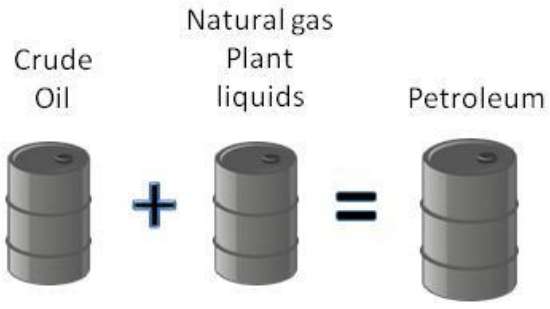
Chapter 1
Petroleum

Summary Statistics from Tables/Figures in this Chapter

Source			
Table 1.3	World Petroleum Production, 2011 (million barrels per day)[a]		82.59
	U.S. Production (million barrels per day)		7.85
	U.S. Share		9.5%
Table 1.4	World Petroleum Consumption, 2011 (million barrels per day)		87.28
	U.S. Consumption (million barrels per day)		18.84
	U.S. Share		21.6%
Figure 1.5	Average Refinery Yield, 2011	OECD Europe	North America
	Gasoline	*19.3%*	*42.7%*
	Diesel oil	*39.8%*	*25.3%*
	Residual fuel	*13.0%*	*5.8%*
	Kerosene	*6.8%*	*7.3%*
	Other	*21.1%*	*18.9%*
Table 1.13	U.S. transportation petroleum use as a percent of U.S. petroleum production, 2011		160.8%
Table 1.13	Net imports as a percentage of U.S. petroleum consumption, 2011		44.8%
Table 1.14	Transportation share of U.S. petroleum consumption, 2011		69.4%
Table 1.17	Highway share of transportation petroleum consumption, 2010		85.9%
Table 1.17	Light vehicle share of transportation petroleum consumption, 2010		63.6%

In this document, petroleum is defined as crude oil (including lease condensate) and natural gas plant liquids.



[a] Because other liquids and processing gain are not included, the world production is smaller than world petroleum consumption.

Although the world has consumed about 40% of estimated conventional oil resources, the total fossil fuel potential is huge. Methane hydrates–a potential source of natural gas–are included in the "additional occurrences" of unconventional natural gas, and constitute the largest resource.

Table 1.1
World Fossil Fuel Potential
(gigatonnes of carbon)

	Consumption (1860-1998)	Reserves	Resources	Additional occurrences
Oil				
Conventional	97	120	121	0
Unconventional	6	102	305	914
Natural Gas				
Conventional	36	83	170	0
Unconventional	1	144	364	14,176
Coal	155	533	4,618	[a]

Source:
Rogner, H.H., *World Energy Assessment: Energy and the Challenge of Sustainability, Part II*, Chapter 5, 2000, p. 149.

[a] Data are not available.

In 2011, the Organization of Petroleum Exporting Countries (OPEC) accounted for more than 42% of world oil production. Responding to low oil prices in early 2000, Mexico, Norway, Russia, and Oman joined OPEC in cutting production. This group of oil countries, referred to here as OPEC+, account for over 63% of world oil production.

Table 1.2
World Crude Oil Production, 1960–2011[a]
(million barrels per day)

Year	United States	U.S. share	Total OPEC[b]	OPEC share	OPEC +[c]	OPEC +[c] share	Total non-OPEC	World
1960	7.04	33.5%	8.70	41.4%	12.25	58.3%	12.29	20.99
1965	7.80	25.7%	14.35	47.3%	19.83	65.4%	15.98	30.33
1970	9.64	21.0%	23.30	50.8%	31.12	67.8%	22.59	45.89
1975	8.38	15.9%	26.79	50.3%	37.55	71.1%	27.04	52.83
1980	8.60	14.4%	26.38	44.3%	40.80	68.5%	34.18	59.56
1985	8.97	16.6%	15.37	28.5%	30.98	57.4%	38.60	53.97
1986	8.68	15.4%	18.28	32.5%	34.05	60.6%	37.95	56.23
1987	8.35	14.7%	18.52	32.7%	34.72	61.3%	38.15	56.67
1988	8.14	13.9%	20.32	34.6%	36.66	62.4%	38.42	58.74
1989	7.61	12.7%	22.07	36.9%	38.50	64.3%	37.79	59.86
1990	7.36	12.2%	22.49	37.2%	38.34	63.4%	38.00	60.50
1991	7.42	12.3%	23.27	38.7%	38.53	64.1%	36.86	60.13
1992	7.17	11.9%	24.40	40.6%	37.67	62.7%	35.70	60.10
1993	6.85	11.4%	25.12	41.7%	37.65	62.6%	35.05	60.17
1994	6.66	10.9%	25.51	41.7%	37.67	61.6%	35.66	61.17
1995	6.56	10.5%	25.54	40.9%	37.77	60.5%	36.89	62.43
1996	6.47	10.1%	26.02	40.8%	38.70	60.6%	37.80	63.82
1997	6.45	9.8%	27.29	41.5%	40.28	61.2%	38.51	65.81
1998	6.25	9.3%	28.37	42.3%	41.21	61.5%	38.67	67.03
1999	5.88	8.9%	27.22	41.3%	40.14	60.9%	38.74	65.97
2000	5.82	8.5%	28.94	42.2%	42.71	62.3%	39.58	68.52
2001	5.80	8.5%	28.11	41.3%	42.39	62.2%	40.00	68.12
2002	5.75	8.5%	26.44	39.3%	41.13	61.2%	40.83	67.12
2003	5.68	8.2%	27.89	40.2%	43.34	62.4%	41.52	69.40
2004	5.42	7.5%	30.31	41.8%	46.30	63.8%	42.13	72.45
2005	5.18	7.0%	31.77	43.1%	47.70	64.5%	41.91	73.67
2006	5.10	6.9%	31.48	42.9%	47.30	64.0%	41.90	73.38
2007	5.06	6.7%	31.09	42.6%	46.65	64.5%	41.82	72.91
2008	4.95	6.7%	32.36	44.0%	47.50	63.6%	41.23	73.59
2009	5.36	7.4%	30.44	42.2%	45.46	62.9%	41.74	72.18
2010	5.47	7.4%	31.44	42.5%	46.49	62.8%	42.45	73.89
2011	5.67	7.7%	31.73	42.9%	46.73	63.2%	42.24	73.96
				Average annual percentage change				
1960–2011	-0.4%		2.6%		2.7%		2.5%	2.5%
1970–2011	-1.3%		0.8%		1.0%		1.5%	1.2%
2001–2011	-0.2%		1.2%		1.0%		0.5%	0.8%

