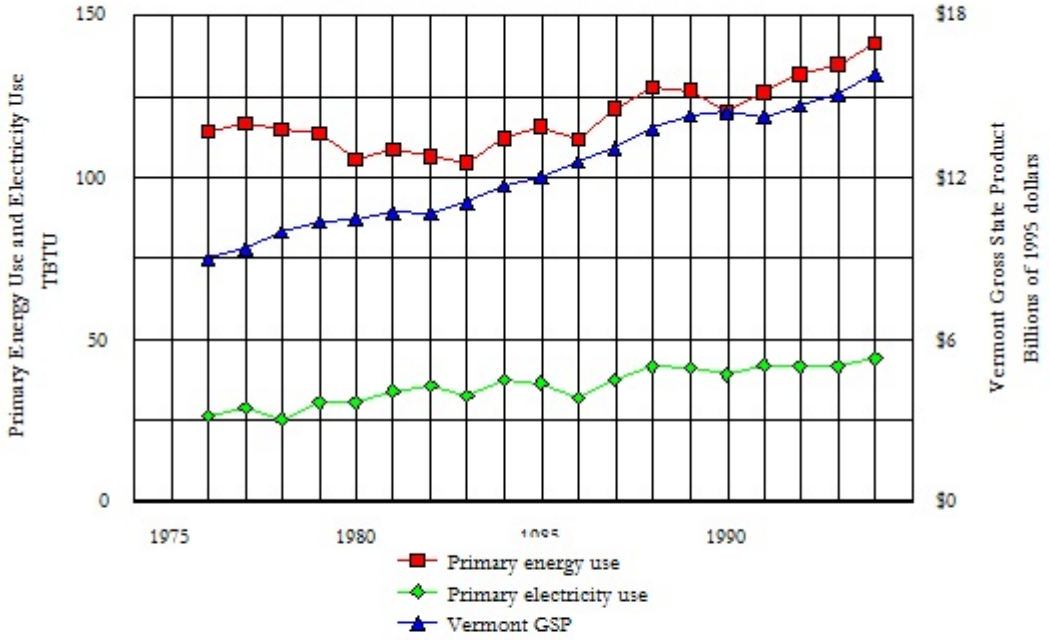


	1940	1945	1950	1955	1960	1965
Electricity price	44.66	28.32	20.72	17.79	13.06	10.77
	1970	1975	1980	1985	1990	1992
	7.61	9.44	8.35	9.18	9.09	9.41

Source: VT DPS

Figure 3.I.5 Vt. Energy Use, Electricity Use, and GSP, 1976-1994

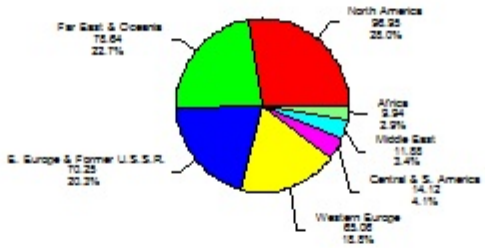
TBTU and GSP (in 1995 dollars) per year



	1976	1980	1985	1990	1994
Primary energy use	114.13	105.58	115.78	120.44	141.68
Primary electricity use	26.38	30.42	36.80	39.18	44.47
GSP (1995 $)	9.01	10.48	12.00	14.47	15.84

Note: Values after 1991 are projections for energy and electricity use; values after 1993 are projections for GSP. Source: VT DPS

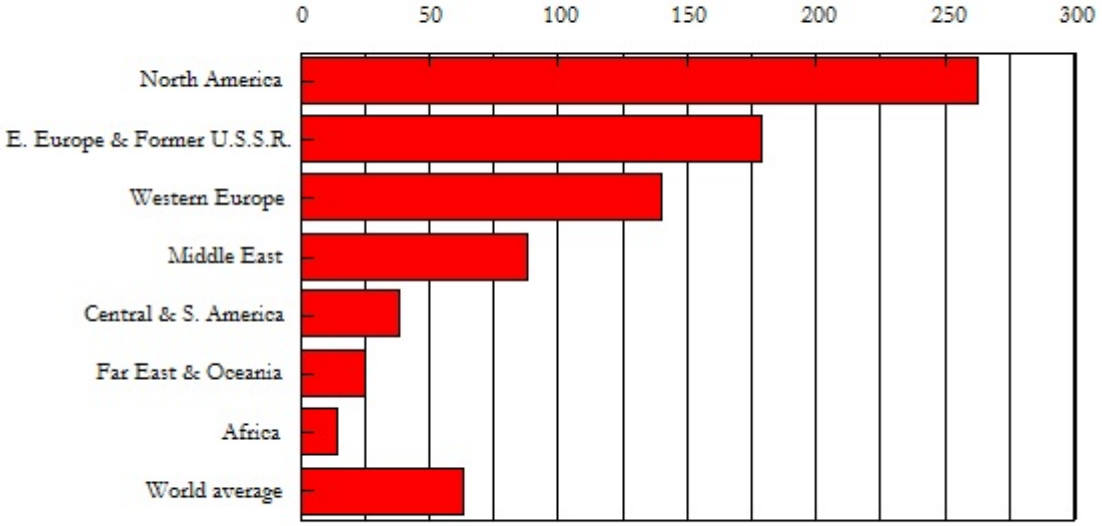
Figure 3.II.1 World Primary Energy Use, 1991
Quadrillion BTU



Source: U.S. Department of Energy, Energy Facts 1992, 102

Figure 3.II.2 World Primary Energy Use per Person, 1991

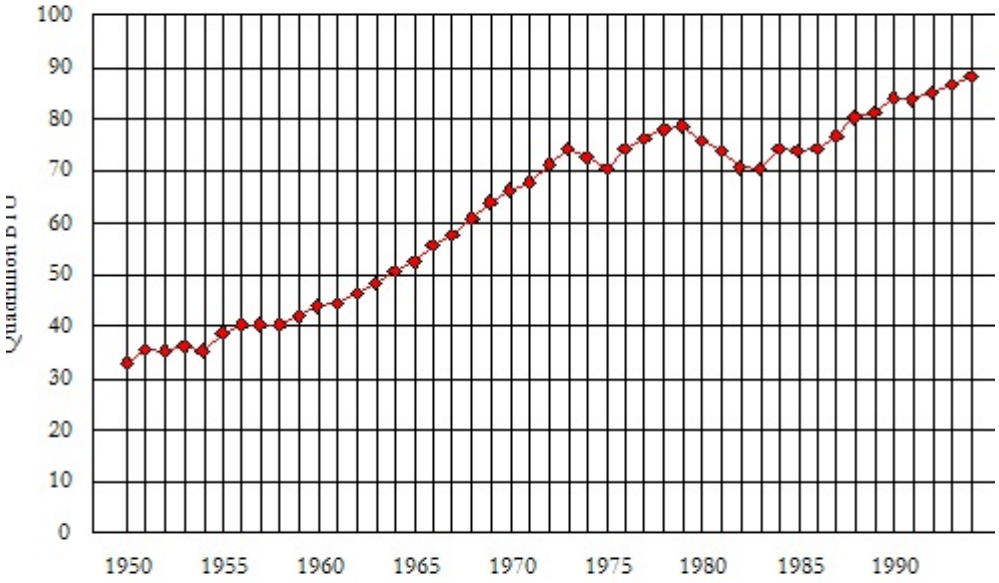
Million BTU per person



U.S. DOE, Energy Facts: 1992, 1993, 102; U.S. DOE, International Energy Annual: 1993, 1995, 113-16

Figure 3.II.3 U.S. Primary Energy Use

Quadrillion BTU

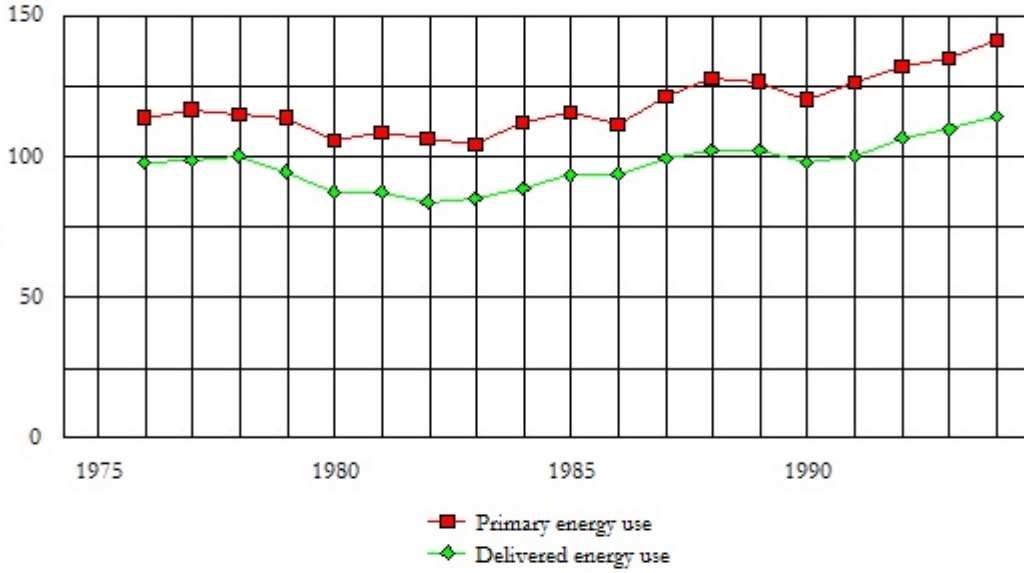


	1950	1955	1960	1965	1970	1975	1980	1985	1990	1994
Energy use	33.08	38.82	43.80	52.68	66.43	70.55	75.96	73.98	84.09	88.45

Source: U.S. DOE, Annual Energy Review: 1994, 1995, 39

Figure 3.II.4 Vermont Primary and Delivered Energy Use

TBTU

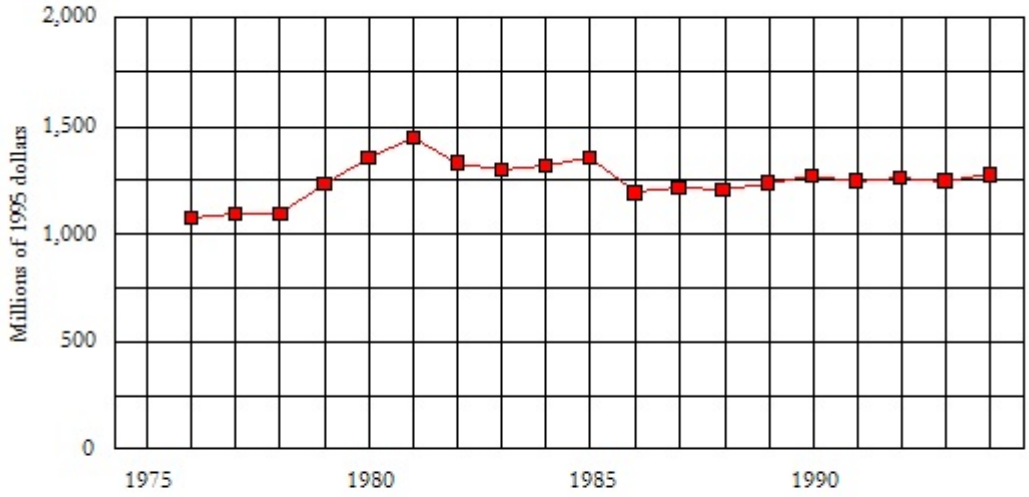


	1976	1980	1985	1990	1994
Primary use	114.13	105.58	115.78	120.44	141.68
Delivered use	98.40	87.48	93.42	98.04	114.74

Note: Values after 1991 are projections and include energy used for cogeneration. Source: VT DPS

Figure 3.II.5 Vermont Energy Expenditures

Millions of 1995 dollars

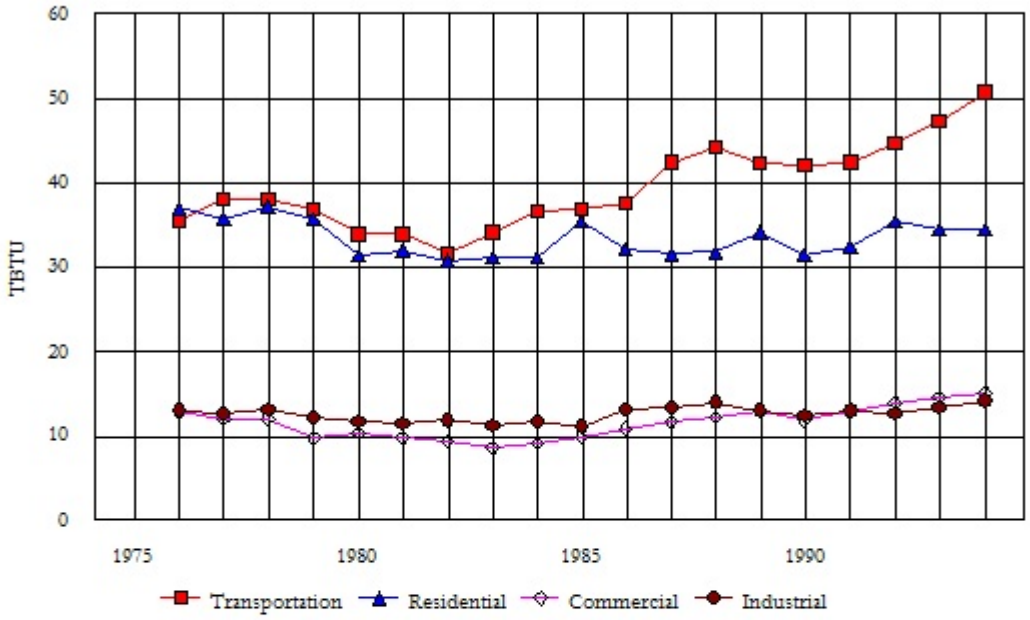


	1976	1980	1985	1990	1994
Expenditures	1,074.7	1,353.1	1,354.8	1,264.5	1,275.9
(In nominal $)	408.5	698.2	921.6	938.6	1,234.7

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.6 Vermont Delivered Energy Use by Sector

TBTU



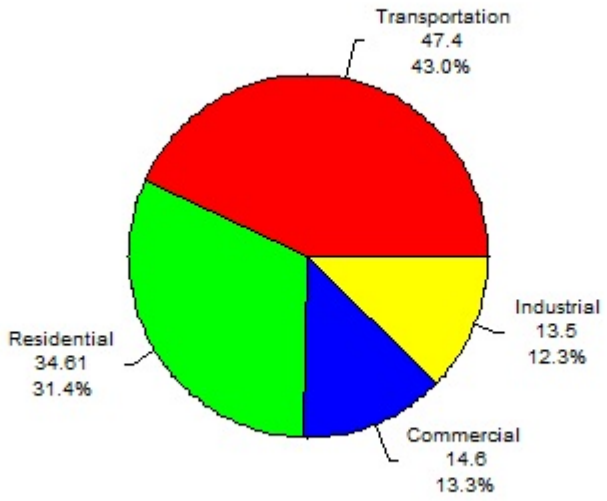
	1976	1980	1985	1990	1994
Transportation	35.46	33.91	36.84	42.10	50.72
Residential	37.12	31.52	35.43	31.53	34.63
Commercial	12.79	10.36	9.94	11.99	15.24
Industrial	13.03	11.69	11.22	12.42	14.16
Total	98.40	87.48	93.42	98.04	114.74

Vermont Primary Energy Consumption by Sector

	1976	1980	1985	1990	1994
Transportation	35.46	33.91	36.84	42.10	50.72
Residential	44.96	39.96	45.52	40.90	45.61
Commercial	17.29	15.42	16.57	18.76	23.57
Industrial	16.42	16.30	16.91	18.74	21.86
Total	114.13	105.59	115.84	120.50	141.76

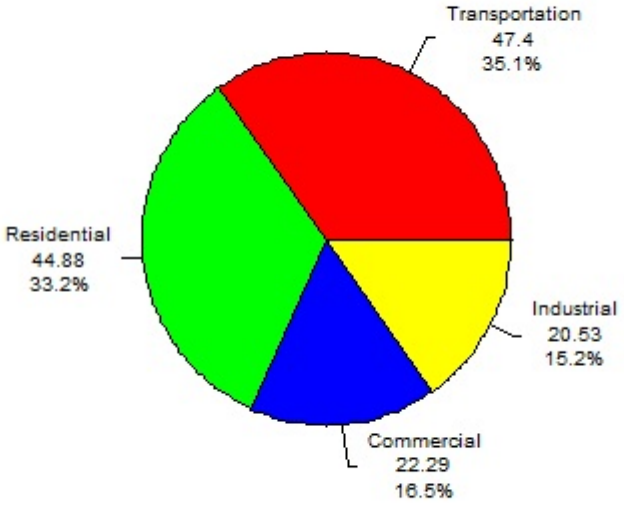
Note Values after 1991 are projections. Source VT DPS

Figure 3.II.7 Vermont Delivered Energy Use by Sector, 1993
TBTU



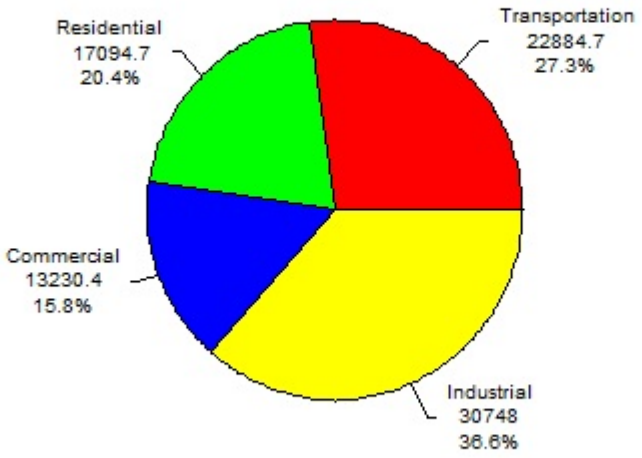
Source: VT DPS

Figure 3.II.8 Vermont Primary Energy Use by Sector, 1993
TBTU



Source: VT DPS

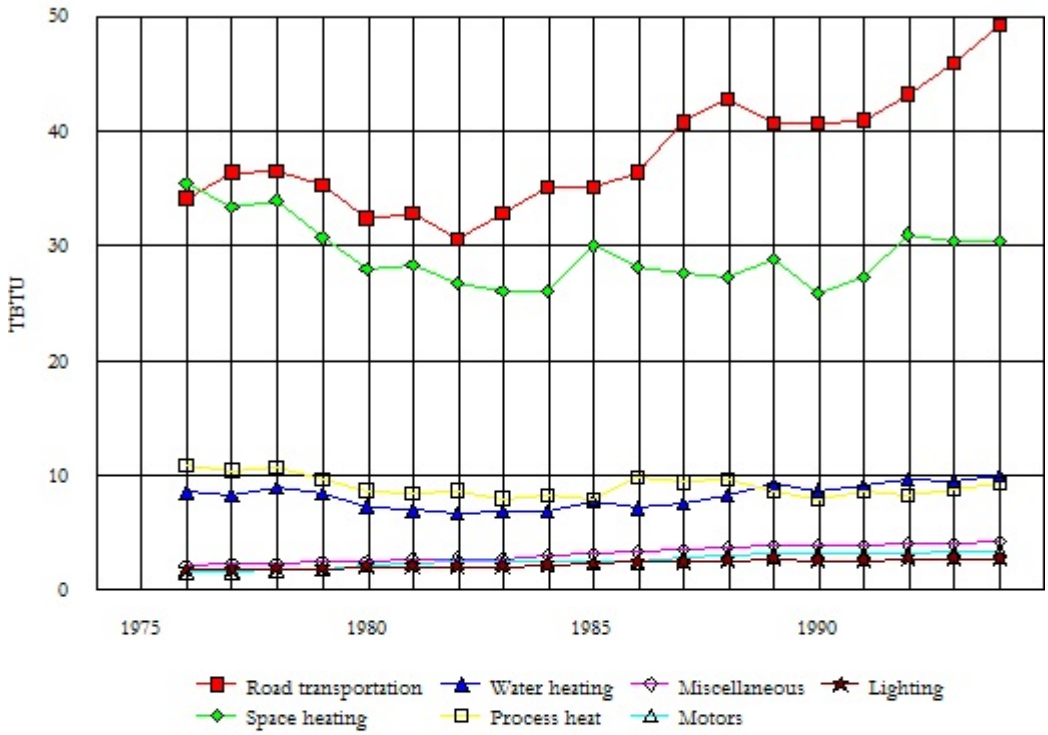
Figure 3.II.9 U.S. Primary Energy Use by Sector, 1993
TBTU



Source: U.S. DOE, State Energy Data Report, 1995

Figure 3.II.10 Vermont Delivered Energy Use by End Use

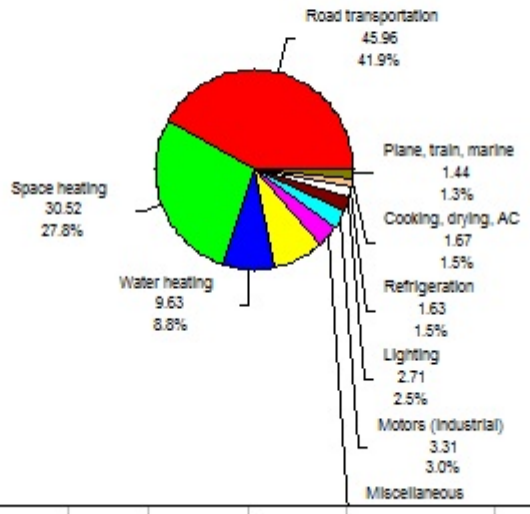
TBTU



	1976	1980	1985	1990	1994
Road transportation	34.12	32.39	35.17	40.65	49.27
Space heating	35.44	28.12	30.00	25.93	30.45
Water heating	8.56	7.38	7.80	8.78	10.02
Process heat	10.84	8.75	7.82	8.08	9.30
Miscellaneous	2.25	2.53	3.20	3.96	4.27
Motors	1.58	2.21	2.50	3.18	3.49
Lighting	1.76	1.99	2.33	2.69	2.81
Refrigeration	1.21	1.32	1.52	1.66	1.67
Plane, train, marine	1.35	1.50	1.68	1.46	1.44
Cooking	0.66	0.59	0.64	0.79	0.85
Drying	0.31	0.33	0.37	0.43	0.48
Air conditioning	0.20	0.23	0.27	0.35	0.45
Total	98.29	87.34	93.32	97.96	114.50
Total w/out transportation	64.17	54.95	58.15	57.31	65.23

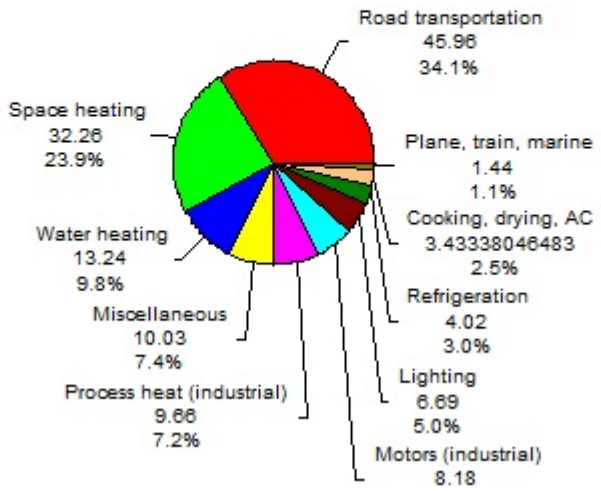
Note: Does not include energy used for cogeneration. Values after 1991 are projections. Source: VT DPS

Figure 3.II.11 Vermont Delivered Energy Use by End Use, 1993
TBTU



Source: VT DPS

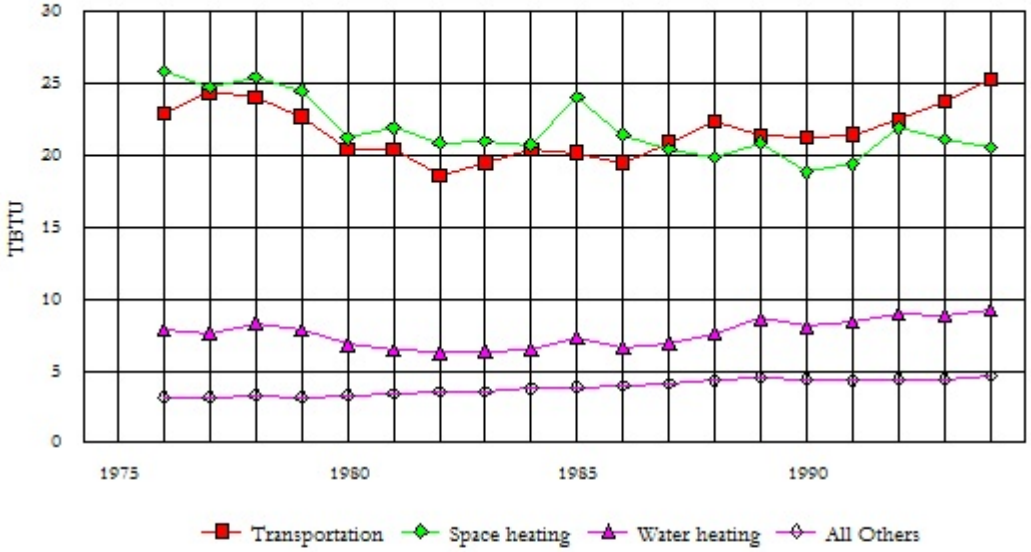
Figure 3.II.12 Vermont Primary Energy Use by End Use, 1993
TBTU



Source: VT DPS

Figure 3.II.13 Vt. Residential Delivered Energy Use by End Use

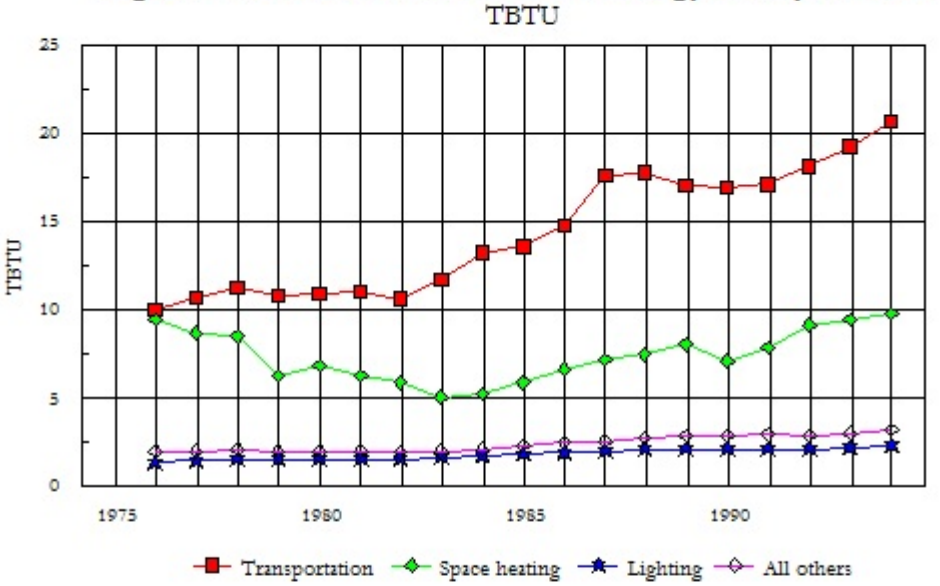
TBTU



	1976	1980	1985	1990	1994
Transportation	22.95	20.46	20.20	21.32	25.33
Space heating	26.00	21.28	24.14	18.85	20.62
Water heating	7.87	6.87	7.34	8.19	9.33
Miscellaneous	1.02	1.11	1.37	1.59	1.66
Refrigeration	0.94	1.02	1.19	1.27	1.27
Cooking	0.62	0.54	0.59	0.73	0.80
Drying	0.31	0.33	0.37	0.43	0.48
Lighting	0.32	0.35	0.38	0.40	0.38
Air conditioning	0.03	0.03	0.05	0.08	0.10
Total	60.07	51.98	55.63	52.85	59.96
Total w/o transportation	37.12	31.52	35.43	31.53	34.63

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.14 Vt. Comm. Delivered Energy Use by End Use

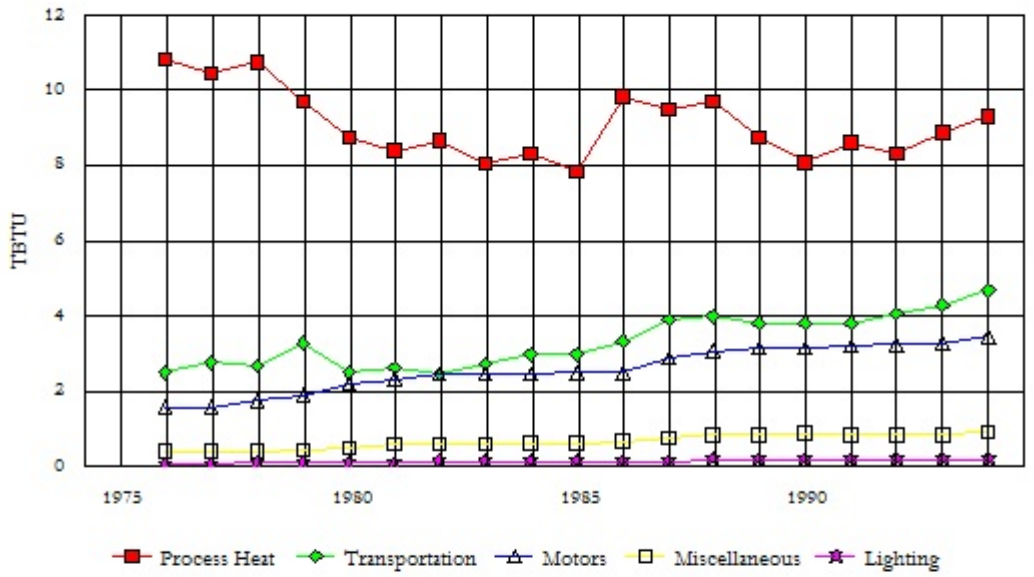


	1976	1980	1985	1990	1994
Transportation	10.03	10.92	13.64	16.99	20.68
Space heating	9.45	6.85	5.86	7.08	9.83
Lighting	1.35	1.53	1.81	2.10	2.24
Miscellaneous	0.83	0.94	1.18	1.50	1.69
Water heating	0.69	0.51	0.46	0.59	0.69
Refrigeration	0.27	0.30	0.34	0.39	0.40
Air conditioning	0.17	0.19	0.22	0.27	0.35
Cooking	0.04	0.05	0.06	0.07	0.05
Total	22.82	21.28	23.57	28.99	35.92
Total w/o transp.	12.79	10.36	9.93	12.00	15.24

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.15 Vt. Industrial Delivered Energy Use by End Use

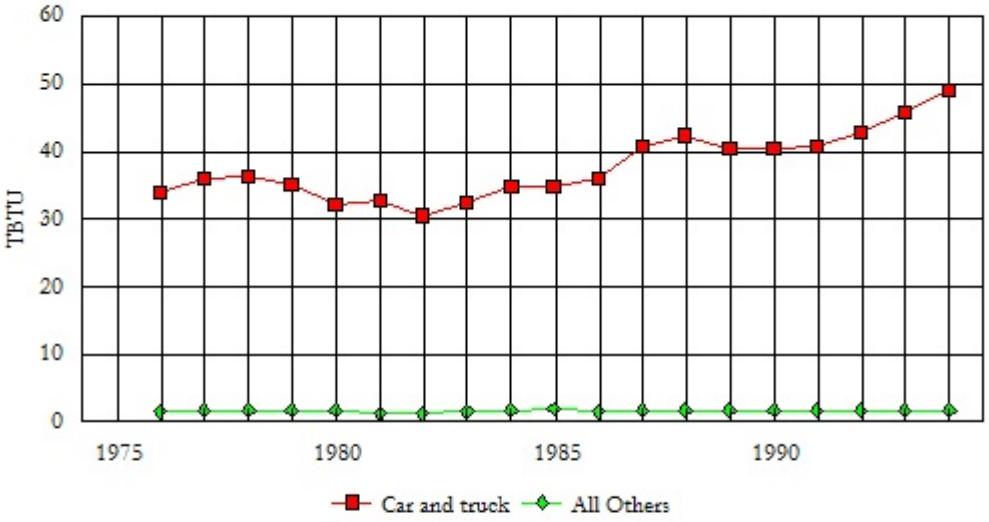
TBTU



	1976	1980	1985	1990	1994
Process Heat	10.84	8.75	7.82	8.08	9.30
Transportation	2.49	2.51	3.01	3.80	4.70
Motors	1.58	2.21	2.50	3.18	3.49
Miscellaneous	0.40	0.49	0.65	0.88	0.93
Lighting	0.09	0.11	0.14	0.18	0.20
Total	15.40	14.07	14.12	16.12	18.62
Total w/o transportation	12.91	11.56	11.11	12.32	13.92

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.16 Vt. Transportation Delivered Energy Use by End Use
TBTU

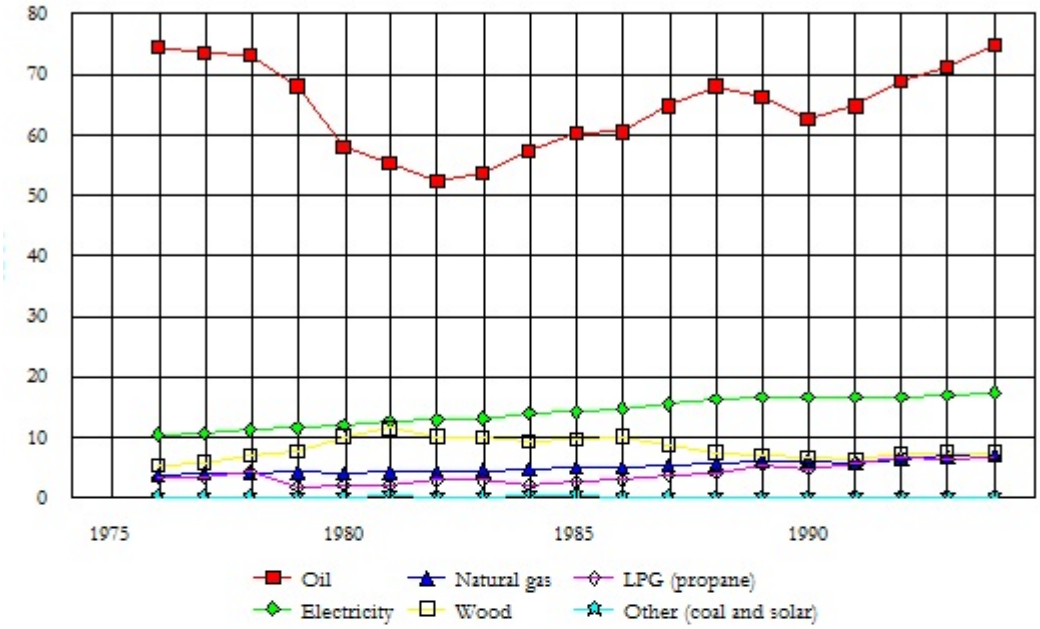


	1976	1980	1985	1990	1994
Car and truck	33.8	32.1	34.8	40.4	49.0
Plane	0.7	0.9	1.2	1.0	0.9
Marine	0.3	0.4	0.3	0.3	0.3
Bus	0.3	0.3	0.3	0.3	0.3
Train	0.4	0.3	0.2	0.2	0.2
Total	35.5	33.9	36.9	42.1	50.7

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.17 Vermont Delivered Energy Use by Fuel

TBTU



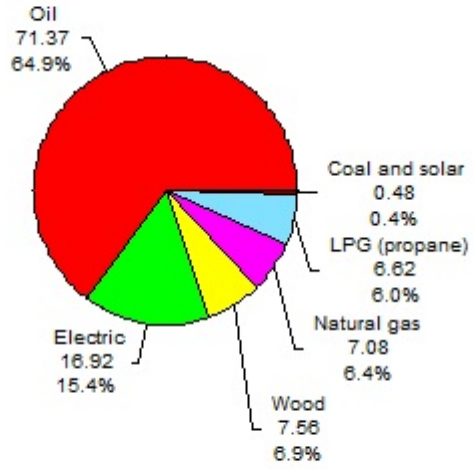
	1976	1980	1985	1990	1994
Oil	74.46	58.06	60.24	62.80	74.70
Electricity	10.65	12.32	14.44	16.78	17.53
Natural gas	4.00	4.11	5.13	6.18	7.44
Wood	5.39	10.29	9.91	6.93	7.71
LPG (propane)	3.50	2.40	2.90	5.00	6.89
Coal	0.40	0.30	0.75	0.30	0.40
Solar	0.00	0.01	0.06	0.06	0.07
Total	98.40	87.48	93.42	98.04	114.74

Vermont Primary Energy Consumption by Fuel

	1976	1980	1985	1990	1994
Oil	77.61	61.53	63.82	67.59	86.94
Nuclear	16.71	15.74	16.39	18.72	18.06
Wood	5.39	10.29	11.61	8.13	11.83
Natural gas	4.16	4.32	5.26	6.20	7.59
LPG (propane)	3.50	2.40	2.90	5.00	6.89
Hydro	4.64	4.15	5.15	7.46	6.57
Coal	2.11	7.14	10.59	7.27	3.71
Other	0.00	0.01	0.06	0.07	0.09
Total	114.13	105.58	115.78	120.44	141.68

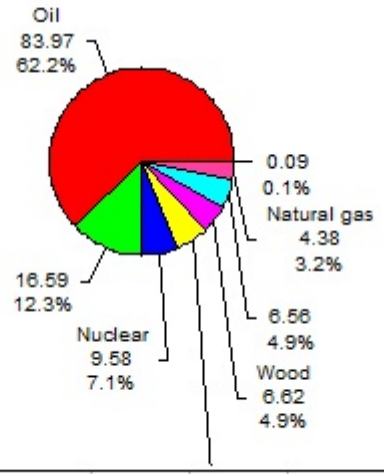
Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.18 Vermont Delivered Energy Use by Fuel, 1993
TBTU



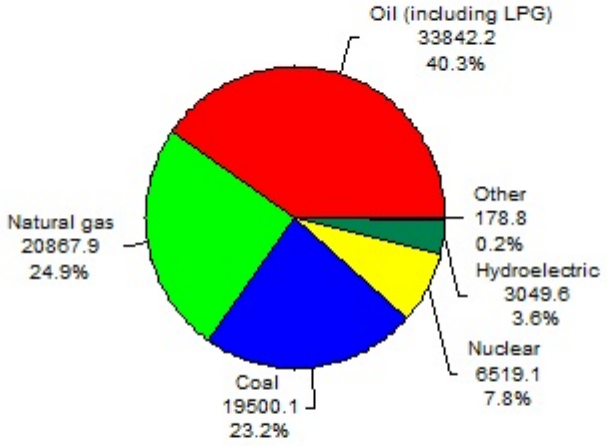
Source: VT DPS

Figure 3.II.19 Vermont Primary Energy Use by Fuel, 1993
TBTU



Source: VT DPS

Figure 3.II.20 U.S. Primary Energy Use by Fuel, 1993
TBTU

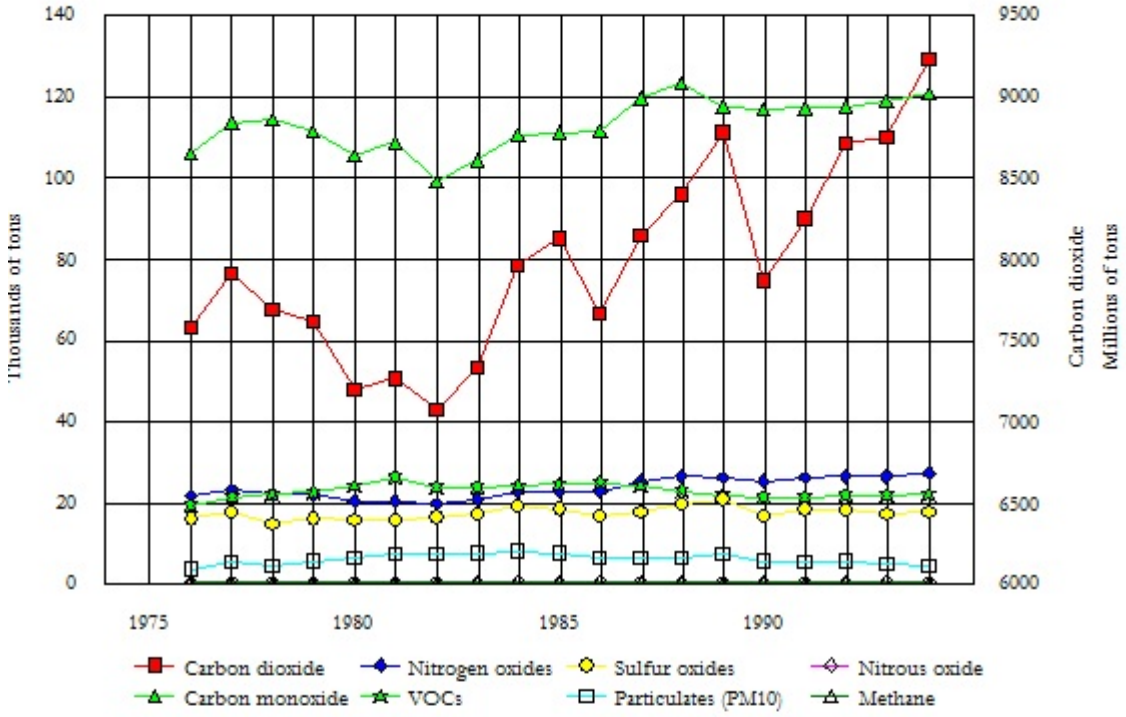


Source: U.S. DOE, State Energy Data Report, 1995, 21

Note: "Other" is electricity generated for distribution from geothermal, wood, wind, waste, photovoltaic and solar thermal sources. This chart does not include consumption of renewable sources outside the electric sector due to lack of consistent data. This consumption of renewables is estimated at an additional 3 quadrillion BTU in 1993.