Source:
U.S. Department of Energy, Energy Information Administration, *International Energy Statistics Website*, March 2012. (Additional resources: www.eia.doe.gov)

[a] Includes lease condensate. Excludes natural gas plant liquids.
[b] See Glossary for membership.
[c] OPEC+ includes all OPEC nations plus Russia, Mexico, Norway and Oman.

This table shows petroleum production, which includes both crude oil and natural gas plant liquids. Because other liquids and processing gain are not included, the world total is smaller than world petroleum consumption (Table 1.4). The United States was responsible for 9.5% of the world's petroleum production in 2011 and 7.7% of the world's crude oil production (Table 1.2).

Table 1.3
World Petroleum Production, 1973–2011[a]
(million barrels per day)

Year	United States	U.S. share	Total OPEC[b]	OPEC share	Total non-OPEC	Non-OPEC share	World
1973	10.95	18.7%	29.99	51.3%	28.48	48.7%	58.47
1974	10.44	17.8%	29.67	50.7%	28.84	49.3%	58.51
1975	10.01	18.0%	26.16	47.0%	28.48	51.2%	55.62
1976	9.74	16.2%	29.55	49.1%	30.66	50.9%	60.21
1977	9.86	15.7%	30.06	47.9%	32.64	52.1%	62.69
1978	10.27	16.2%	28.70	45.4%	34.54	54.6%	63.24
1979	10.14	15.4%	29.95	45.4%	36.01	54.6%	65.96
1980	10.17	16.1%	26.05	41.3%	35.77	56.8%	63.00
1981	10.18	17.1%	21.95	36.8%	37.73	63.2%	59.68
1982	10.20	17.9%	18.54	32.5%	38.55	67.5%	57.09
1983	10.25	18.0%	17.26	30.3%	39.64	69.7%	56.89
1984	10.51	18.0%	17.29	29.6%	41.08	70.4%	58.37
1985	10.58	18.3%	16.22	28.0%	40.88	70.6%	57.90
1986	10.23	16.9%	18.40	30.4%	41.17	68.1%	60.49
1987	9.94	16.3%	18.69	30.7%	41.46	68.0%	60.93
1988	9.77	15.5%	20.79	32.9%	41.87	66.3%	63.20
1989	9.16	14.2%	22.51	35.0%	41.18	64.0%	64.31
1990	8.91	13.7%	23.70	36.4%	40.81	62.6%	65.14
1991	9.08	14.0%	23.71	36.5%	40.53	62.4%	64.95
1992	8.87	13.7%	25.03	38.5%	39.37	60.6%	64.95
1993	8.58	13.2%	25.82	39.6%	38.82	59.5%	65.23
1994	8.39	12.6%	26.54	39.9%	39.21	58.9%	66.55
1995	8.32	12.2%	27.23	40.0%	40.21	59.1%	68.01
1996	8.30	11.9%	27.71	39.9%	41.26	59.3%	69.52
1997	8.27	11.5%	29.07	40.6%	42.05	58.7%	71.65
1998	8.01	11.0%	30.21	41.4%	42.35	58.0%	73.04
1999	7.73	10.7%	29.13	40.4%	43.01	59.6%	72.15
2000	7.73	10.3%	30.94	41.3%	43.95	58.7%	74.90
2001	7.67	10.3%	30.34	40.5%	44.47	59.5%	74.81
2002	7.63	10.3%	28.77	38.8%	45.30	61.2%	74.07
2003	7.40	9.7%	30.35	39.7%	46.11	60.3%	76.46
2004	7.23	9.1%	32.92	41.3%	46.81	58.7%	79.73
2005	6.90	8.5%	34.61	42.6%	46.61	57.4%	81.22
2006	6.84	8.4%	34.40	42.4%	46.77	57.6%	81.17
2007	6.85	8.5%	34.05	42.1%	46.75	57.9%	80.80
2008	6.73	8.3%	35.34	43.4%	46.12	56.6%	81.46
2009	7.27	9.1%	33.52	41.8%	46.75	58.2%	80.26
2010	7.54	9.2%	34.72	42.2%	47.63	57.8%	82.35
2011	7.85	9.5%	35.03	42.4%	47.56	57.6%	82.59
			Average annual percentage change				
1973–2011	-0.9%		0.4%		1.4%		0.9%
2001–2011	0.2%		1.4%		0.7%		1.0%

Source:
U.S. Department of Energy, Energy Information Administration, *International Energy Statistics Website*, March 2012. (Additional resources: www.eia.doe.gov)

[a] Includes natural gas plant liquids, crude oil and lease condensate. Does not account for all inputs or refinery processing gain.

[b] Organization of Petroleum Exporting Countries. See Glossary for membership.

During the 1980s and 1990s, the United States accounted for about one-quarter of the world's petroleum consumption, but since 2000 that share has been decreasing. In 2011 the United States accounted for only 21.6%. World petroleum consumption decreased in 2009 but rose in 2010. Non-OECD consumption has continued to increase.

Table 1.4
World Petroleum Consumption, 1960–2011
(million barrels per day)

Year	United States	U.S. share	Total OECD[a]	Total non-OECD	World
1960	9.80	45.9%	15.78	5.56	21.34
1965	11.51	37.0%	22.81	8.33	31.14
1970	14.70	31.4%	34.69	12.12	46.81
1975	16.32	29.0%	39.14	17.06	56.20
1980	17.06	27.0%	41.87	21.25	63.12
1981	16.06	26.3%	39.60	21.36	60.95
1982	15.30	25.7%	37.87	21.68	59.55
1983	15.23	25.9%	37.00	21.78	58.78
1984	15.73	26.3%	37.77	22.04	59.81
1985	15.73	26.2%	37.56	22.52	60.08
1986	16.28	26.3%	38.68	23.12	61.80
1987	16.67	26.4%	39.43	23.66	63.08
1988	17.28	26.6%	40.75	24.21	64.96
1989	17.33	26.2%	41.44	24.63	66.07
1990	16.99	25.5%	41.59	24.94	66.52
1991	16.71	24.9%	42.06	25.14	67.20
1992	17.03	25.3%	43.02	24.37	67.39
1993	17.24	25.5%	43.44	24.13	67.57
1994	17.72	25.7%	44.64	24.25	68.89
1995	17.72	25.3%	45.12	24.98	70.10
1996	18.31	25.5%	46.25	25.44	71.69
1997	18.62	25.4%	47.01	26.44	73.45
1998	18.92	25.5%	47.21	26.90	74.10
1999	19.52	25.7%	48.23	27.63	75.87
2000	19.70	25.7%	48.21	28.58	76.78
2001	19.65	25.4%	48.25	29.26	77.51
2002	19.76	25.3%	48.22	29.94	78.16
2003	20.03	25.1%	48.90	30.81	79.71
2004	20.73	25.1%	49.75	32.80	82.56
2005	20.80	24.7%	50.10	33.98	84.09
2006	20.69	24.3%	49.82	35.35	85.13
2007	20.68	24.1%	49.53	36.23	85.81
2008	19.50	22.8%	47.92	37.51	85.44
2009	18.77	22.2%	45.91	38.78	84.68
2010	19.18	22.0%	46.40	40.74	87.14
2011	18.84	21.6%	45.83	41.45	87.28
		Average annual percentage change			
1960–2011	1.3%		2.1%	4.0%	2.8%
1970–2011	0.6%		0.7%	3.0%	1.5%
2001–2011	-0.4%		-0.5%	3.5%	1.2%

Source:
U.S. Department of Energy, Energy Information Administration, *International Energy Statistics Website*, May 2012. (Additional resources: www.eia.doe.gov)

[a] Organization for Economic Cooperation and Development. See Glossary for membership.