Figure 3.II.21 Vermont Emissions from Energy Use

Tons

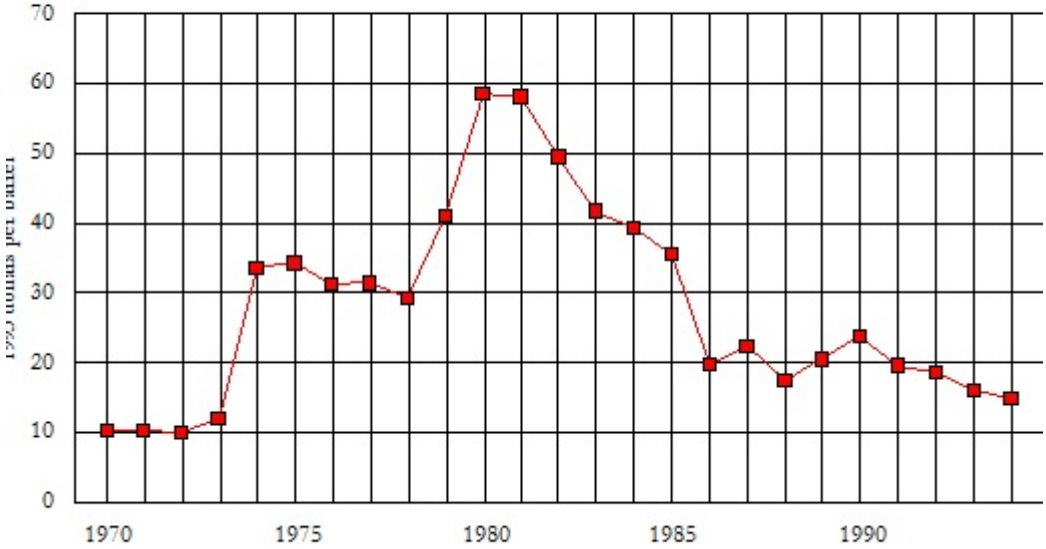


	Individual Emissions				
	1976	1980	1985	1990	1994
Carbon dioxide	7,578,064	7,196,989	8,134,909	7,866,758	9,235,082
Carbon monoxide	106,066	105,858	111,266	116,856	121,037
Nitrogen oxides	21,866	20,773	22,930	25,326	27,616
VOCs	19,490	24,344	24,586	21,581	22,196
Sulfur oxides	16,364	16,011	18,764	17,055	17,886
Particulates (PM10)	3,776	6,664	7,878	5,976	4,811
Nitrous oxide	775	657	713	646	787
Methane	591	522	654	629	681
	Aggregate Emissions				
Greenhouse gases (CO_2 equivalent)	7,793,815	7,380,121	8,334,613	8,048,097	9,455,063
Ozone precursors	41,356	45,117	47,516	46,907	49,812
Acid rain precursors	38,230	36,784	41,694	42,381	45,502

Note: See the glossary for a definition of CO_2 equivalent. Greenhouse gases are carbon dioxide, methane, and nitrous oxide; ground-level ozone precursors are VOCs and nitrogen oxides; acid rain precursors are sulfur oxides and nitrogen oxides. Values after 1991 are projections. Source: VT DPS

Figure 3.II.22 World Oil Prices

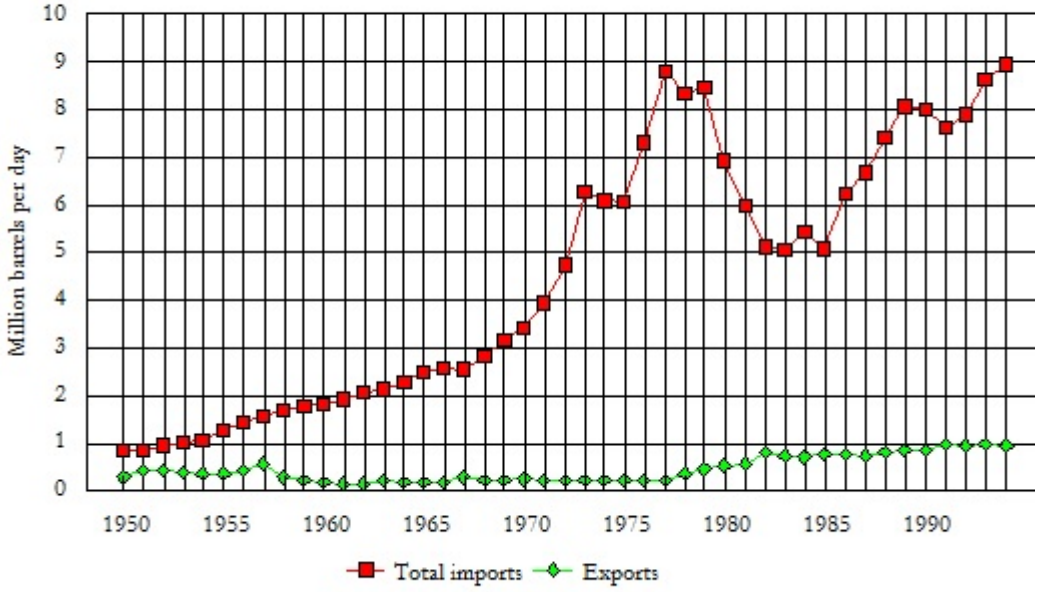
1993 dollars per barrel



Source: U.S. DOE, International Energy Outlook, 1995, 31.

Figure 3.II.23 U.S. Oil Imports and Exports

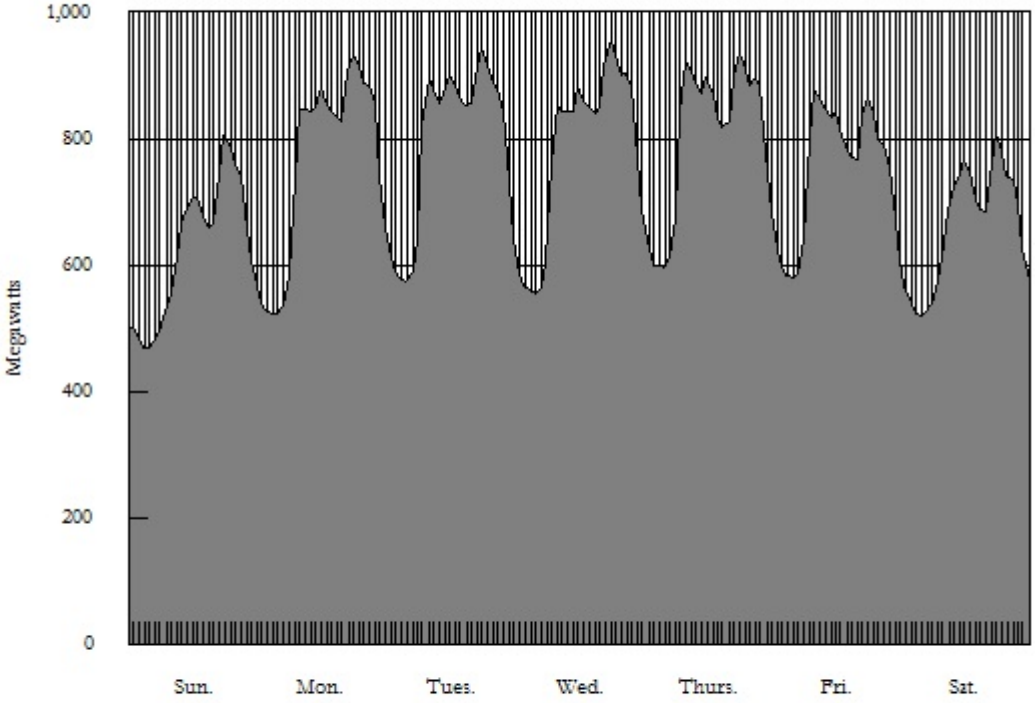
Million barrels per day



Source: U.S. DOE, Annual Energy Review 1994, 1995, 139.

Figure 3.II.24 Vt. Electricity Avg. Weekly Dec. Load Shape, 1991

Megawatts

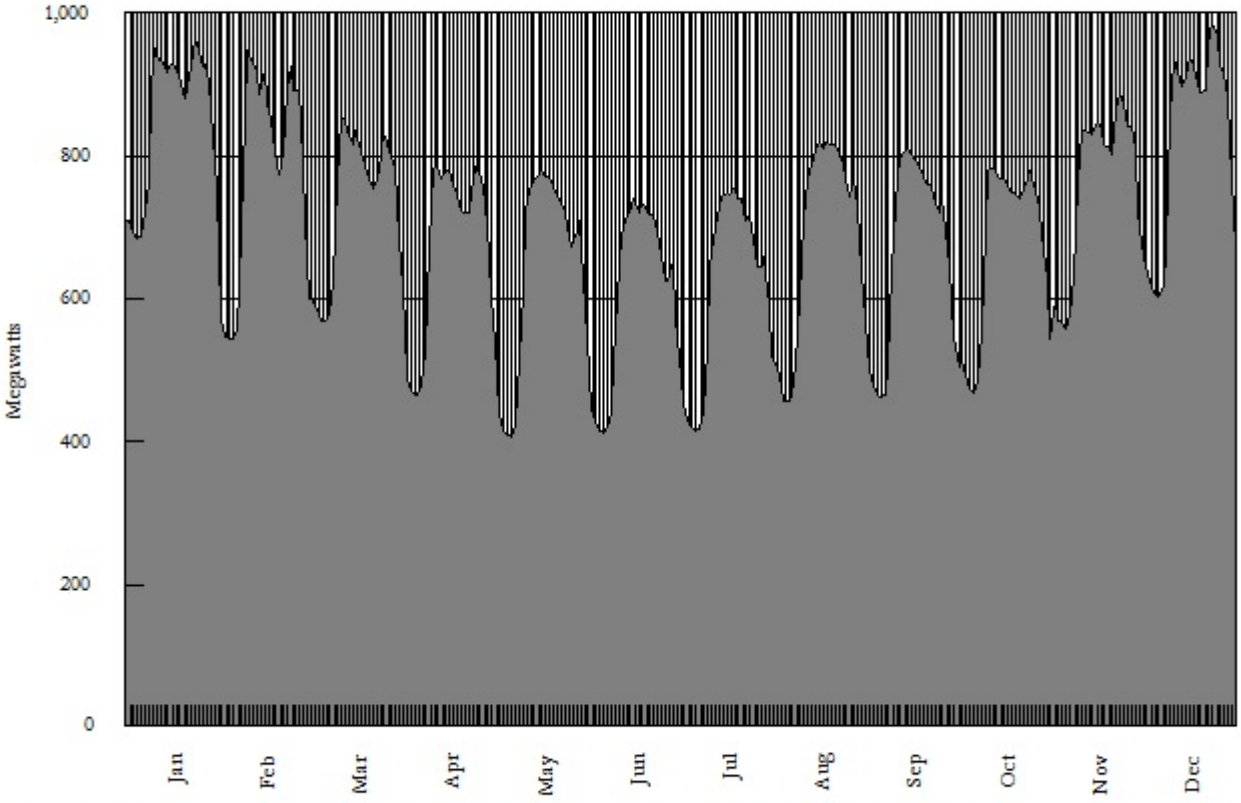


Vertical grids indicate 12 a.m., 6 a.m., 12 p.m., 6 p.m.; dark grid lines represent 12 a.m.

Source: VELCO

Figure 3.II.25 Vt. Electricity Load Shape, Avg. of Tuesdays Each Month, 1991

Megawatts

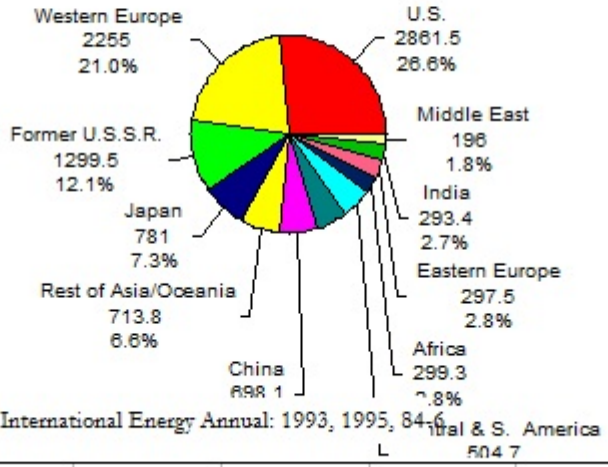


Source: VELCO

Vertical grids indicate 12 a.m., 6 a.m., 12 p.m., 6 p.m.; dark grid lines represent 12 a.m.

Figure 3.II.26 World Delivered Electricity Use, 1993

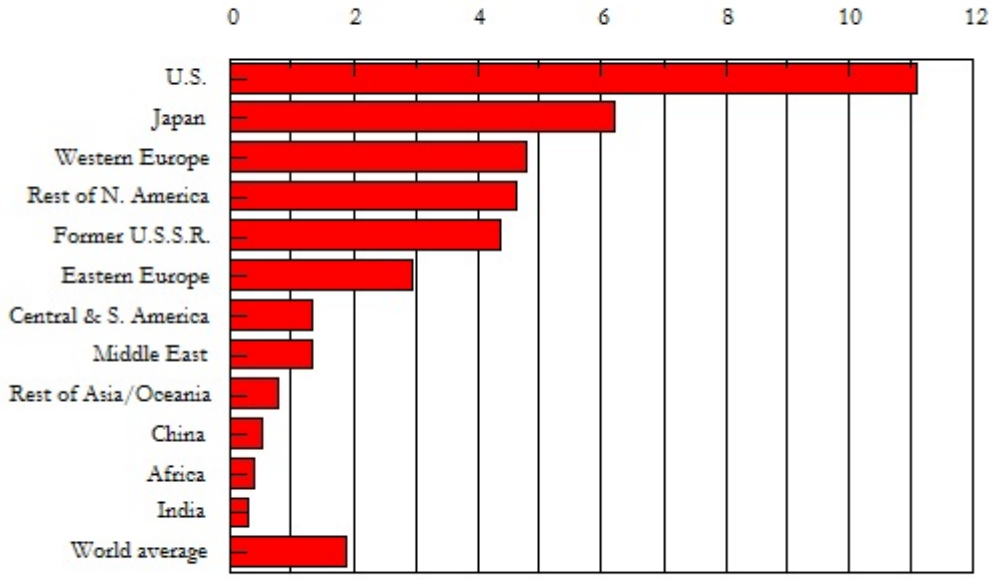
Billion kWh



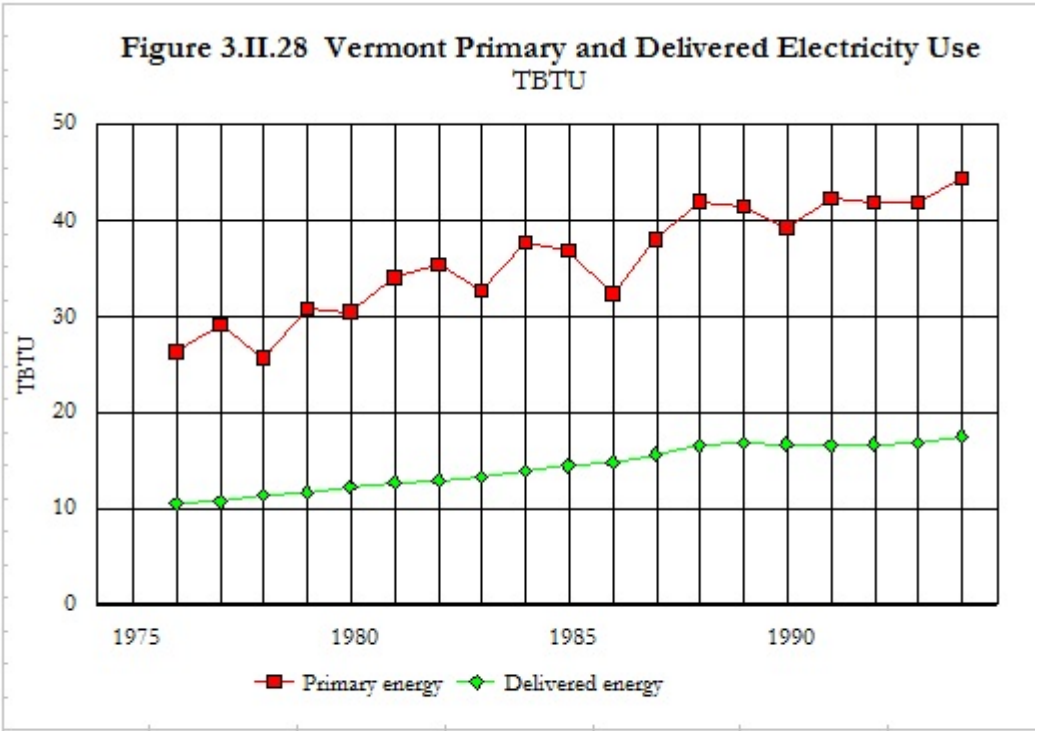
Source: U.S. DOE, International Energy Annual: 1993, 1995, 84-6.

Figure 3.II.27 World Electricity Use per Capita, 1993

Thousand kWh per capita



Source: U.S. DOE, International Energy Annual: 1993, 1995, 84-6, 113-16

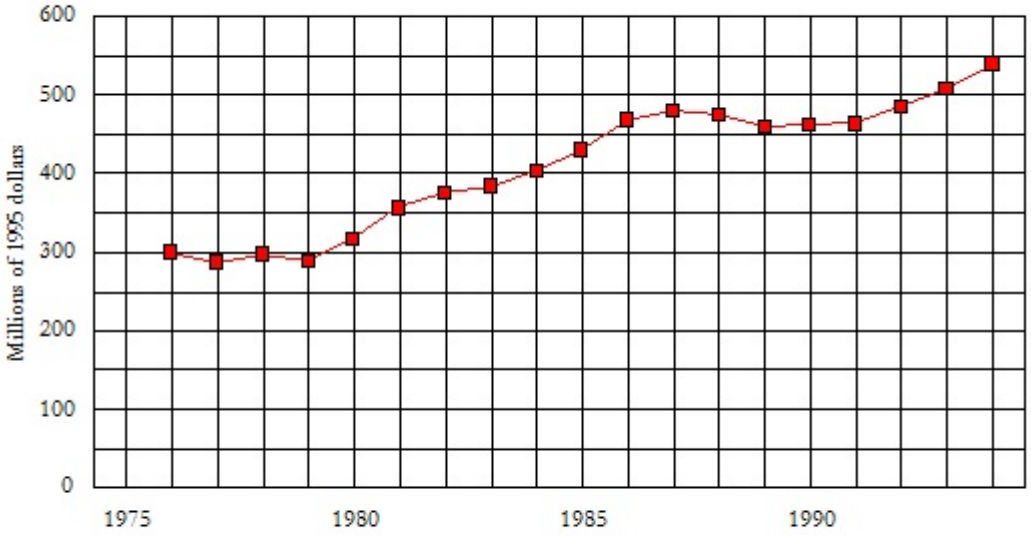


	1976	1980	1985	1990	1994
Primary use	26.38	30.42	36.80	39.18	44.47
Delivered Use	10.65	12.32	14.44	16.78	17.53

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.29 Vermont Electricity Expenditures

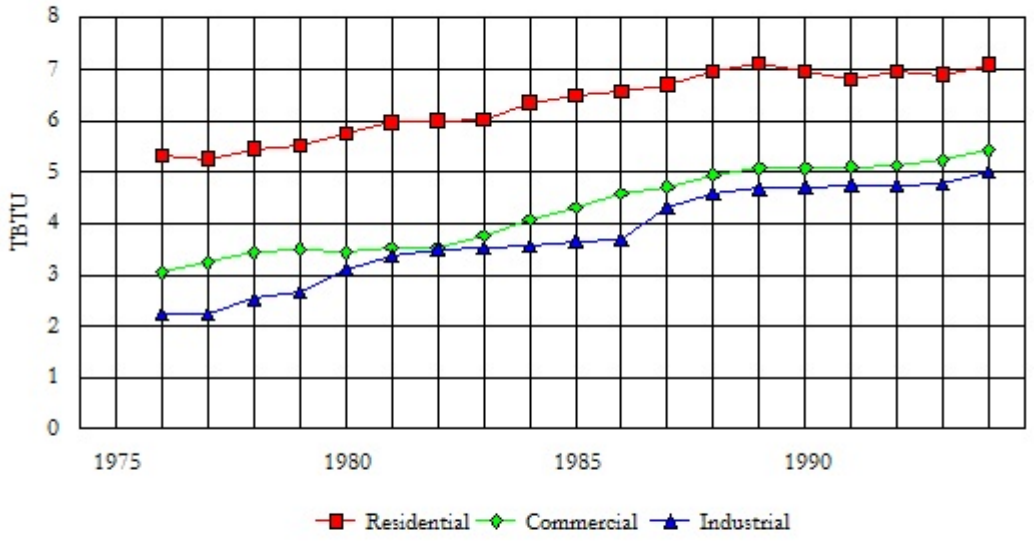
Millions of 1995 dollars



	1976	1980	1985	1990	1994
Electricity Expenditures	299.9	317.8	430.7	461.8	540.5
(In nominal $)	114.0	164.0	293.0	368.0	523.0

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.30 Vermont Delivered Electricity Use by Sector
TBTU