Figure 1.1. World Oil Reserves [a], Production and Consumption, 2010

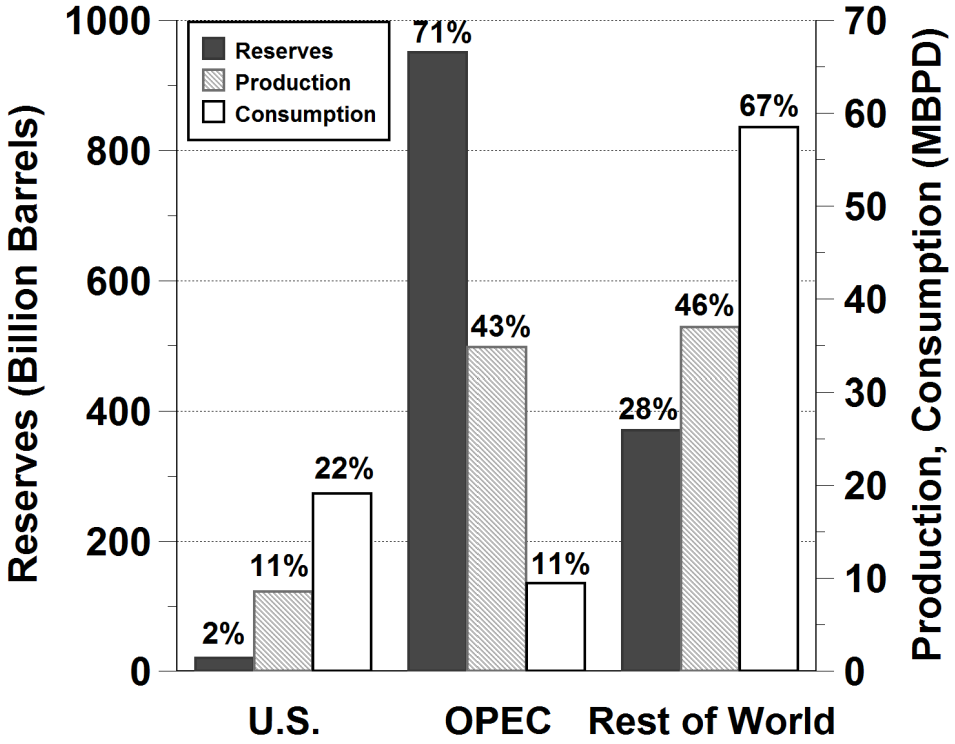


Table 1.5
World Oil Reserves, Production and Consumption, 2010

	Crude oil reserves[a] (billion barrels)	Reserve share	Petroleum production (million barrels per day)	Production share	Petroleum consumption (million barrels per day)	Consumption share
United States	20.7	2%	8.6	11%	19.1	22%
OPEC	951	71%	34.8	43%	9.5	11%
Rest of world	370.1	28%	37.0	46%	58.5	67%

Sources:
Reserves – Energy Information Administration, *International Energy Statistics*, May 2012.
Production – Energy Information Administration, *International Energy Statistics*, May 2012.
Consumption – Energy Information Administration, *International Energy Statistics*, May 2012. (Additional resources: www.eia.doe.gov)

Note: Total consumption is higher than total production due to refinery gains including alcohol and liquid products produced from coal and other sources. OPEC countries include Venezuela, Iran, Iraq, Kuwait, Qatar, Saudi Arabia, Angola, United Arab Emirates, Algeria, Libya, Nigeria, Indonesia, Gabon, and Ecuador.

[a] Reserves are 2009 data.

Figure 1.2. World Natural Gas Reserves[a], Production and Consumption, 2010

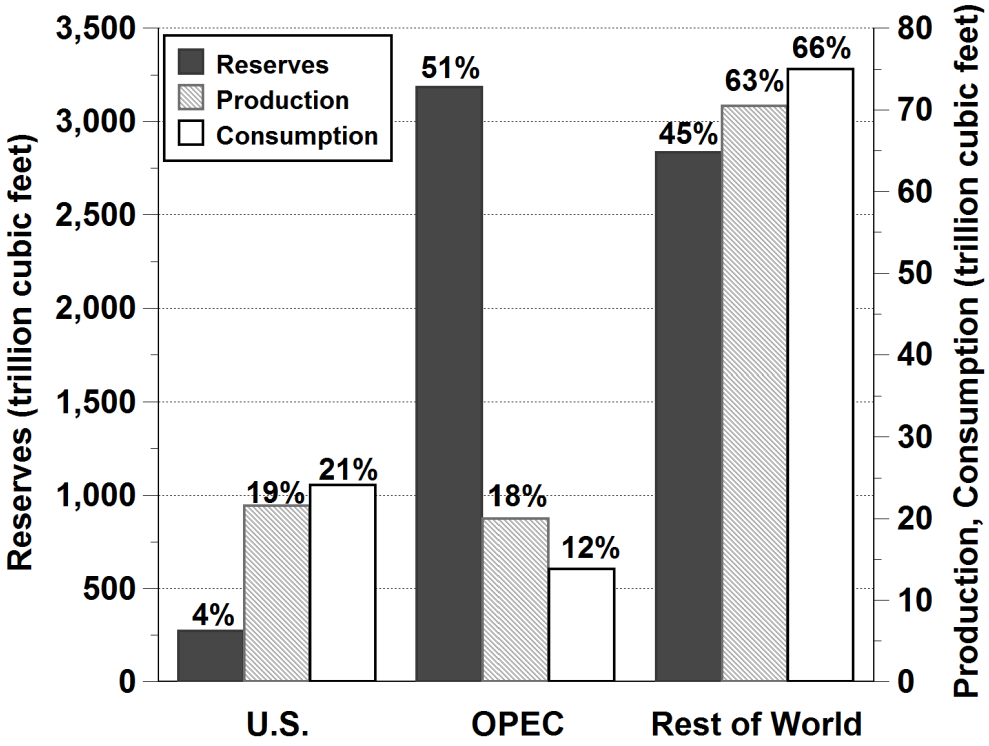


Table 1.6
World Natural Gas Reserves, Production and Consumption, 2010
(trillion cubic feet)

	Natural gas reserves[a]	Reserve share	Natural gas production	Production share	Natural gas consumption	Consumption share
U.S.	272.5	4%	21.6	19%	24.1	21%
OPEC	3,182.8	51%	20.0	18%	13.8	12%
Rest of world	2,833.8	45%	70.5	63%	75.0	66%

Source:
Energy Information Administration, *International Energy Statistics*, 2012. (Additional resources: www.eia.doe.gov)

Note: Production data are dry gas production.

[a] Reserves are 2009 data.

The share of petroleum imported to the United States can be calculated using total imports or net imports. Net imports, which are the preferred data, rose to over 50% of U.S. petroleum consumption for the first time in 1998, while total imports reached 50% for the first time in 1993. OPEC share of net imports has been below 50% since 1993.

Table 1.7
U.S. Petroleum Imports, 1960–2011
(million barrels per day)

Year	Net OPEC[a] imports	Net OPEC[a] share	Net imports	Net imports as a share of U.S. consumption	Total imports
1960	1.31	81.3%	1.61	[b]	1.82
1965	1.48	64.7%	2.28	[b]	2.47
1970	1.34	42.5%	3.16	[b]	3.42
1975	3.60	59.5%	5.89	35.8%	6.06
1980	4.30	62.2%	6.36	37.3%	6.91
1981	3.32	55.4%	5.40	33.6%	6.00
1982	2.15	42.0%	4.30	28.1%	5.11
1983	1.86	36.9%	4.31	28.2%	5.05
1984	2.05	37.7%	4.72	29.9%	5.44
1985	1.83	36.1%	4.29	27.3%	5.07
1986	2.84	45.6%	5.44	33.4%	6.22
1987	3.06	45.8%	5.91	35.4%	6.68
1988	3.52	47.6%	6.59	38.0%	7.40
1989	4.14	51.4%	7.20	41.3%	8.06
1990	4.30	53.6%	7.16	42.2%	8.02
1991	4.09	53.7%	6.63	38.9%	7.63
1992	4.09	51.9%	6.94	40.9%	7.89
1993	4.27	49.6%	7.62	44.9%	8.62
1994	4.25	47.2%	8.05	45.7%	9.00
1995	4.00	45.3%	7.89	44.5%	8.84
1996	4.21	44.4%	8.50	46.4%	9.48
1997	4.57	45.0%	9.16	49.2%	10.16
1998	4.91	45.8%	9.76	51.6%	10.71
1999	4.95	45.6%	9.91	50.8%	10.85
2000	5.20	45.4%	10.42	52.9%	11.46
2001	5.53	46.6%	10.90	55.5%	11.87
2002	4.61	39.9%	10.55	53.4%	11.53
2003	5.16	42.1%	11.24	56.1%	12.26
2004	5.70	43.4%	12.10	58.4%	13.15
2005	5.59	40.7%	12.55	60.3%	13.71
2006	5.52	40.2%	12.39	59.9%	13.71
2007	5.98	44.4%	12.04	58.2%	13.47
2008	5.95	46.1%	11.11	57.0%	12.92
2009	4.78	40.9%	9.67	51.5%	11.69
2010	4.91	41.6%	9.44	49.2%	11.79
2011	4.53	39.9%	8.44	44.8%	11.36
			Average annual percentage change		
1960–2011	2.5%		3.3%		3.7%
1970–2011	3.0%		2.4%		3.0%
2001–2011	-2.0%		-2.5%		-0.4%

Source:
U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Washington, DC, March 2012, Table 3.3a. (Additional resources: www.eia.gov)

[a] Organization of Petroleum Exporting Countries. See Glossary for membership.
[b] Data are not available.

Just over half of the oil imported to the United States in 2011 was from the western hemisphere. Canada, Mexico, and Venezuela provided most of the oil from the western hemisphere, along with small amounts from Brazil, Columbia, Ecuador, and the U.S. Virgin Islands (these countries are not listed separately.

Table 1.8
Imported Crude Oil by Country of Origin, 1973–2011
(million barrels per day)

Year	Saudi Arabia	Venezuela	Nigeria	Other OPEC[a] countries	Canada	Mexico	Russia	Other non-OPEC countries	Total imports
1973	0.49	1.13	0.46	0.91	1.32	0.02	0.03	1.90	6.26
1975	0.71	0.70	0.76	1.42	0.85	0.07	0.01	1.52	6.06
1980	1.26	0.48	0.86	1.70	0.45	0.53	0.00	1.62	6.91
1981	1.13	0.41	0.62	1.17	0.45	0.52	0.00	1.70	6.00
1982	0.55	0.41	0.51	0.67	0.48	0.68	0.00	1.80	5.11
1983	0.34	0.42	0.30	0.80	0.55	0.83	0.00	1.81	5.05
1984	0.32	0.55	0.22	0.96	0.63	0.75	0.01	2.00	5.44
1985	0.17	0.60	0.29	0.76	0.77	0.82	0.01	1.64	5.07
1986	0.68	0.79	0.44	0.92	0.81	0.70	0.02	1.86	6.22
1987	0.75	0.80	0.53	0.97	0.85	0.65	0.01	2.10	6.68
1988	1.07	0.79	0.62	1.03	1.00	0.75	0.03	2.11	7.40
1989	1.22	0.87	0.82	1.23	0.93	0.77	0.05	2.17	8.06
1990	1.34	1.02	0.80	1.13	0.93	0.76	0.04	1.99	8.02
1991	1.80	1.03	0.70	0.55	1.03	0.81	0.03	1.67	7.63
1992	1.72	1.17	0.68	0.52	1.07	0.83	0.02	1.88	7.89
1993	1.41	1.30	0.74	0.82	1.18	0.92	0.05	2.19	8.62
1994	1.40	1.33	0.64	0.87	1.27	0.98	0.03	2.46	9.00
1995	1.34	1.48	0.63	0.55	1.33	1.07	0.02	2.41	8.83
1996	1.36	1.68	0.62	0.56	1.42	1.24	0.03	2.57	9.48
1997	1.41	1.77	0.70	0.69	1.56	1.39	0.01	2.63	10.16
1998	1.49	1.72	0.70	1.00	1.60	1.35	0.02	2.83	10.71
1999	1.48	1.49	0.66	1.33	1.54	1.32	0.09	2.95	10.85
2000	1.57	1.55	0.90	1.19	1.81	1.37	0.07	3.00	11.46
2001	1.66	1.55	0.89	1.43	1.83	1.44	0.09	2.98	11.87
2002	1.55	1.40	0.62	1.03	1.97	1.55	0.21	3.20	11.53
2003	1.77	1.38	0.87	1.14	2.07	1.62	0.25	3.15	12.26
2004	1.56	1.55	1.14	1.45	2.14	1.66	0.30	3.34	13.15
2005	1.54	1.53	1.17	1.36	2.18	1.66	0.41	3.87	13.71
2006	1.46	1.42	1.11	1.52	2.35	1.71	0.37	3.76	13.71
2007	1.48	1.36	1.13	2.00	2.45	1.53	0.41	3.09	13.47
2008	1.53	1.19	0.99	2.25	2.49	1.30	0.47	2.70	12.92
2009	1.00	1.06	0.81	1.90	2.48	1.21	0.56	2.66	11.69
2010	1.10	0.99	1.02	1.80	2.54	1.28	0.61	2.46	11.79
2011	1.19	0.94	0.82	1.58	2.71	1.20	0.62	2.29	11.36