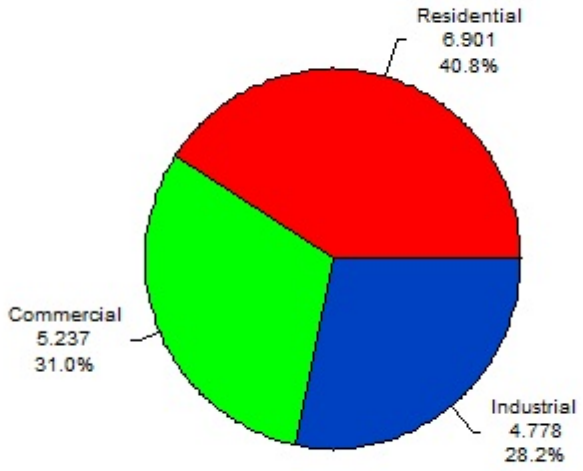


	1976	1980	1985	1990	1994
Residential	5.32	5.75	6.49	6.97	7.10
Commercial	3.05	3.46	4.29	5.07	5.43
Industrial	2.27	3.11	3.65	4.73	5.01
Total	10.65	12.32	14.44	16.78	17.53

Note: Values after 1991 are projections. Source: VT DPS

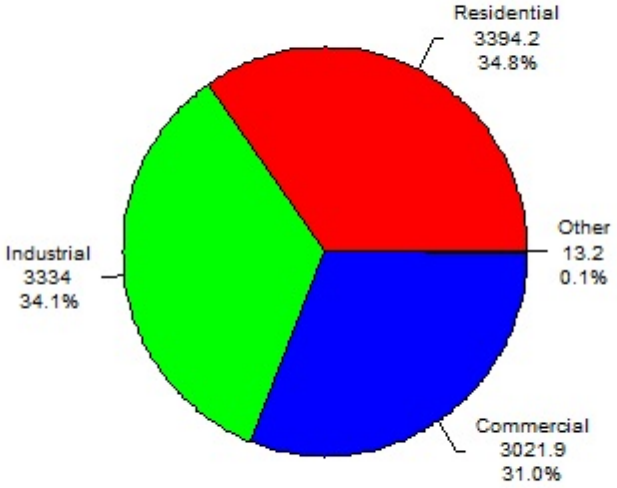
Figure 3.II.31 Vermont Delivered Electricity Use by Sector, 1993

TBTU



Source: VT DPS

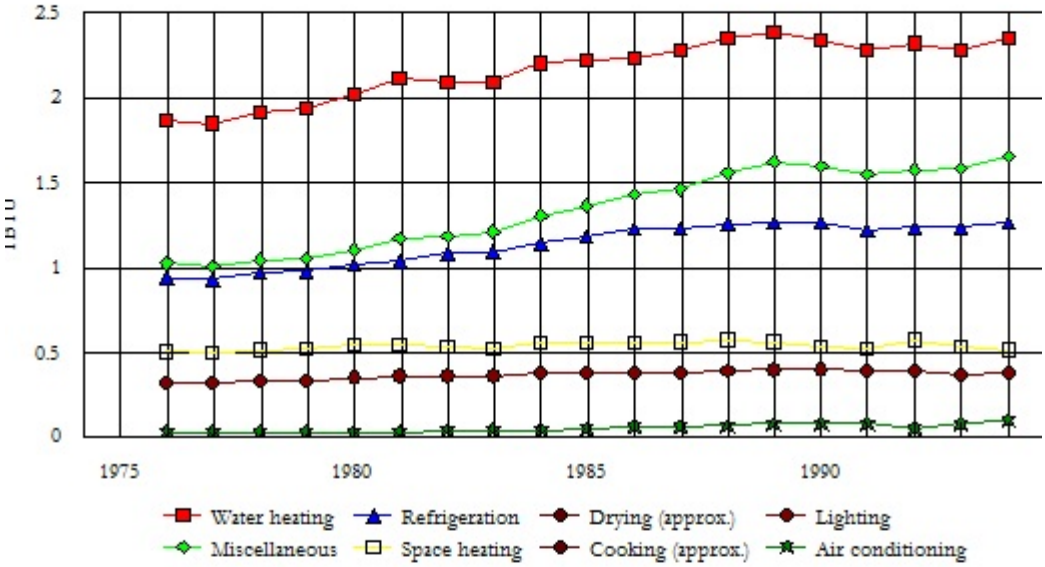
Figure 3.II.32 U.S. Delivered Electricity Use by Sector, 1993
TBTU



Source: U.S. DOE, State Energy Data Report: 1993, 1995

Figure 3.II.33 Vt. Residential Delivered Electricity Use by End Use

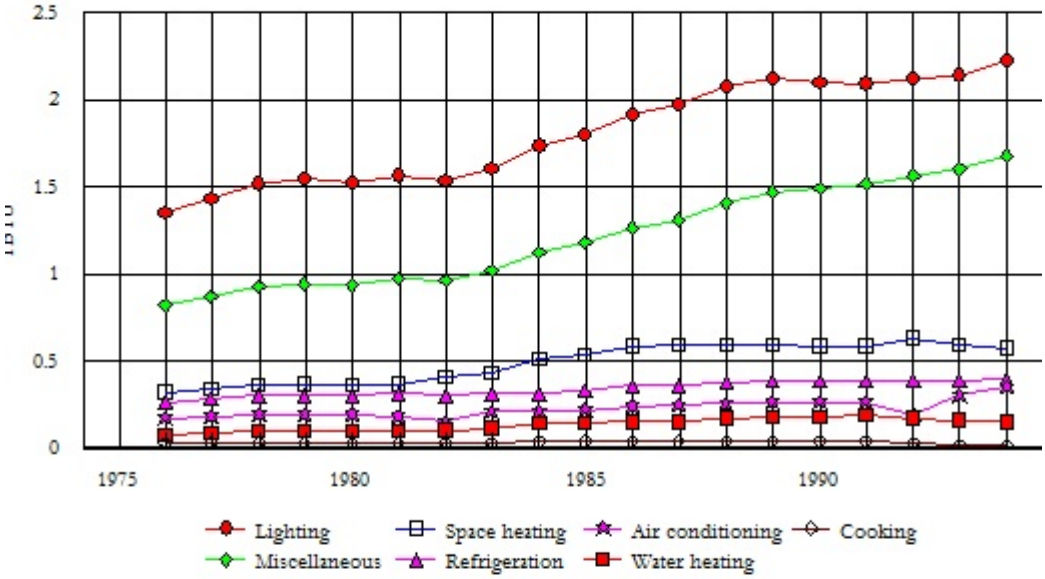
TBTU



	1976	1980	1985	1990	1994
Water heating	1.872	2.023	2.229	2.337	2.348
Miscellaneous	1.024	1.107	1.367	1.593	1.657
Refrigeration	0.943	1.019	1.186	1.270	1.270
Space heating	0.506	0.546	0.559	0.535	0.521
Drying	0.294	0.317	0.350	0.391	0.422
Cooking	0.333	0.360	0.371	0.371	0.400
Lighting	0.323	0.349	0.382	0.398	0.380
Air conditioning	0.029	0.032	0.050	0.079	0.097
Total	5.324	5.753	6.494	6.974	7.095

Note: Values after 1991 are projections. Values for drying, cooking, and lighting are nearly equal and appear as a single line on the graph. Source: VT DPS

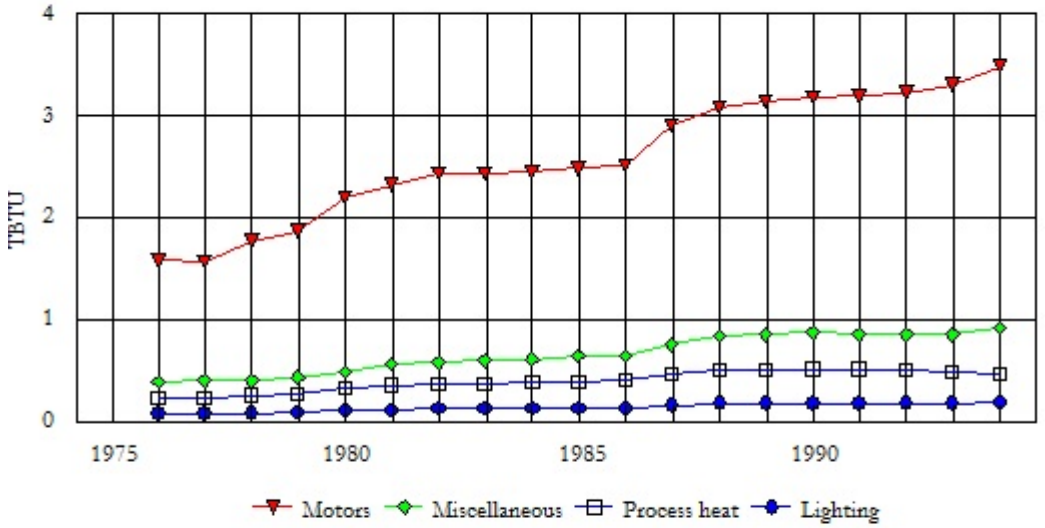
Figure 3.II.34 Vt. Commercial Delivered Electricity Use by End Use
TBTU



	1976	1980	1985	1990	1994
Lighting	1.352	1.530	1.811	2.104	2.235
Miscellaneous	0.826	0.935	1.184	1.496	1.688
Space heating	0.322	0.364	0.547	0.585	0.577
Refrigeration	0.269	0.304	0.337	0.387	0.401
Air conditioning	0.171	0.193	0.224	0.269	0.351
Water heating	0.084	0.095	0.148	0.187	0.158
Cooking	0.031	0.035	0.041	0.044	0.020
Total	3.055	3.456	4.292	5.072	5.430

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.35 Vt. Industrial Delivered Electricity Use by End Use
TBTU

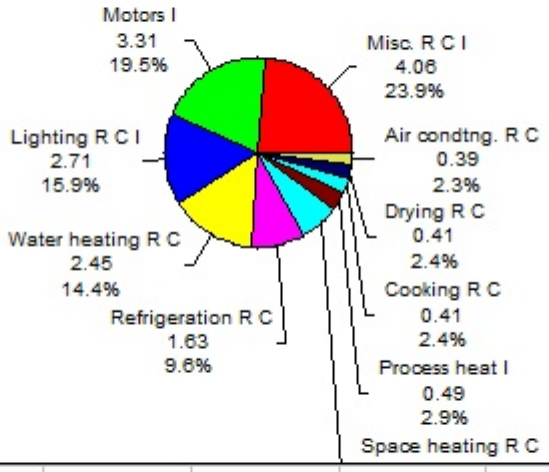


	1976	1980	1985	1990	1994
Motors	1.582	2.208	2.496	3.183	3.488
Miscellaneous	0.397	0.489	0.651	0.875	0.929
Process heat	0.238	0.335	0.402	0.520	0.479
Lighting	0.087	0.113	0.140	0.183	0.198
Total	2.304	3.145	3.689	4.761	5.094

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.II.36 Vt. Delivered Electricity Use by End Use, 1993

TBTU

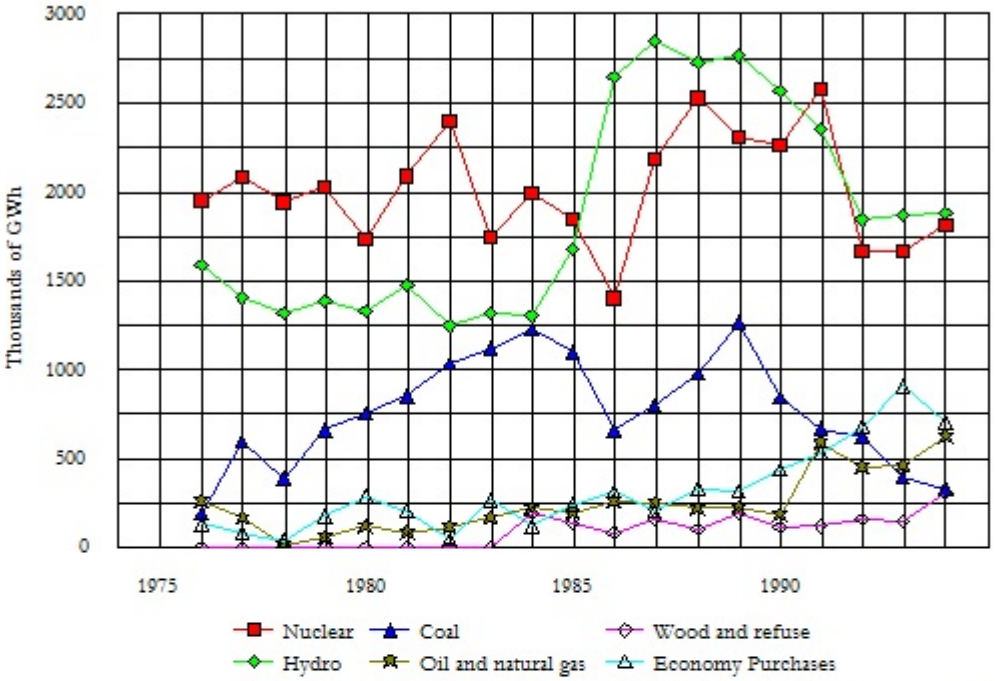


Source: VT DPS

Note: The letters following each pie segment title indicate in which sectors the end use occurred; R=residential, C=commercial, I=industrial. "Misc" includes appliances and others in the residential sector; automation, office equipment and others in the commercial sector; and automation, cooling, refrigeration, and others in the industrial sector.

Figure 3.II.37 Vermont Delivered Electricity Use by Fuel

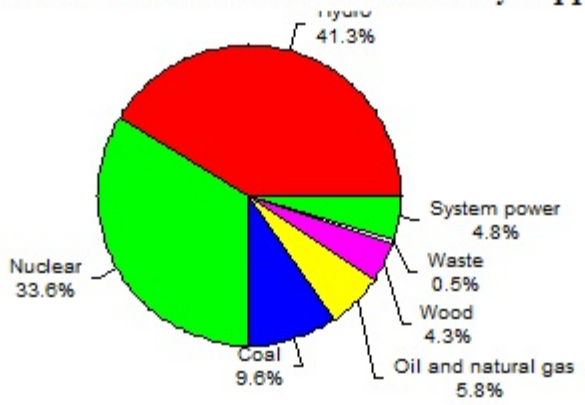
Thousands of GWh



	1976	1980	1985	1990	1994
Nuclear	1,953.8	1,730.1	1,842.9	2,262.3	1,817.0
Hydro	1,587.9	1,326.8	1,674.5	2,563.7	1,875.5
Coal	199.4	751.2	1,106.1	842.3	332.4
Oil and natural gas	263.5	120.1	196.1	190.5	622.1
Wood	0.0	0.0	140.1	105.8	302.7
Refuse	0.0	0.0	0.0	5.0	5.9
Economy Purchases	133.5	292.0	241.5	439.5	712.2
Total generation and purchases	4,138.1	4,220.2	5,201.2	6,409.1	5,667.8
Transmission losses	(486.0)	(247.0)	(435.0)	(460.0)	(491.0)
Sales to out-of-state utilities	(387.0)	(213.0)	(392.0)	(993.0)	(130.0)
Total delivered use	3,265.1	3,760.2	4,374.2	4,956.1	5,046.8

Note: Values after 1991 are projections. "Economy purchases" are short-term purchases from a variety of fuel sources. The total generation and purchases shown for 1994 differs slightly from the total ownload in a subsequent Figure. This difference occurs because the value shown above is the result of a forecast that uses long-term economic and price trends, while the ownload value reflects what Vermont utilities would have used if they operated independently of NEPOOL. Values for each fuel source also differ. In 1994, as reflected in the ownload values, Vermont purchased more low-cost nuclear and hydro power than predicted in the forecast. These low-cost purchases displaced the use of some more expensive power from oil, natural gas, and wood resources.

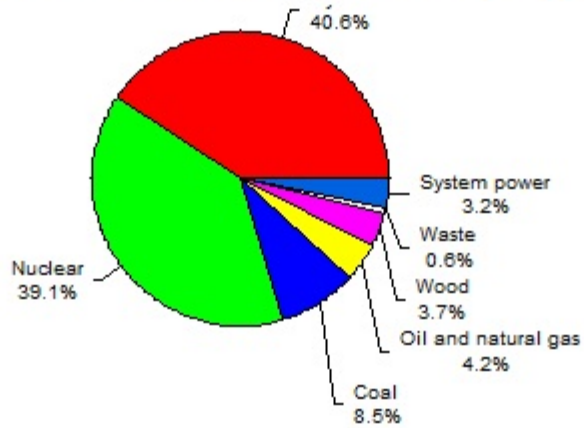
Figure 3.II.38 Vermont Ownload Electricity Supply, 1993



Fuel	Source	GWh	Percent
Hydro	Hydro-Quebec	1,588	
	NYPA	192	
	Vermont utilities	444	
	IPPs	151	
	Out-of-state plants	2	
	Total	2,377	41.3%
Nuclear	Vermont Yankee	1,462	
	Other plants	473	
	Total	1,935	33.6%
Coal	Merrimack II	555	
	Total	555	9.7%
Oil & Natural Gas	In-state oil plants	10	
	Other oil plants	291	
	Natural gas	31	
	Total	332	5.8%
Wood	McNeil plant	82	
	IPP - Ryegate plant	165	
	Total	247	4.3%
Waste	VT-NH waste plant	31	
	Total	31	0.5%
System Power	New England plants	133	
	Ontario Hydro	142	
	Total	275	4.8%
Total		**5,752**	

Note: "Ownload Electricity Supply" represents what Vermont utilities would have used if they operated independently of NEPOOL. The waste power that appears on Vermont's ownload is used by customers in the small region of New Hampshire that CVPS serves. "System power" means power supplied by other utilities under contracts that do not specify a particular source and includes power generated from nuclear, coal, oil, or other fuels. Ownload supply represents energy generated in or delivered to Vermont and will always be higher than delivered consumption due to losses. Source: VT DPS

Figure 3.II.39 Vermont Ownload Electricity Supply, 1994

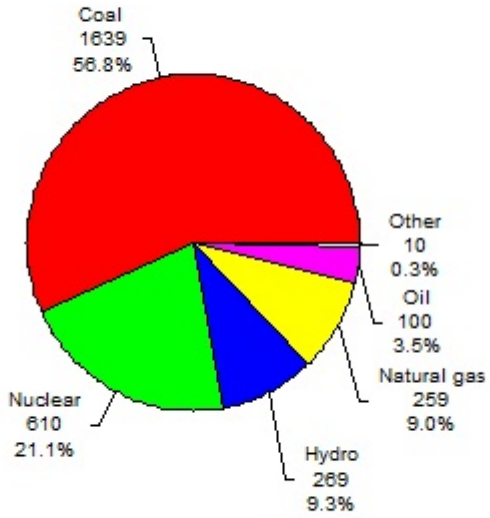


Fuel	Source	GWh	Percent
Hydro	Hydro-Quebec	1,624	
	NYPA	107	
	Vermont utilities	452	
	IPPs	155	
	Out-of-state plants	5	
	Total	2,343	40.6%
Nuclear	Vermont Yankee	1,863	
	Other plants	393	
	Total	2,256	39.1%
Coal	Merrimack II	492	
	Total	492	8.5%
Oil & Natural Gas	In-state oil plants	11	
	Other oil plants	210	
	Natural gas	23	
	Total	244	4.2%
Wood	McNeil plant	46	
	IPP - Ryegate plant	170	
	Total	216	3.7%
Waste	VT-NH waste plant	32	
	Total	32	0.6%
System Power	New England plants	99	
	Ontario Hydro	84	
	Total	183	3.2%
Total		**5,766**	

Note: "Ownload Electricity Supply" represents what Vermont utilities would have used if they operated independently of NEPOOL. The waste power that appears on Vermont's ownload is used by customers in the small region of New Hampshire that CVPS serves. "System power" means power supplied by other utilities under contracts that do not specify a particular source and includes power generated from nuclear, coal, oil, or other fuels. Ownload supply represents energy generated in or delivered to Vermont and will always be higher than delivered consumption due to losses. Source: VT DPS