Sources:
U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Washington, DC, March 2012, Tables 3.3c and 3.3d. (Additional resources: www.eia.gov)

[a] Organization of Petroleum Exporting Countries. See Glossary for membership.

The Strategic Petroleum Reserve (SPR) began in October 1977 as a result of the 1975 Energy Policy and Conservation Act. Its purpose is to provide protection against oil supply disruptions. The U.S. consumed nearly 20 million barrels per day in 2011. At that rate of consumption, the SPR supply would last 37 days if used exclusively and continuously.

Table 1.9
Crude Oil Supplies, 1973-2011

Year	Strategic Petroleum Reserve	Other crude oil stocks[a]	Total crude oil stocks	U.S. petroleum consumption (million barrels per day)	Number of days the SPR would supply the U.S.[b]
	(Million Barrels)				
1973	0.0	242.5	242.5	17.3	0
1977	7.5	340.2	347.7	18.4	0
1978	66.9	309.4	376.3	18.8	4
1979	91.2	339.1	430.3	18.5	5
1980	107.8	358.2	466.0	17.1	6
1981	230.3	363.5	593.8	16.1	14
1982	293.8	349.7	643.6	15.3	19
1983	379.1	343.9	722.9	15.2	25
1984	450.5	345.4	795.9	15.7	29
1985	493.3	320.9	814.2	15.7	31
1986	511.6	331.2	842.8	16.3	31
1987	540.6	349.0	889.6	16.7	32
1988	559.5	330.4	889.9	17.3	32
1989	579.9	341.3	921.1	17.3	33
1990	585.7	322.7	908.4	17.0	34
1991	568.5	324.6	893.1	16.7	34
1992	574.7	318.1	892.9	17.0	34
1993	587.1	335.4	922.5	17.2	34
1994	591.7	337.2	928.9	17.7	33
1995	591.6	303.3	895.0	17.7	33
1996	565.8	283.9	849.7	18.3	31
1997	563.4	304.7	868.1	18.6	30
1998	571.4	323.5	894.9	18.9	30
1999	567.2	284.5	851.7	19.5	29
2000	540.7	285.5	826.2	19.7	27
2001	550.2	312.0	862.2	19.6	28
2002	599.1	277.6	876.7	19.8	30
2003	638.4	268.9	907.3	20.0	32
2004	675.6	285.7	961.3	20.7	33
2005	684.5	323.7	1,008.2	20.8	33
2006	688.6	312.3	1,000.9	20.7	33
2007	696.9	286.1	983.0	20.7	34
2008	701.8	325.8	1,027.7	19.5	36
2009	726.6	325.2	1,051.8	18.8	39
2010	726.5	333.4	1,060.0	19.2	38
2011	696.0	330.9	1,026.8	18.8	37