Figure 3.II.40 U.S. Electricity Net Generation by Fuel, 1993

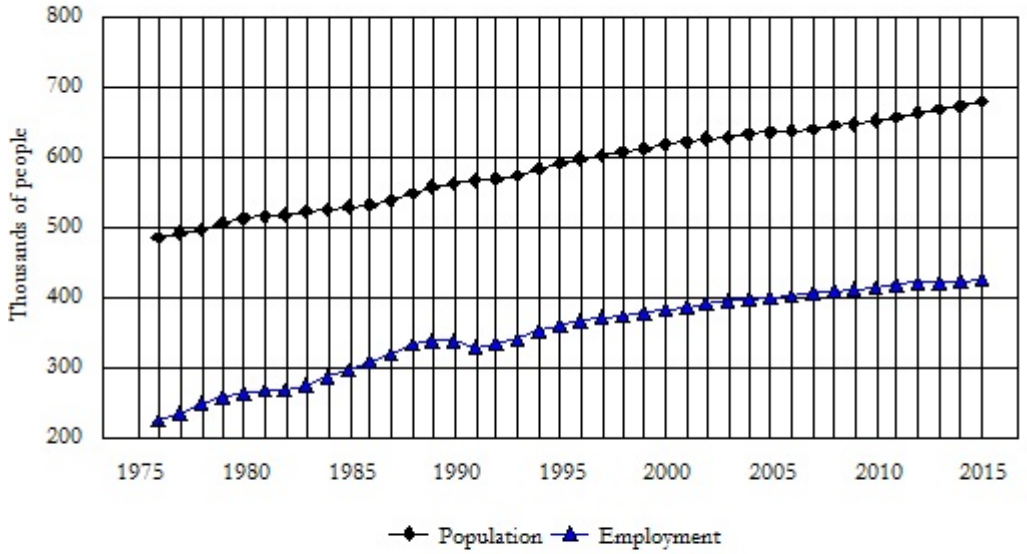
Billion kWh



Source: U.S. DOE, Annual Energy Review: 1994, 1995, 233

Figure 3.III.1 Vermont Population and Employment

Thousands of people

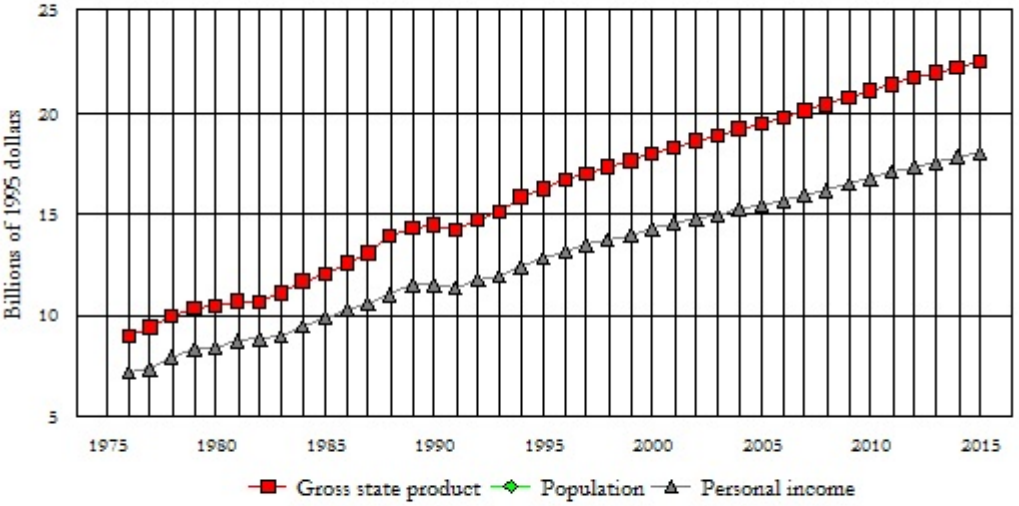


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Population	530	564	591	619	636	653	680	0.75%	20.57%
Employment	297	339	361	384	402	416	427	0.92%	25.65%

Note: Values after 1993 are projections. Source: VT DPS

Figure 3.III.2 Vermont Personal Income and Gross State Product

Billions of 1995 dollars

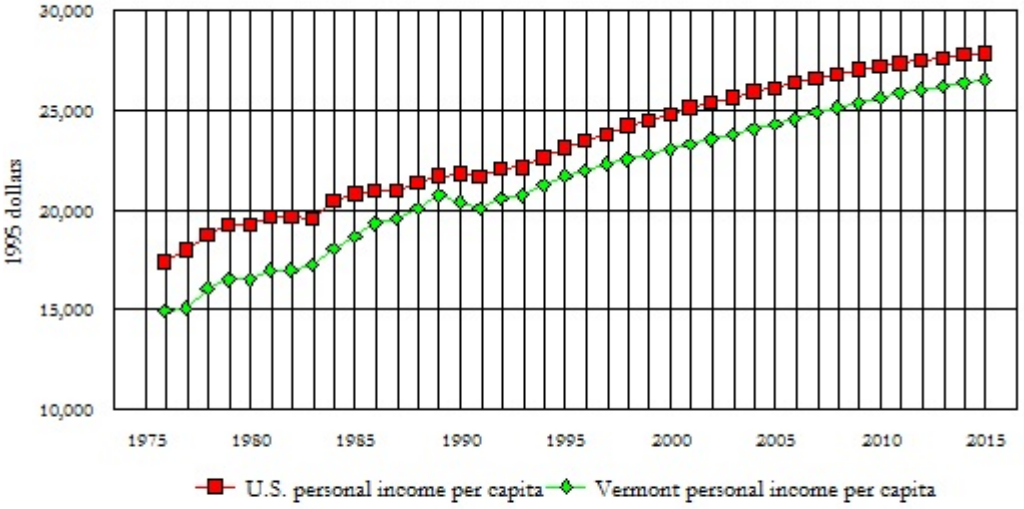


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
GSP	12.00	14.47	16.27	17.99	19.41	21.04	22.48	1.78%	55.42%
Personal inc.	9.89	11.51	12.86	14.28	15.45	16.76	18.04	1.81%	56.70%

Note: Values after 1993 are projections. Source: VT DPS

Figure 3.III.3 Vermont and U.S. Personal Income Per Capita

1995 dollars

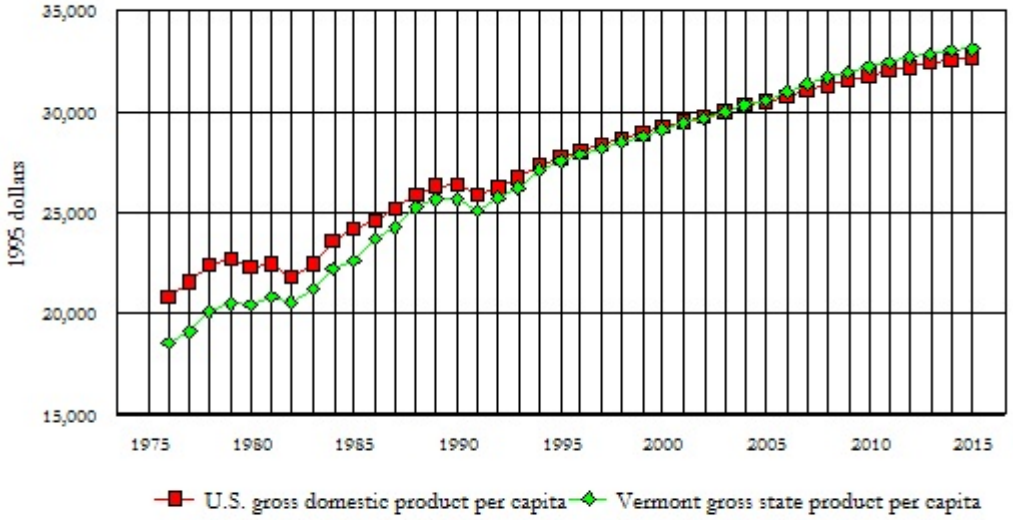


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
U.S.	20,805	21,822	23,159	24,810	26,175	27,222	27,894	0.99%	27.82%
Vermont	18,654	20,409	21,753	23,065	24,298	25,662	26,526	1.05%	29.97%

Note: Values after 1993 are projections. Source: VT DPS

Figure 3.III.4 Vt. GSP and U.S. GDP Per Capita

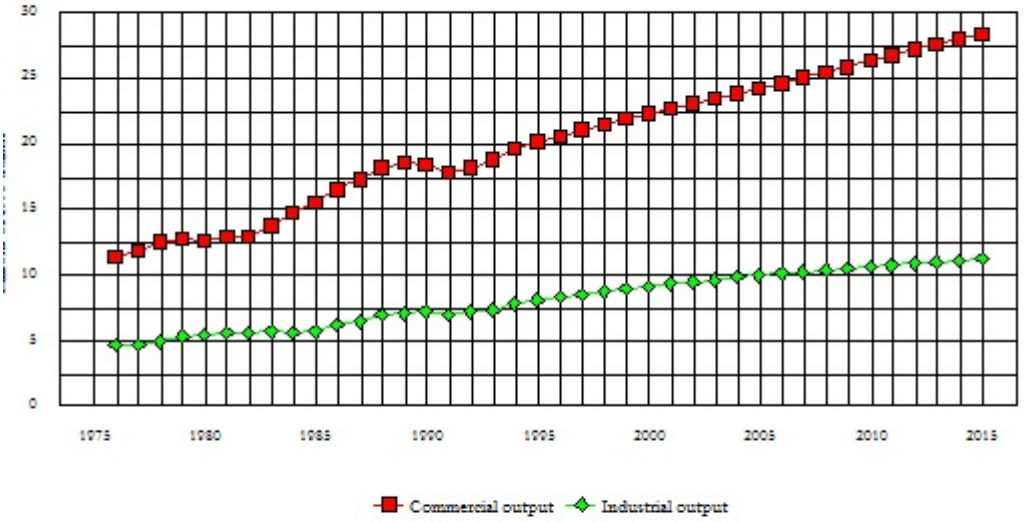
1995 dollars



								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
U.S.	24,145	26,361	27,724	29,227	30,443	31,760	32,687	0.86%	24.00%
Vermont	22,633	25,649	27,525	29,066	30,516	32,216	33,063	1.02%	28.91%

Note: Values after 1993 are projections. Source: VT DPS

Figure 3.III.5 Vermont Commercial and Industrial Output
Billions of 1995 dollars



								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Commercial	15.56	18.49	20.17	22.36	24.22	26.39	28.39	1.73%	53.52%
Industrial	5.74	7.20	8.13	9.15	10.02	10.70	11.23	1.79%	55.91%

Note: Values after 1993 are projections. Source: VT DPS

Figure 3.III.6 Crude Oil Prices

1994 dollars per barrel

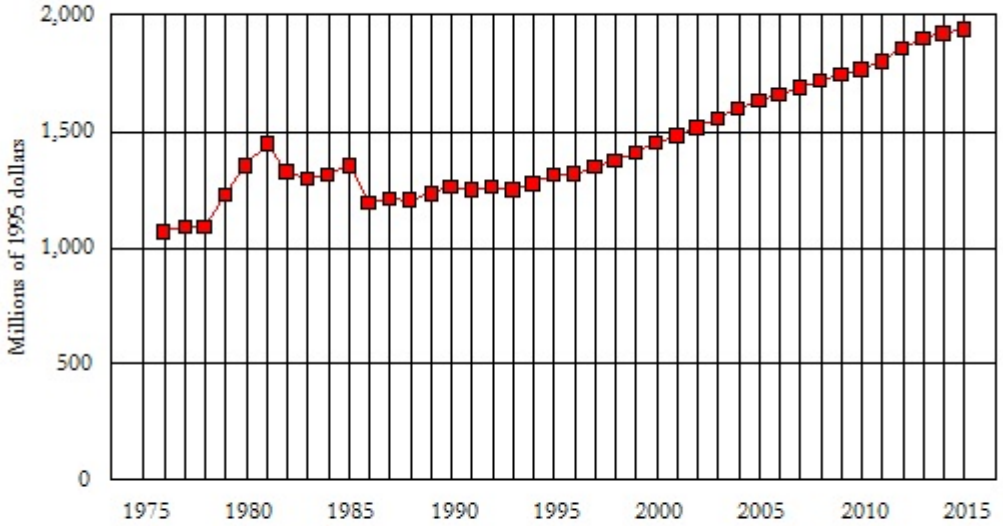
							% Chg 1990-2015	
	1987	1990	2000	2005	2010	2015	Avg Yrly	Total
Oil prices	22.85	25.06	16.03	20.03	22.75	25.20	0.02%	0.56%

Note: Values after 1993 are projections.

Source: Energy Ventures Analysis, Vt. Energy Price Forecast, 1995, Ex. 5-15.

Figure 3.III.7 Vermont Energy Expenditures

Millions of 1995 dollars

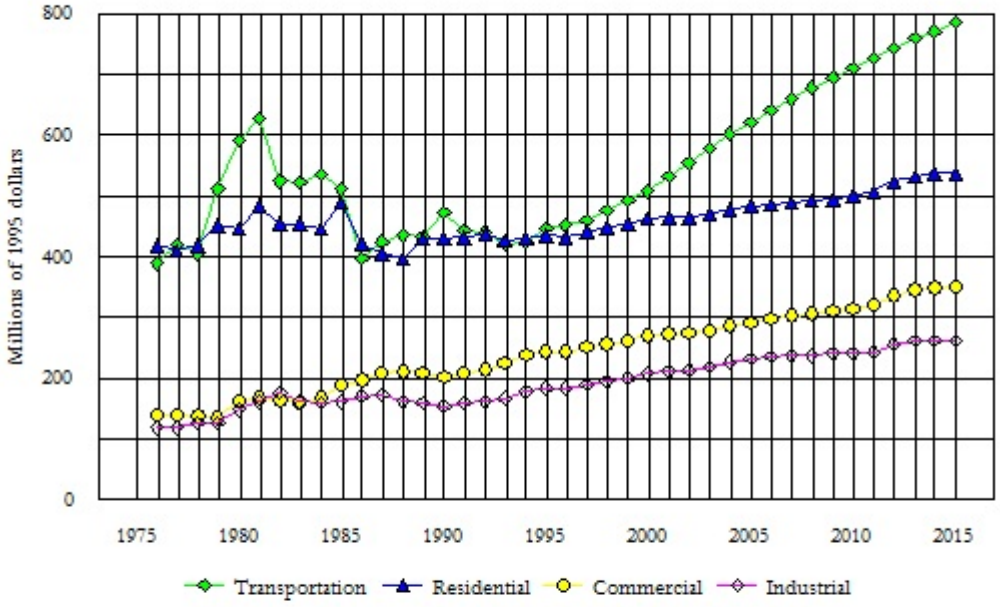


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Expenditures	1,354.8	1,264.5	1,313.1	1,452.4	1,633.5	1,769.7	1,942.8	1.73%	53.65%
Nominal $	921.6	1,081.5	1,313.1	1,716.7	2,344.3	3,094.8	4,149.4	5.53%	283.67%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.8 Vermont Energy Expenditures by Sector

Millions of 1995 dollars

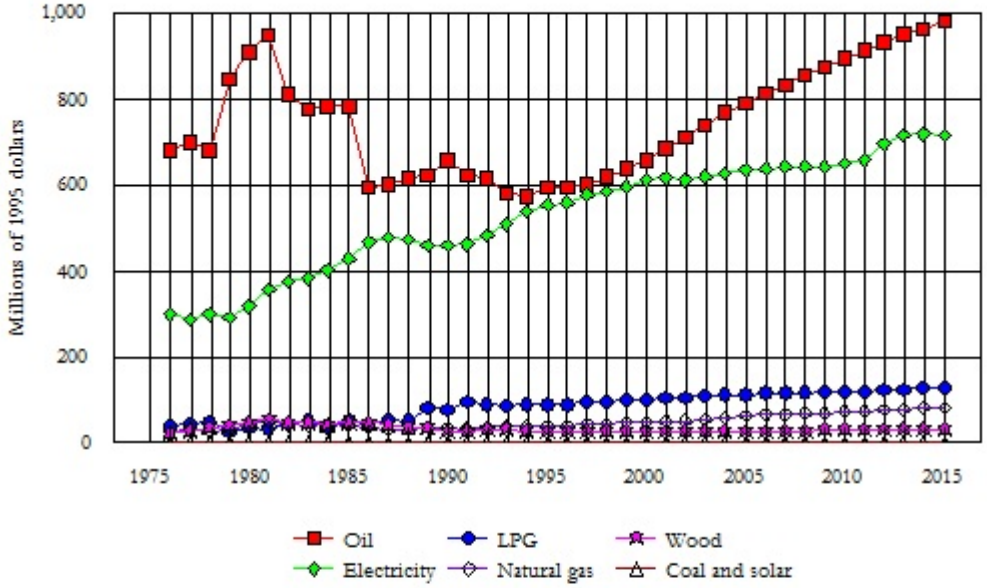


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Transportation	511.0	474.1	448.1	509.9	623.1	711.8	787.7	2.05%	66.15%
Residential	489.5	431.4	437.0	462.8	484.3	500.9	539.4	0.90%	25.02%
Commercial	191.1	203.4	244.0	270.7	293.3	315.1	352.1	2.22%	73.08%
Industrial	163.2	155.5	184.0	209.0	232.7	241.9	263.6	2.13%	69.52%
Total	1,354.8	1,264.5	1,313.1	1,452.4	1,633.5	1,769.7	1,942.8	1.73%	53.65%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.9 Vermont Energy Expenditures by Fuel

Millions of 1995 dollars

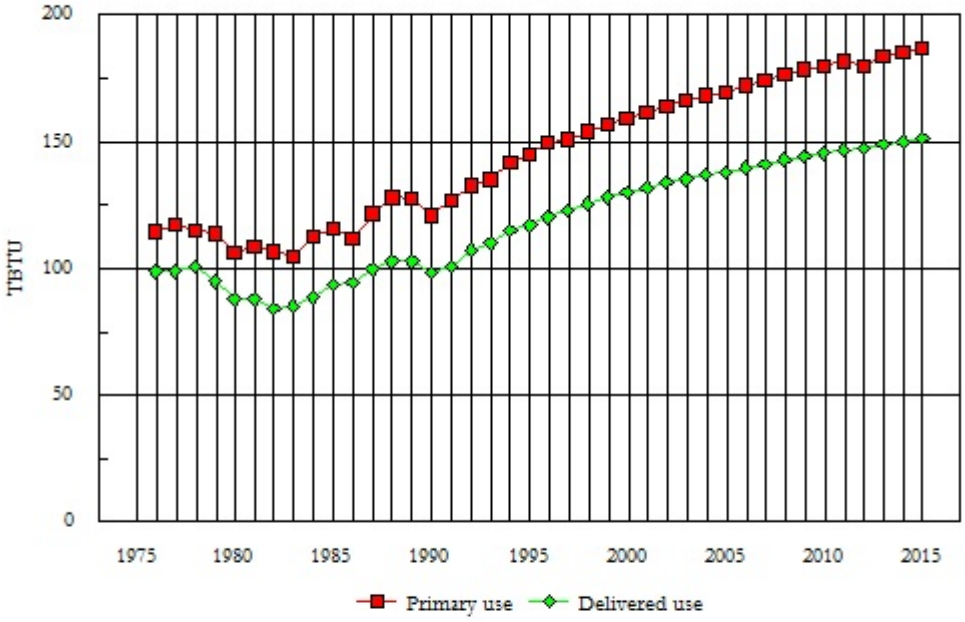


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Oil	782.9	660.0	595.1	657.1	792.5	894.8	981.1	1.60%	48.65%
Electricity	430.7	461.8	555.0	613.4	634.1	649.6	716.8	1.77%	55.22%
LPG (propane)	50.0	77.2	90.0	102.4	113.6	119.5	127.8	2.04%	65.65%
Natural gas	39.7	35.1	41.0	48.2	62.7	72.6	83.8	3.55%	138.95%
Wood	48.5	30.4	30.0	28.8	28.6	31.5	31.4	0.13%	3.20%
Coal	2.9	0.0	2.0	1.7	1.4	1.1	0.9	NA	NA
Solar	0.0	0.0	0.0	0.8	0.7	0.6	0.9	NA	NA
Total	1,354.8	1,264.5	1,313.1	1,452.4	1,633.5	1,769.7	1,942.8	1.73%	53.65%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.10 Vermont Primary and Delivered Energy Use

TBTU

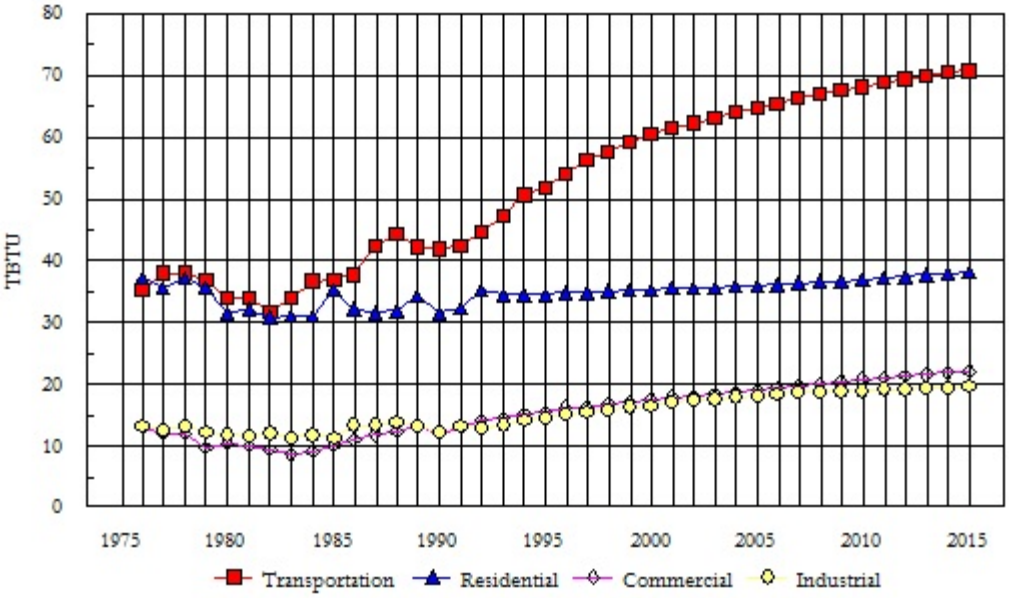


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Primary use	115.78	120.44	144.47	158.86	169.28	179.91	186.45	1.76%	54.81%
Delivered use	93.42	98.04	116.52	130.07	137.86	145.13	150.92	1.74%	53.93%
Population (thousands)	530	564	591	619	636	653	680	0.75%	20.57%
Primary use per capita	218.45	213.55	244.45	256.64	266.16	275.51	274.20	1.00%	28.40%
(million BTU per capita)									

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.11 Vermont Delivered Energy Use by Sector

TBTU



								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Transportation	36.84	42.10	51.85	60.53	64.67	68.33	70.98	2.11%	68.60%
Residential	35.43	31.53	34.66	35.38	35.97	37.02	38.26	0.78%	21.32%
Commercial	9.94	11.99	15.57	17.49	18.99	20.72	22.04	2.46%	83.79%
Industrial	11.22	12.42	14.43	16.67	18.22	19.07	19.64	1.85%	58.17%
Total	93.42	98.04	116.52	130.07	137.86	145.13	150.92	1.74%	53.93%

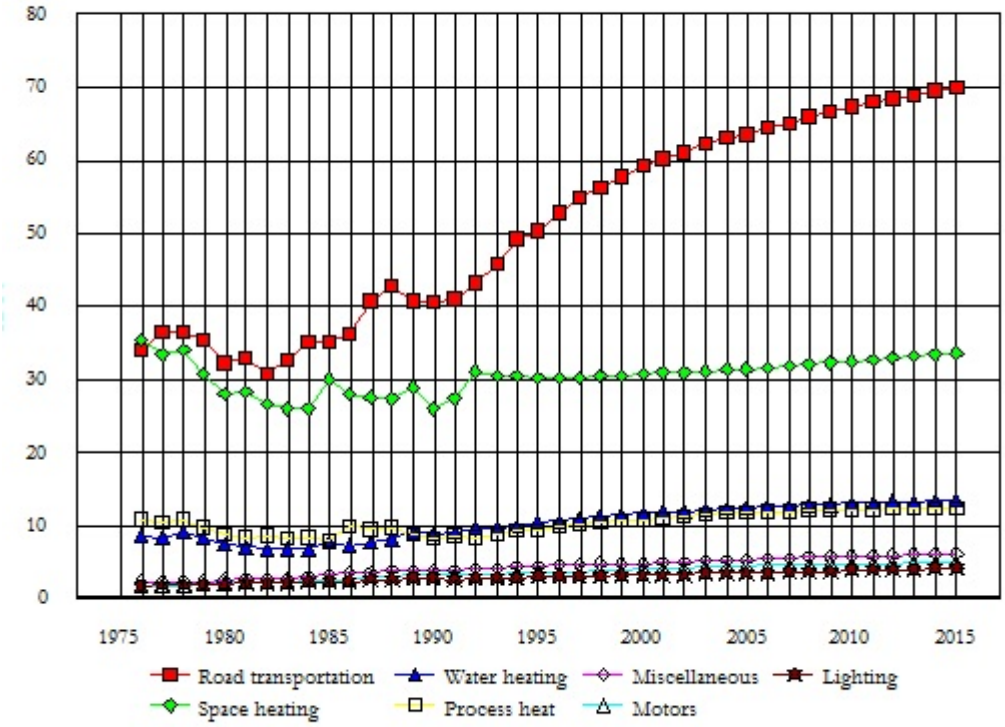
Vermont Primary Energy Use by Sector

								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Transportation	36.84	42.10	51.85	60.53	64.67	68.33	70.98	2.11%	68.60%
Residential	45.52	40.90	46.08	46.97	48.35	50.51	52.07	0.97%	27.30%
Commercial	16.57	18.76	24.16	26.26	28.57	31.55	33.25	2.31%	77.21%
Industrial	16.91	18.74	22.46	25.20	27.81	29.66	30.32	1.94%	61.84%
Total	115.78	120.44	144.47	158.86	169.28	179.91	186.45	1.76%	54.81%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.12 Vermont Delivered Energy Use by End Use

TBTU

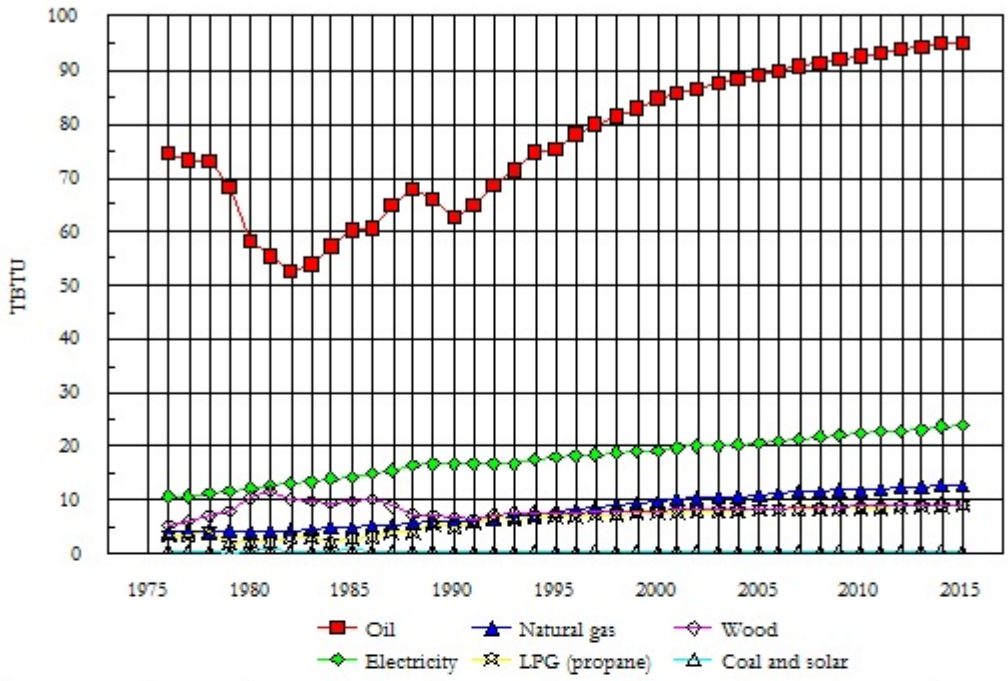


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Road transportation	35.17	40.65	50.46	59.26	63.55	67.28	69.97	2.20%	72.13%
Space heating	30.00	25.93	30.21	30.75	31.32	32.49	33.62	1.04%	29.65%
Water heating	7.80	8.78	10.41	11.70	12.42	13.02	13.57	1.76%	54.55%
Process heat (industrial)	7.82	8.08	9.38	10.91	11.83	12.23	12.45	1.75%	54.18%
Miscellaneous	3.20	3.96	4.43	4.86	5.33	5.83	6.22	1.82%	56.94%
Motors (industrial)	2.50	3.18	3.61	4.05	4.46	4.80	5.05	1.86%	58.59%
Lighting	2.33	2.69	2.91	3.19	3.48	3.82	4.11	1.72%	53.18%
Refrigeration	1.52	1.66	1.71	1.81	1.89	1.99	2.10	0.96%	26.92%
Plane, train, marine	1.68	1.46	1.42	1.26	1.12	1.05	1.01	-1.46%	-30.82%
Cooking	0.64	0.79	0.88	0.94	0.98	1.04	1.10	1.31%	38.59%
Drying	0.37	0.43	0.50	0.55	0.59	0.64	0.69	1.87%	58.89%
Air conditioning	0.27	0.35	0.39	0.44	0.50	0.56	0.63	2.37%	79.60%
Total	93.32	97.96	116.29	129.70	137.46	144.75	150.51	1.73%	53.65%
Total w/out transp.	58.15	57.31	65.83	70.44	73.91	77.47	80.54	1.37%	40.54%

Note: Does not include energy used for cogeneration. Values after 1991 are projections. Source: VT DPS

Figure 3.III.13 Vermont Delivered Energy Use by Fuel

TBTU



								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Oil	60.24	62.80	75.26	84.67	88.99	92.69	95.16	1.68%	51.53%
Electricity	14.44	16.78	17.94	19.30	20.79	22.47	23.89	1.42%	42.40%
Natural gas	5.13	6.18	7.98	9.80	11.06	12.06	12.84	2.97%	107.75%
LPG (propane)	2.90	5.00	7.11	7.74	8.17	8.62	9.14	2.44%	82.86%
Wood	9.91	6.93	7.75	8.08	8.36	8.77	9.33	1.20%	34.61%
Coal	0.75	0.30	0.40	0.39	0.38	0.38	0.39	1.05%	30.00%
Solar	0.06	0.06	0.08	0.10	0.12	0.14	0.16	4.42%	194.55%
Total	93.42	98.04	116.52	130.07	137.86	145.13	150.92	1.74%	53.93%

Vermont Primary Energy Use by Fuel

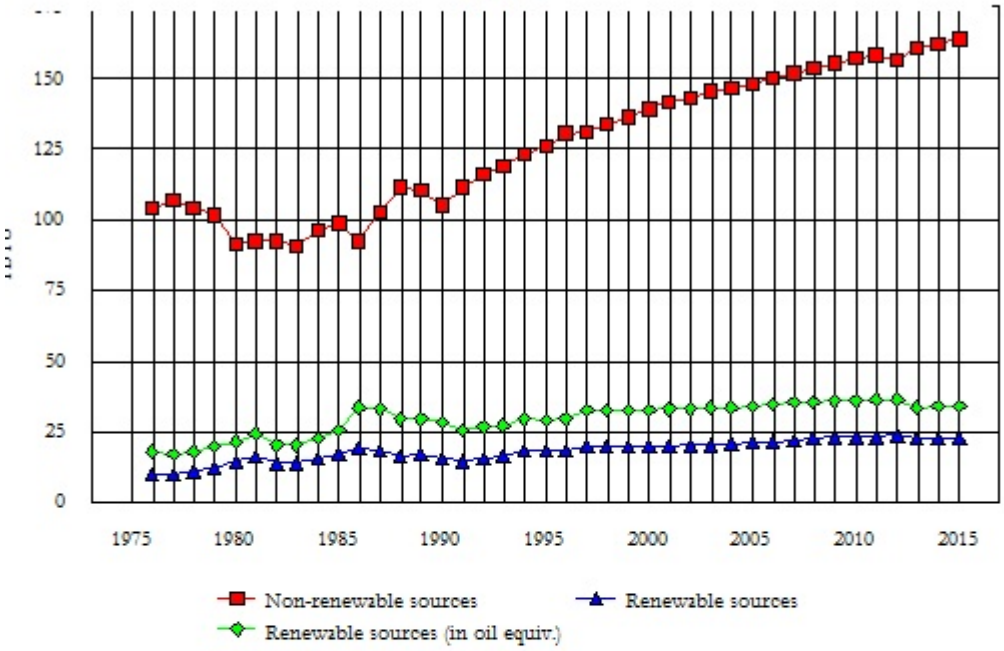
								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Oil	63.82	67.59	90.50	94.68	99.53	103.30	101.85	1.65%	50.70%
Natural gas	5.26	6.20	8.12	13.06	18.70	24.06	49.98	8.71%	706.23%
Wood	11.61	8.13	11.94	12.30	13.68	15.54	16.16	2.79%	98.76%
LPG (propane)	2.90	5.00	7.13	8.30	8.65	8.95	9.39	2.55%	87.64%
Hydro	5.15	7.46	6.38	7.52	7.61	7.61	6.61	-0.48%	-11.42%
Nuclear	16.39	18.72	16.55	22.50	20.59	19.90	1.90	-8.74%	-89.85%
Coal	10.59	7.27	3.75	0.39	0.38	0.38	0.39	-11.04%	-94.64%
Solar	0.06	0.06	0.08	0.10	0.12	0.14	0.16	4.42%	194.55%
Total	115.78	120.44	144.47	158.86	169.28	179.91	186.45	1.76%	54.81%

Note: Primary energy consumption was calculated by applying heat rates to the fossil fuels and nuclear power used to generate electricity; for hydroelectric power, 5% was added to the power coming from Hydro-Quebec to account for line losses before the power enters Vermont.

Total percent changes for end uses with small values may appear larger than they should be due to rounding of values in individual years. Values after 1991 are projections. Source: VT DPS

Figure 3.III.14 Vt. Non-renewable & Renewable Primary Energy Use

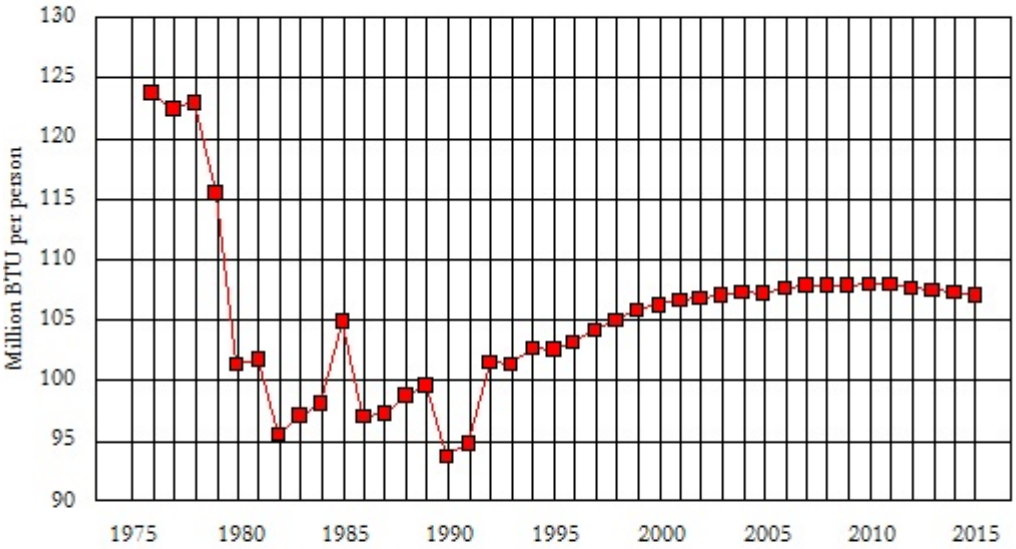
TBTU



								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Oil	63.82	67.59	90.50	94.68	99.53	103.30	101.85	1.65%	50.70%
Natural gas	5.26	6.20	8.12	13.06	18.70	24.06	49.98	8.71%	706.23%
LPG (propane)	2.90	5.00	7.13	8.30	8.65	8.95	9.39	2.55%	87.64%
Nuclear	16.39	18.72	16.55	22.50	20.59	19.90	1.90	-8.74%	-89.85%
Coal	10.59	7.27	3.75	0.39	0.38	0.38	0.39	-11.04%	-94.64%
Total non-renewables	98.96	104.79	126.05	138.92	147.85	156.59	163.51	1.80%	56.04%
Hydroelectric	5.15	7.46	6.38	7.52	7.61	7.61	6.61	-0.48%	-11.42%
(Oil equivalent of hydro)	13.89	20.10	17.20	20.26	20.50	20.51	17.80	-0.48%	-11.42%
Wood	11.61	8.13	11.94	12.30	13.68	15.54	16.16	2.79%	98.76%
Solar	0.06	0.06	0.08	0.10	0.12	0.14	0.16	4.42%	194.55%
Total renewables	16.82	15.64	18.40	19.93	21.41	23.29	22.93	1.54%	46.57%
	25.56	28.28	29.22	32.67	34.30	36.19	34.12	0.75%	20.65%

Note: "Oil equivalent of hydro" is the amount of oil (as burned in conventional power plants) that is displaced by Vermont's use of hydroelectric power. Values after 1991 are projections. Source: VT DPS

Figure 3.III.15 Vermont Energy Intensity, Residential Sector
Million BTU per person

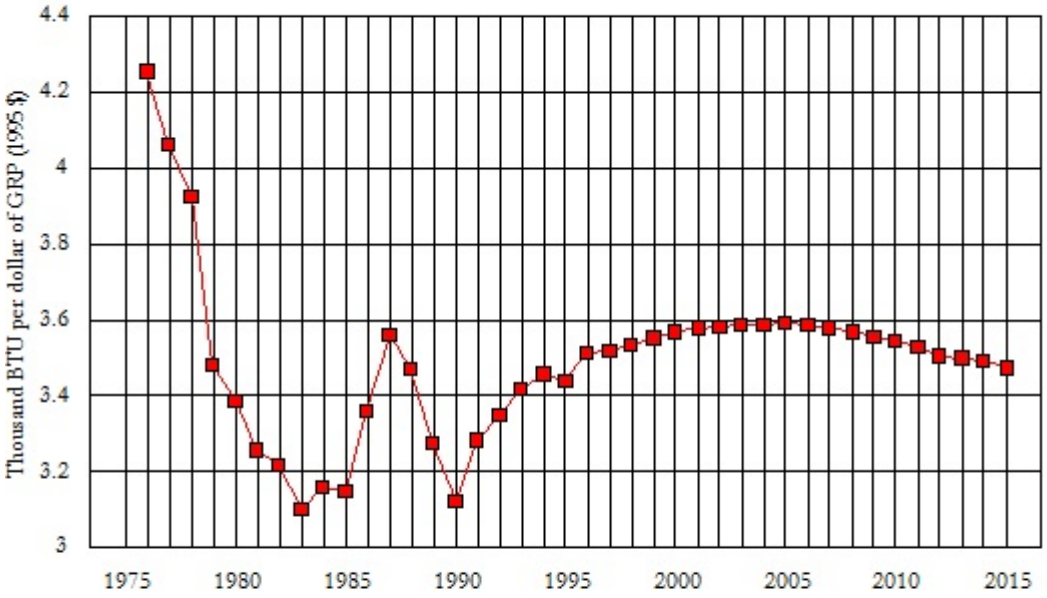


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Residential delivered									
energy use (TBTU)	55.6	52.9	60.6	65.8	68.2	70.6	72.8	1.29%	37.68%
Population (thousands)	530.0	564.0	591.0	619.0	636.0	653.0	680.0	0.75%	20.57%
Million BTU per person	105.0	93.7	102.5	106.3	107.2	108.1	107.0	0.53%	14.19%

Note: Residential energy use includes transportation use. Values after 1991 are projections. Source: VT DPS

Figure 3.III.16 Vt. Energy Intensity, Commercial & Industrial Sectors

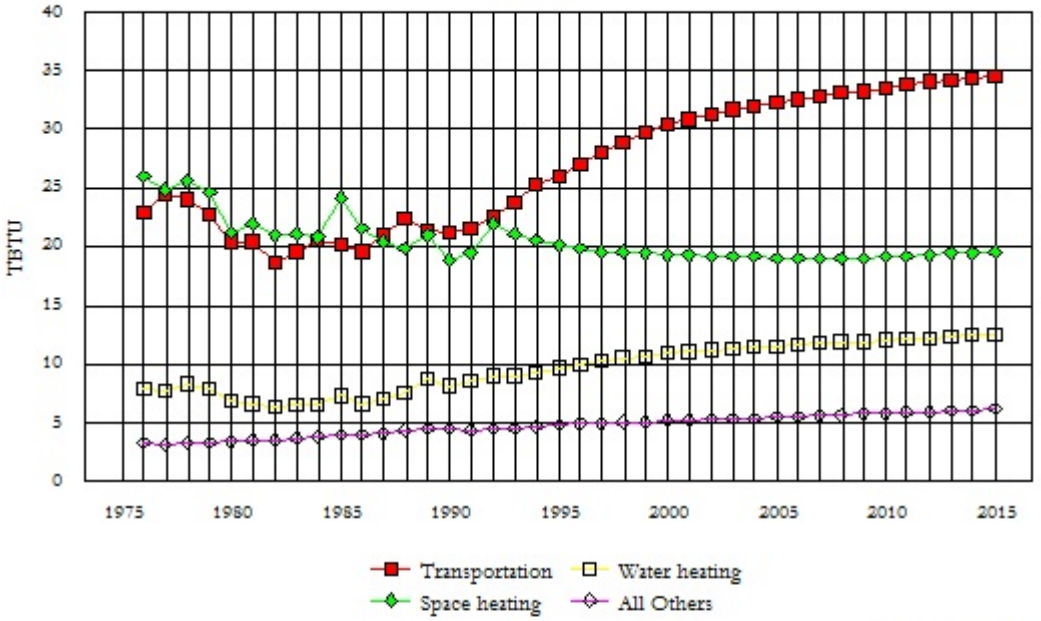
Thousand BTU per dollar of real GSP (1995 dollars)



								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
C & I delivered energy use									
(TBTU)	37.80	45.20	55.95	64.26	69.69	74.57	78.15	2.21%	72.90%
Real GSP (1995 billions of $)	12.00	14.47	16.27	17.99	19.41	21.04	22.48	1.78%	55.42%
Thousand BTU per dollar	3.15	3.12	3.44	3.57	3.59	3.54	3.48	0.43%	11.25%
Note: Commercial and industrial energy use includes transportation uses. Values after 1991 are projections.									
Source: VT DPS									

Figure 3.III.17 Vt. Residential Delivered Energy Use by End Use

TBTU

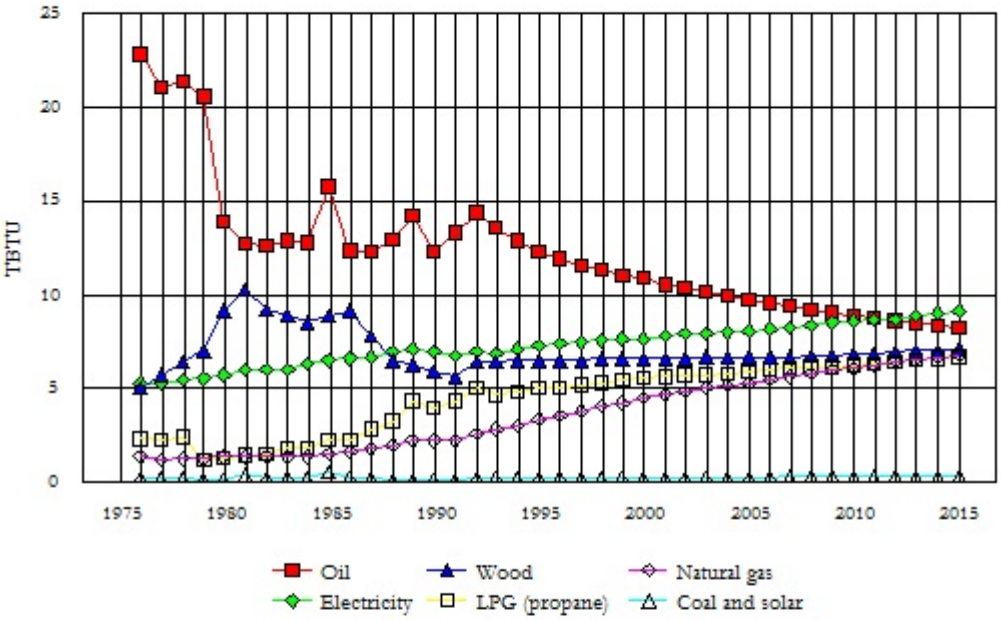


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Transportation	20.20	21.32	25.93	30.42	32.20	33.54	34.51	1.95%	61.87%
Space heating	24.14	18.85	20.16	19.35	19.00	19.16	19.53	0.14%	3.62%
Water heating	7.34	8.19	9.69	10.88	11.53	12.05	12.53	1.72%	53.08%
Miscellaneous	1.37	1.59	1.72	1.85	2.00	2.18	2.34	1.56%	47.14%
Refrigeration	1.19	1.27	1.30	1.35	1.39	1.43	1.49	0.65%	17.56%
Cooking	0.59	0.73	0.82	0.88	0.90	0.95	1.00	1.27%	36.95%
Drying	0.37	0.43	0.50	0.55	0.59	0.64	0.69	1.87%	58.89%
Lighting	0.38	0.40	0.40	0.43	0.45	0.47	0.50	0.94%	26.38%
Air conditioning	0.05	0.08	0.08	0.10	0.12	0.15	0.17	3.19%	118.99%
Total	55.63	52.85	60.60	65.80	68.17	70.56	72.77	1.29%	37.68%
Total w/o transp.	35.43	31.53	34.67	35.38	35.97	37.02	38.26	0.78%	21.33%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.18 Vt. Residential Delivered Energy Use by Fuel

TBTU



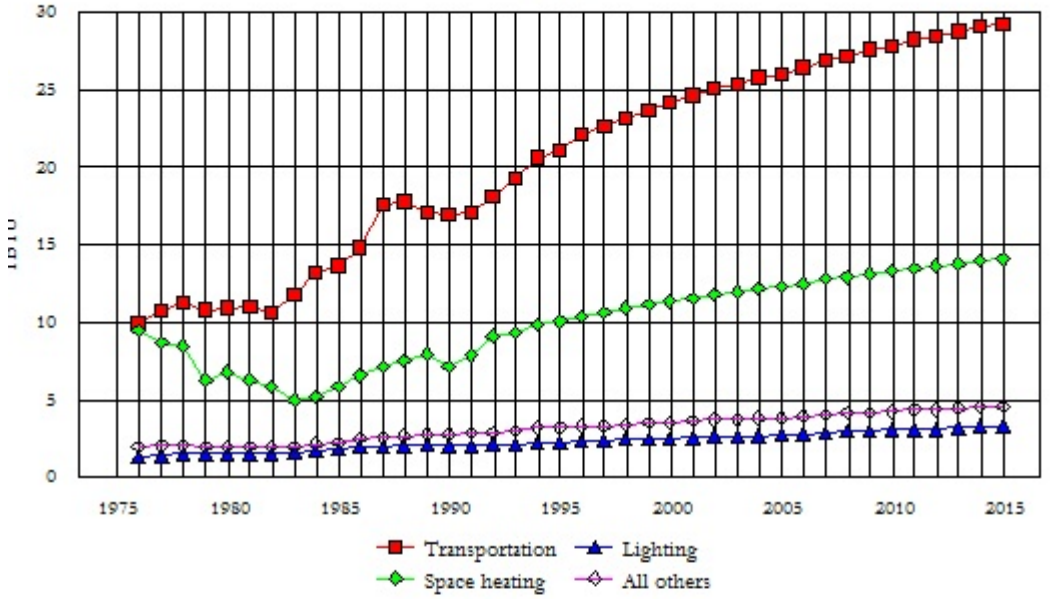
								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Oil	15.80	12.30	12.24	10.84	9.74	8.91	8.26	-1.58%	-32.87%
Electricity	6.49	7.69	7.28	7.69	8.09	8.61	9.15	0.70%	18.97%
Wood	8.84	5.92	6.51	6.61	6.66	6.84	7.08	0.72%	19.68%
LPG (propane)	2.20	4.00	5.03	5.55	5.91	6.28	6.67	2.07%	66.75%
Natural gas	1.54	2.19	3.41	4.46	5.33	6.10	6.79	4.64%	210.80%
Coal	0.50	0.10	0.12	0.13	0.13	0.14	0.14	1.38%	41.00%
Solar	0.00	0.06	0.08	0.10	0.12	0.14	0.16	4.42%	194.55%
Total	35.43	31.53	34.67	35.38	35.97	37.02	38.26	0.78%	21.33%

Note: Does not include transportation fuel use in the residential sector. Values after 1991 are projections.

Source: VT DPS

Figure 3.III.19 Vt. Commercial Delivered Energy Use by End Use

TBTU

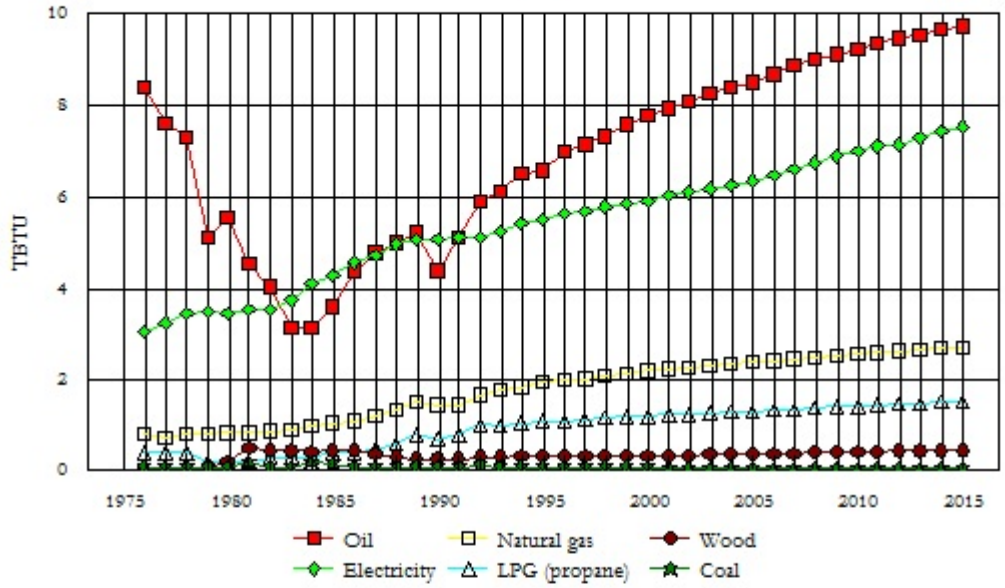


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Transportation	13.64	16.99	21.09	24.29	26.04	27.88	29.26	2.20%	72.22%
Space heating	5.86	7.08	10.04	11.40	12.33	13.33	14.09	2.79%	98.88%
Lighting	1.81	2.10	2.31	2.53	2.78	3.09	3.33	1.86%	58.46%
Miscellaneous	1.18	1.50	1.74	1.88	2.04	2.26	2.42	1.95%	62.03%
Water heating	0.46	0.59	0.71	0.82	0.89	0.97	1.03	2.26%	74.92%
Refrigeration	0.34	0.39	0.42	0.46	0.50	0.56	0.61	1.84%	57.62%
Air conditioning	0.22	0.27	0.30	0.34	0.38	0.42	0.45	2.10%	68.03%
Cooking	0.06	0.07	0.05	0.06	0.08	0.09	0.10	1.82%	56.92%
Total	23.57	28.99	36.67	41.78	45.03	48.60	51.30	2.31%	77.00%
Total w/o transp.	9.93	12.00	15.58	17.49	18.99	20.72	22.04	2.46%	83.77%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.20 Vt. Commercial Delivered Energy Use by Fuel

TBTU



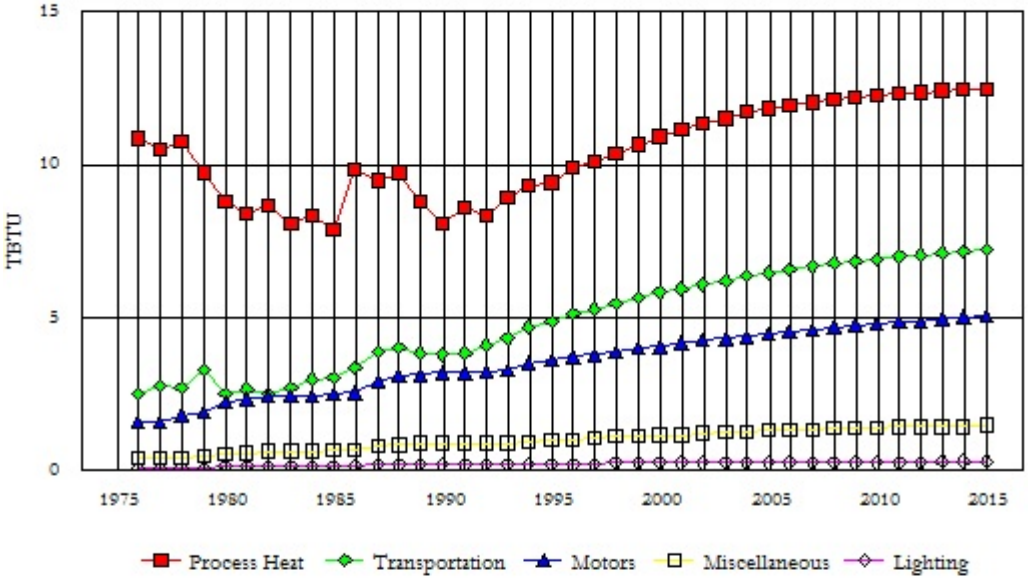
								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Oil	3.60	4.40	6.59	7.78	8.52	9.24	9.73	3.22%	121.11%
Electricity	4.29	5.07	5.52	5.89	6.35	7.01	7.55	1.61%	48.90%
Natural gas	1.06	1.44	1.94	2.19	2.38	2.58	2.72	2.57%	88.68%
LPG (propane)	0.40	0.70	1.09	1.22	1.31	1.43	1.54	3.20%	120.00%
Wood	0.43	0.28	0.34	0.34	0.37	0.41	0.46	2.00%	63.96%
Coal	0.15	0.10	0.10	0.07	0.06	0.05	0.04	-3.50%	-59.00%
Solar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
Total	9.93	12.00	15.58	17.49	18.99	20.72	22.04	2.46%	83.77%

Note: Does not include transportation use in the commercial sector. Values after 1991 are projections.

Source: VT DPS

Figure 3.III.21 Vt. Industrial Delivered Energy Use by End Use

TBTU

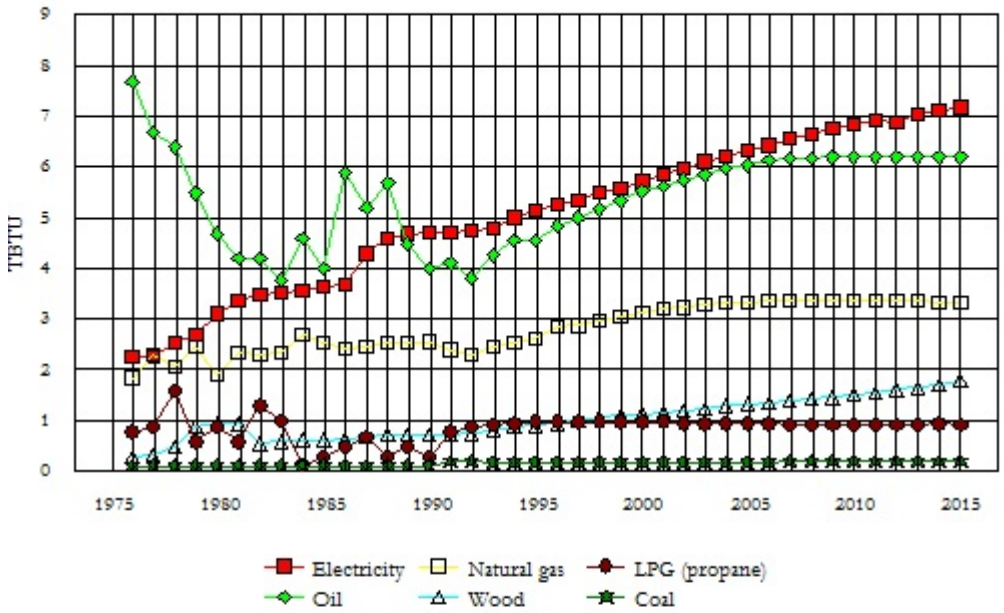


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Process Heat	7.82	8.08	9.38	10.91	11.83	12.23	12.45	1.75%	54.18%
Transportation	3.01	3.80	4.86	5.81	6.43	6.91	7.21	2.59%	89.74%
Motors	2.50	3.18	3.61	4.05	4.46	4.80	5.05	1.86%	58.59%
Miscellaneous	0.65	0.88	0.98	1.13	1.30	1.39	1.45	2.05%	66.06%
Lighting	0.14	0.18	0.20	0.22	0.24	0.26	0.28	1.66%	50.82%
Total	14.12	16.12	19.03	22.12	24.26	25.60	26.44	2.00%	64.04%
Total w/o transp.	11.11	12.32	14.17	16.31	17.83	18.69	19.23	1.80%	56.11%

Note: Does not include energy used for cogeneration. Values after 1991 are projections. Source: VT DPS

Figure 3.III.22 Vt. Industrial Delivered Energy Use by Fuel

TBTU



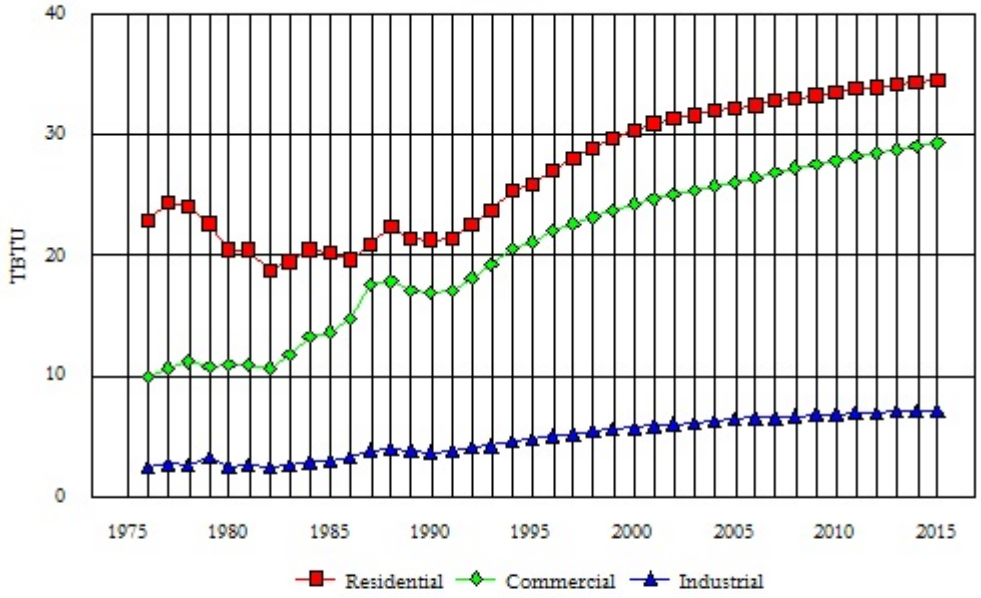
								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Electricity	3.65	4.73	5.15	5.71	6.34	6.85	7.19	1.69%	51.94%
Oil	4.00	4.00	4.57	5.52	6.06	6.21	6.20	1.77%	54.90%
Natural gas	2.52	2.56	2.63	3.15	3.35	3.38	3.33	1.07%	30.33%
Wood	0.64	0.73	0.91	1.13	1.33	1.52	1.78	3.64%	144.44%
LPG (propane)	0.30	0.30	0.99	0.98	0.95	0.91	0.93	4.64%	211.00%
Coal	0.10	0.10	0.18	0.18	0.19	0.20	0.21	2.97%	108.00%
Solar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	NA	NA
Total	11.22	12.42	14.43	16.67	18.22	19.07	19.64	1.85%	58.17%

Note: Does not include transportation use in the industrial sector; includes energy used for cogeneration.

Values after 1991 are projections. Source: VT DPS

Figure 3.III.23 Vt. Transportation Delivered Energy Use by Sector

TBTU

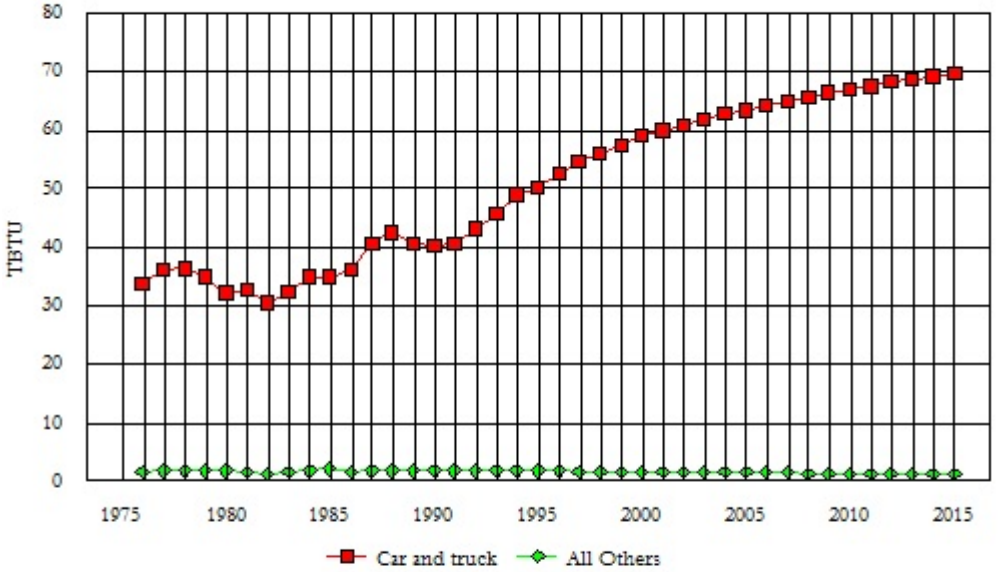


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Residential	20.20	21.32	25.93	30.42	32.20	33.54	34.51	1.95%	61.87%
Commercial	13.64	16.99	21.09	24.29	26.04	27.88	29.26	2.20%	72.22%
Industrial	3.01	3.80	4.86	5.81	6.43	6.91	7.21	2.59%	89.74%
Total	36.85	42.11	51.88	60.52	64.67	68.33	70.98	2.11%	68.56%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.24 Vt. Transportation Delivered Energy Use by End Use

TBTU

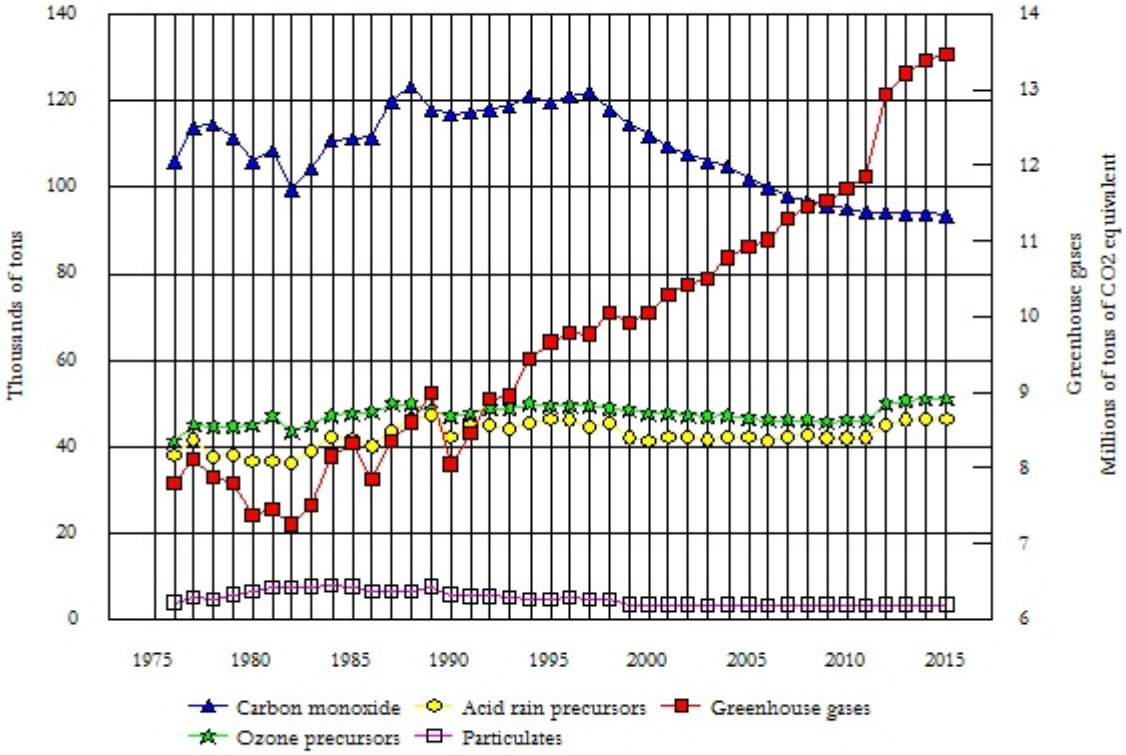


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Car and truck	34.84	40.39	50.16	58.95	63.23	66.96	69.64	2.20%	72.42%
Plane	1.22	0.96	0.91	0.77	0.64	0.55	0.50	-2.58%	-47.92%
Marine	0.25	0.31	0.35	0.38	0.41	0.45	0.48	1.76%	54.84%
Bus	0.33	0.26	0.30	0.31	0.32	0.32	0.33	0.96%	26.92%
Train	0.21	0.19	0.16	0.11	0.07	0.05	0.03	-7.12%	-84.21%
Total	36.85	42.11	51.88	60.52	64.67	68.33	70.98	2.11%	68.56%

Note: Values after 1991 are projections. Source: VT DPS

Figure 3.III.25 Vermont Emissions from Energy Use

Tons

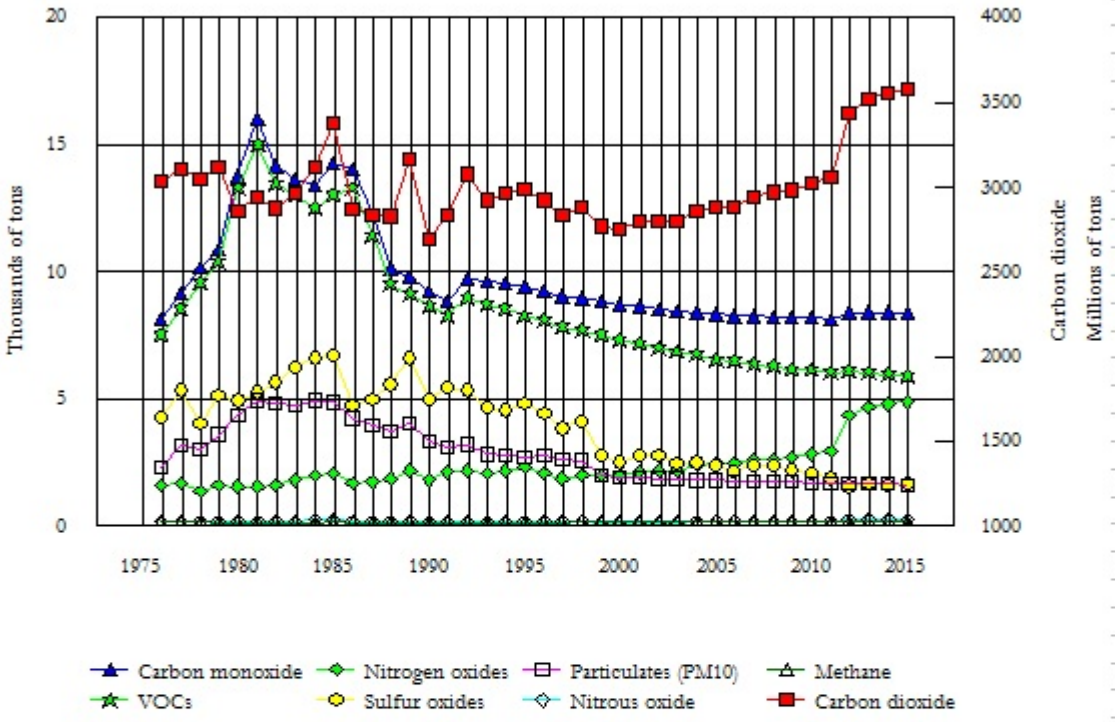


Individual Emissions									
								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Carbon dioxide	8,134,909	7,866,758	9,445,243	9,820,970	10,673,705	11,413,829	13,102,938	2.06%	66.56%
Net carbon dioxide	6,818,022	6,938,559	8,198,472	8,552,176	9,258,119	9,788,434	11,406,781	2.01%	64.40%
Carbon monoxide	111,266	116,856	119,478	112,076	101,783	94,911	93,585	-0.88%	-19.91%
Nitrogen oxides	22,930	25,326	27,739	26,699	26,588	26,540	31,742	0.91%	25.33%
VOCs	24,586	21,581	21,826	21,086	20,008	19,436	19,356	-0.43%	-10.31%
Sulfur oxides	18,764	17,055	18,698	14,685	15,568	15,453	14,870	-0.55%	-12.81%
Particulates (PM10)	7,878	5,976	4,811	3,427	3,399	3,407	3,418	-2.21%	-42.80%
Nitrous oxide	713	646	821	834	943	1,013	1,317	2.89%	103.87%
Methane	654	629	681	730	773	803	841	1.17%	33.70%
Aggregate Emissions									
Greenhouse gases									
(CO2 equivalent)	8,334,613	8,048,097	9,674,404	10,054,180	10,936,818	11,696,172	13,467,779	2.08%	67.34%
Ozone precursors	47,516	46,907	49,565	47,785	46,596	45,976	51,098	0.34%	8.93%
Acid rain precursors	41,694	42,381	46,437	41,384	42,156	41,993	46,612	0.38%	9.98%

Note: Net carbon dioxide is emissions when wood carbon dioxide emissions are zero, due to sustainable harvesting.
Greenhouse gases are carbon dioxide, methane, and nitrous oxide; ground-level ozone precursors are VOCs and nitrogen oxides; acid rain precursors are sulfur oxides and nitrogen oxides. Values after 1991 are projections.
Source: VT DPS

Figure 3.III.26 Vermont Emissions from Residential Energy Use

Tons

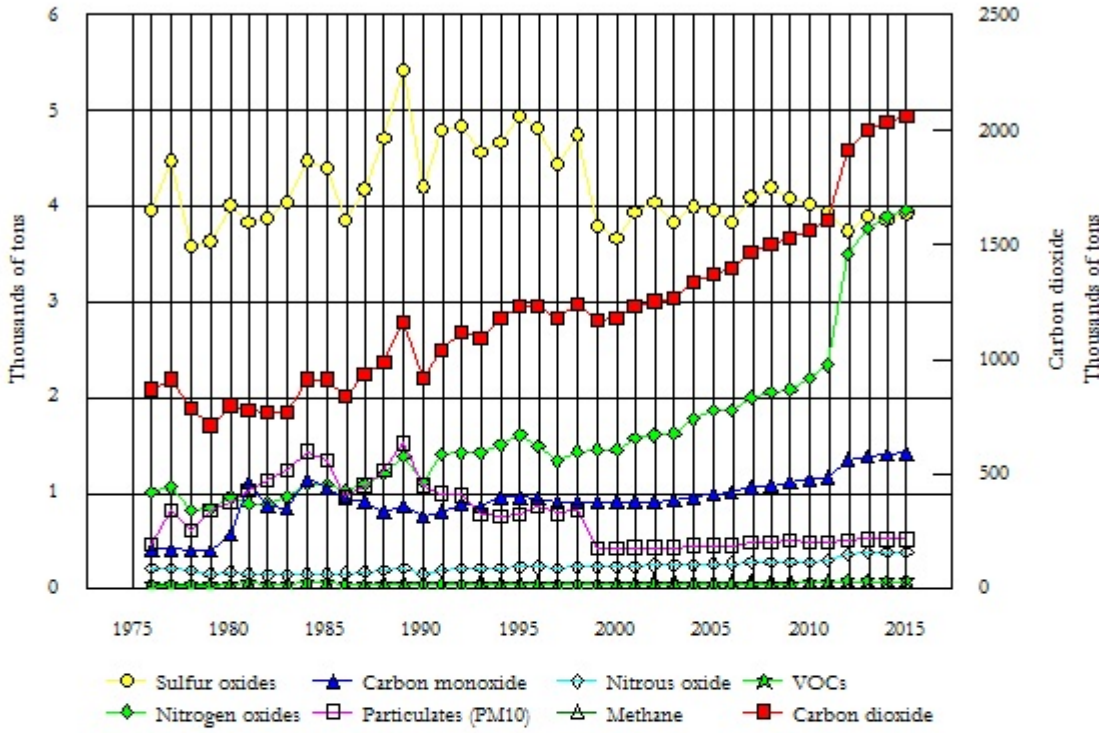


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Carbon monoxide	14,300	9,237	9,405	8,719	8,317	8,197	8,415	-0.37%	-8.90%
VOCs	12,975	8,668	8,272	7,315	6,580	6,143	5,926	-1.51%	-31.64%
Nitrogen oxides	2,062	1,803	2,307	2,030	2,483	2,824	4,915	4.09%	172.68%
Sulfur oxides	6,742	5,001	4,855	2,500	2,401	2,058	1,663	-4.31%	-66.75%
Particulates (PM10)	4,894	3,331	2,713	1,961	1,806	1,714	1,657	-2.75%	-50.25%
Nitrous oxide	290	209	224	182	198	209	316	1.66%	50.82%
Methane	227	157	185	196	212	228	243	1.76%	54.61%
Carbon dioxide	3,374,128	2,695,998	2,989,453	2,753,883	2,882,369	3,016,647	3,575,432	1.14%	32.62%
Aggregate Emissions									
Greenhouse gases									
(CO2 equivalent)	3,454,951	2,754,221	3,051,970	2,805,131	2,938,216	3,075,534	3,663,307	1.15%	33.01%
Ozone precursors	15,037	10,471	10,579	9,345	9,063	8,967	10,841	0.14%	3.54%
Acid rain precursors	8,804	6,803	7,163	4,530	4,883	4,882	6,578	-0.13%	-3.31%

Note: Emissions exclude transportation energy use in the residential sector. See the glossary for a definition of CO2 equivalent. Greenhouse gases are carbon dioxide, methane, and nitrous oxide; ground-level ozone precursors are VOCs and nitrogen oxides; acid rain precursors are sulfur oxides and nitrogen oxides. Values after 1991 are projections. Source: VT DPS

Figure 3.III.27 Vermont Emissions from Commercial Energy Use

Tons

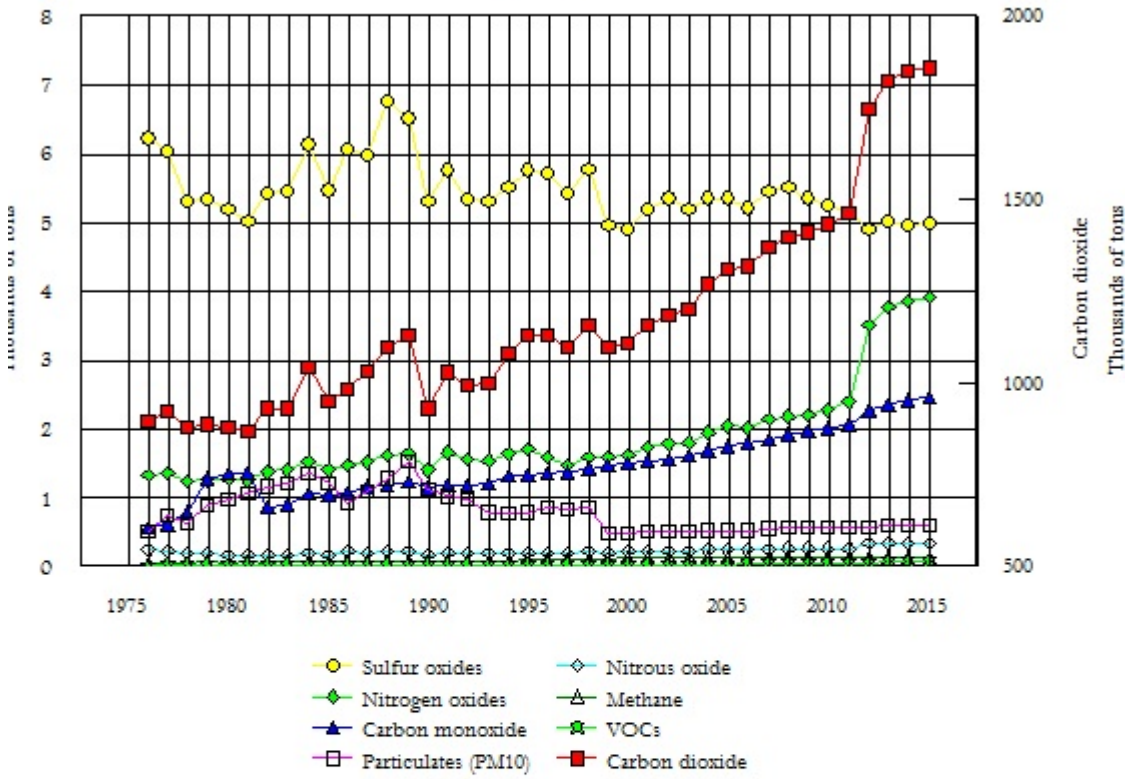


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Sulfur oxides	4,408	4,194	4,946	3,951	3,959	4,027	3,931	-0.26%	-6.27%
Nitrogen oxides	1,097	1,115	1,609	1,574	1,865	2,209	3,957	5.20%	254.92%
Carbon monoxide	1,045	761	965	914	997	1,143	1,429	2.55%	87.77%
Particulates (PM10)	1,338	1,081	779	428	452	494	519	-2.89%	-51.94%
Nitrous oxide	162	168	228	236	260	289	391	3.42%	132.02%
Methane	56	58	68	68	71	76	80	1.27%	37.17%
VOCs	57	43	48	44	47	52	74	2.19%	71.89%
Carbon dioxide	909,435	918,218	1,233,668	1,232,307	1,377,325	1,566,002	2,061,411	3.29%	124.50%
Aggregate Emissions									
Greenhouse gases									
(CO2 equivalent)	953,916	964,310	1,295,893	1,296,903	1,448,436	1,644,847	2,167,746	3.29%	124.80%
Ozone precursors	1,154	1,158	1,658	1,618	1,911	2,261	4,031	5.12%	248.10%
Acid rain precursors	5,505	2,158	2,223	2,236	2,265	2,299	2,406	0.43%	11.46%

Note: Emissions exclude transportation energy use in the commercial sector. See the glossary for a definition of CO2 equivalent. Greenhouse gases are carbon dioxide, methane, and nitrous oxide; ground-level ozone precursors are VOCs and nitrogen oxides; acid rain precursors are sulfur oxides and nitrogen oxides. Values after 1991 are projections. Source: VT DPS

Figure 3.III.28 Vermont Emissions from Industrial Energy Use

Tons

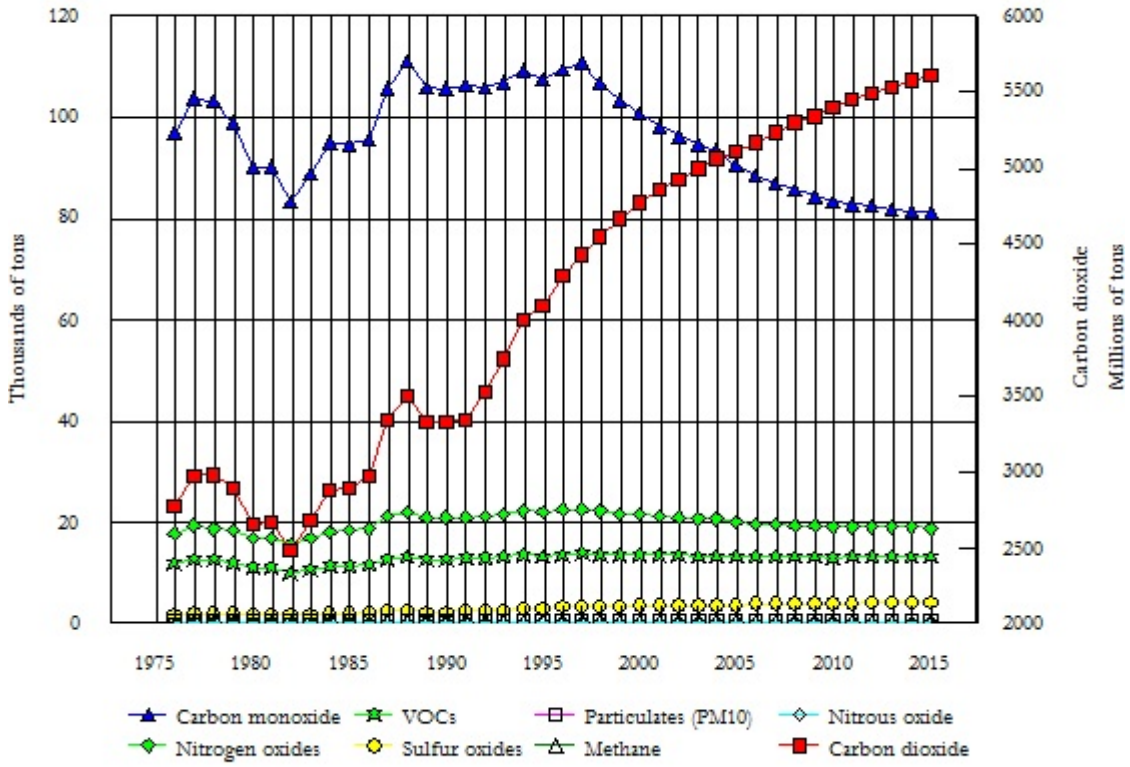


								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Sulfur oxides	5,484	5,303	5,758	4,905	5,355	5,267	4,997	-0.24%	-5.77%
Nitrogen oxides	1,412	1,402	1,727	1,628	2,051	2,295	3,910	4.19%	178.84%
Carbon monoxide	1,053	1,156	1,342	1,493	1,759	2,019	2,466	3.08%	113.31%
Particulates (PM10)	1,227	1,115	797	476	539	577	603	-2.43%	-45.89%
Nitrous oxide	183	180	212	216	252	268	354	2.73%	96.12%
Methane	82	83	95	119	134	132	139	2.06%	66.47%
VOCs	37	40	39	40	46	52	76	2.62%	90.82%
Carbon dioxide	951,772	931,623	1,130,546	1,110,173	1,310,335	1,436,367	1,861,789	2.81%	99.84%
Aggregate Emissions									
Greenhouse gases									
(CO2 equivalent)	1,002,203	981,258	1,188,911	1,169,936	1,379,946	1,510,240	1,958,860	2.80%	99.63%
Ozone precursors	1,449	1,442	1,766	1,668	2,097	2,347	3,986	4.15%	176.41%
Acid rain precursors	6,896	6,705	7,485	6,533	7,405	7,562	8,907	1.14%	32.84%

Note: Emissions exclude transportation energy use in the industrial sector. See the glossary for a definition of CO2 equivalent. Greenhouse gases are carbon dioxide, methane, and nitrous oxide; ground-level ozone precursors are VOCs and nitrogen oxides; acid rain precursors are sulfur oxides and nitrogen oxides. Values after 1991 are projections. Source: VT DPS

Figure 3.III.29 Vermont Emissions from Transportation Energy Use

Tons



								% Chg 1990-2015	
	1985	1990	1995	2000	2005	2010	2015	Avg Yrly	Total
Carbon monoxide	94,867	105,702	107,766	100,959	90,710	83,552	81,275	-1.05%	-23.11%
Nitrogen oxides	18,359	21,006	22,095	21,579	20,190	19,212	18,959	-0.41%	-9.74%
VOCs	11,517	12,830	13,467	13,687	13,335	13,189	13,280	0.14%	3.51%
Sulfur oxides	2,130	2,558	3,138	3,604	3,854	4,101	4,280	2.08%	67.32%
Particulates (PM10)	419	449	522	580	602	622	638	1.42%	42.09%
Methane	289	330	333	348	355	368	379	0.56%	14.85%
Nitrous oxide	77	88	157	209	232	247	257	4.38%	192.05%
Carbon dioxide	2,899,574	3,320,919	4,091,576	4,775,972	5,103,675	5,394,813	5,604,307	2.12%	68.76%
Aggregate Emissions									
Greenhouse gases (CO2 equivalent)	2,923,543	3,348,309	4,137,629	4,836,230	5,170,220	5,465,551	5,677,866	2.13%	69.57%
Ozone precursors	29,876	33,836	35,562	35,266	33,525	32,401	32,239	-0.19%	-4.72%
Acid rain precursors	20,489	23,564	25,233	25,183	24,044	23,313	23,239	-0.06%	-1.38%

Note: See the glossary for a definition of CO2 equivalent. Greenhouse gases are carbon dioxide, methane, and nitrous oxide; ground-level ozone precursors are VOCs and nitrogen oxides; acid rain precursors are sulfur oxides and nitrogen oxides. Values after 1991 are projections. Source: VT DPS