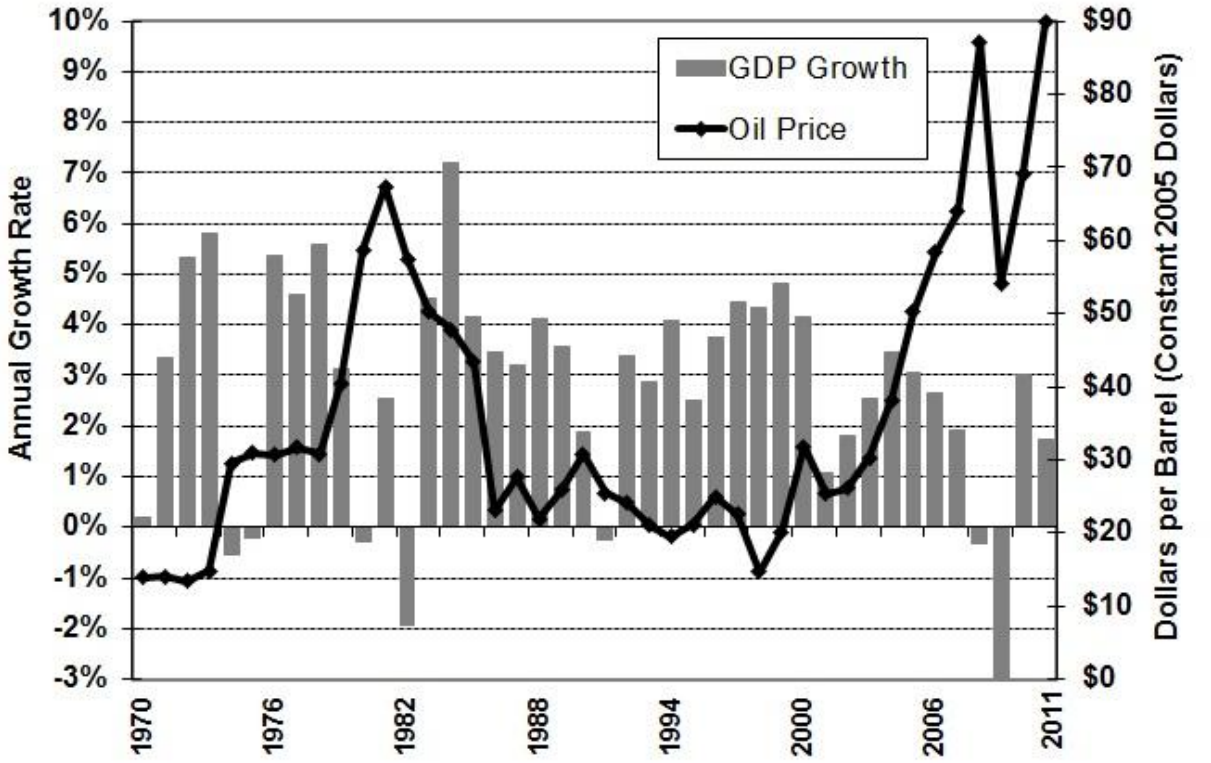
Sources:
U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Washington, DC, March 2012, Tables 3.1 and 3.4. (Additional resources: www.eia.gov)

[a] Other crude oil stocks include stocks held by petroleum companies, as well as stocks of Alaskan crude oil in transit.

[b] Strategic Petroleum Reserves divided by U.S. consumption per day. This would only hold true if the SPR were the only oil used for that many days.

Major oil price shocks have disrupted world energy markets five times in the past 30 years (1973-74, 1979-80, 1990-91, 1999-2000, 2008). Most of the oil price shocks were followed by an economic recession in the United States.

Figure 1.3. Oil Price and Economic Growth, 1970–2011

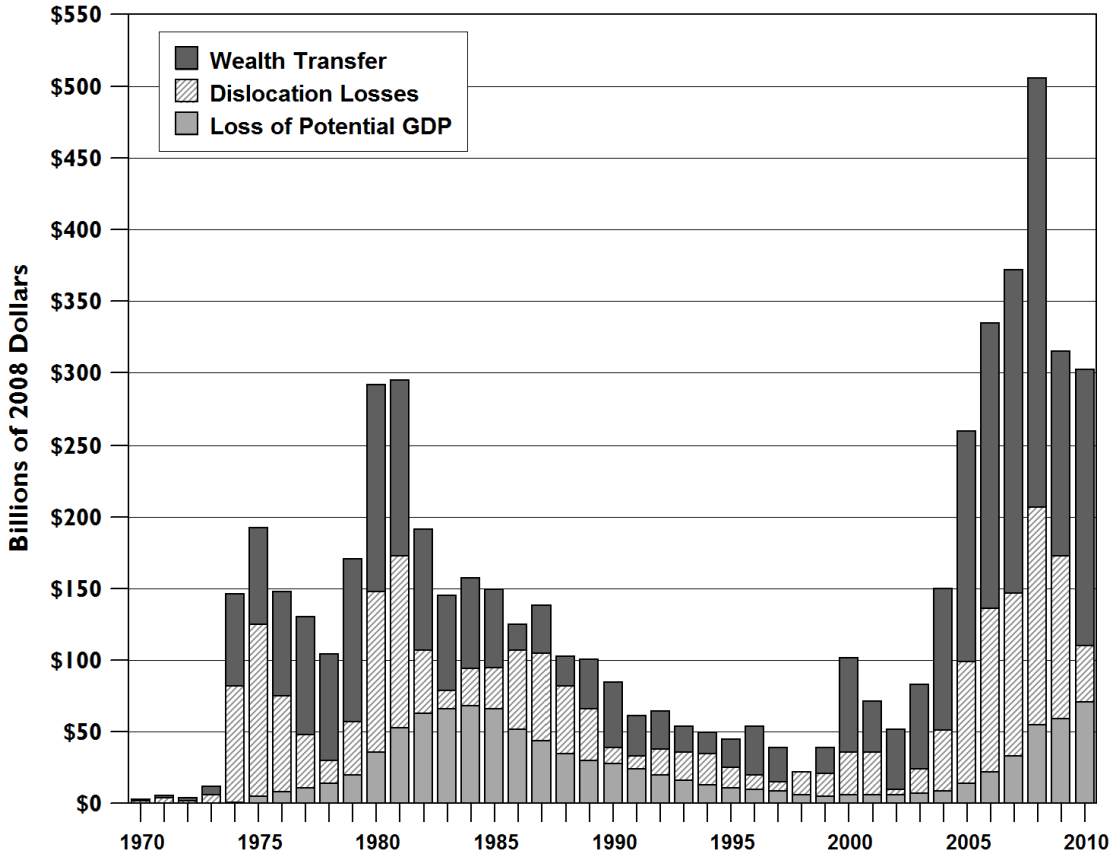


Source:

Greene, D.L. and N. I. Tishchishyna, *Costs of Oil Dependence: A 2000 Update*, Oak Ridge National Laboratory, ORNL/TM-2000/152, Oak Ridge, TN, 2000, and data updates, 2011. (Additional resources: cta.ornl.gov/cta/publications.shtml)

The United States has long recognized the problem of oil dependence and the economic problems that arise from it. According to Oak Ridge National Laboratory (ORNL) researchers Greene and Hopson, oil dependence is a combination of four factors: (1) a noncompetitive world oil market strongly influenced by the OPEC cartel, (2) high levels of U.S. imports, (3) the importance of oil to the U.S. economy, and (4) the lack of economical and readily available substitutes for oil. ORNL developed a model to estimate the historical cost of oil dependence and analyze the potential effectiveness of policies on likely future costs. The most recent study using this model shows that the U.S. economy suffered the greatest losses in 2008 when wealth transfer and GDP losses (combined) amounted to approximately half a trillion dollars. However, when comparing oil dependence to the size of the economy, the year 1980 is the highest. Oil dependence costs were almost 4.5% of GDP in 1980, but were under 3.5% in 2008. In 2009, the average oil price fell to about $60 per barrel and oil dependence costs fell to about $300 billion for 2009 and 2010.

Figure 1.4. Costs of Oil Dependence to the U.S. Economy, 1970–2010



Source:
Greene, David L., Roderick Lee, and Janet L. Hopson, "OPEC and the Costs to the U.S. Economy of Oil Dependence: 1970-2010," Oak Ridge National Laboratory Memorandum, 2011.

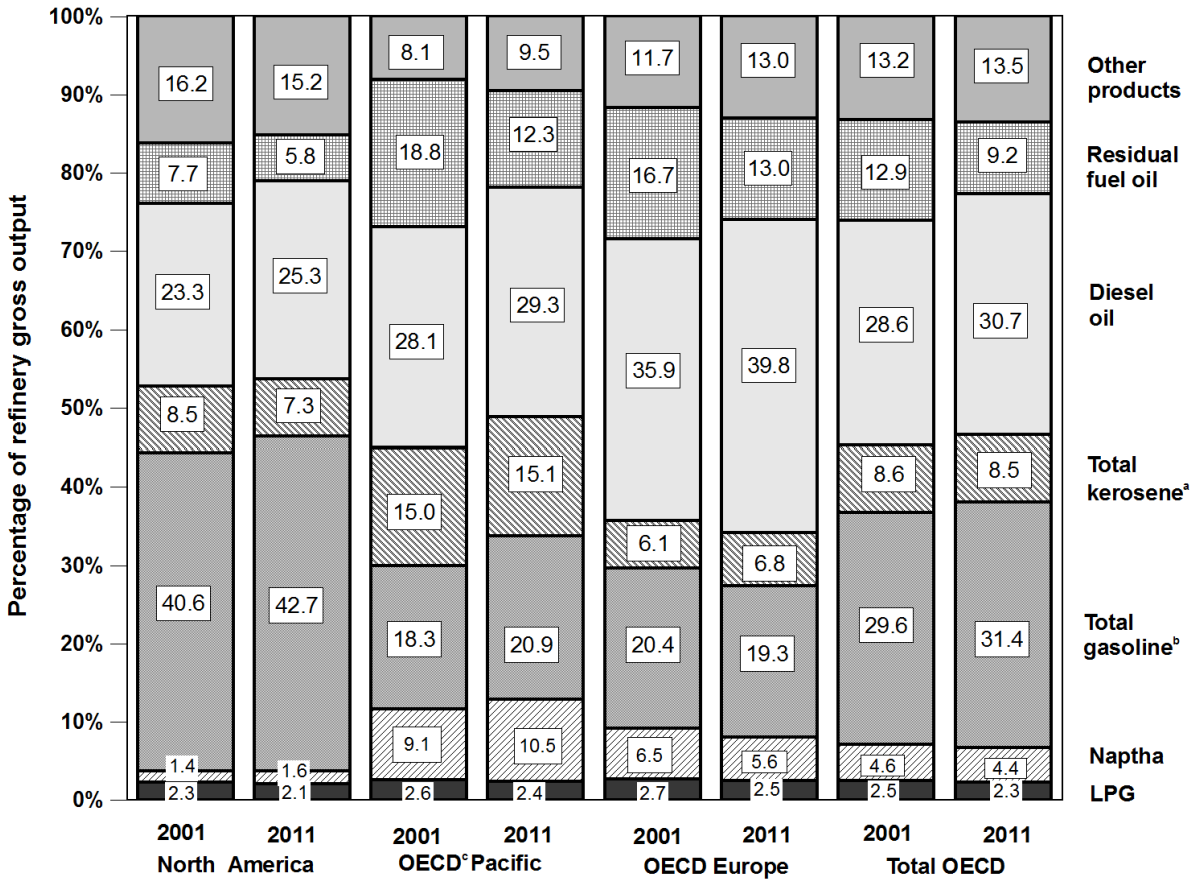
Notes:
Wealth Transfer is the product of total U.S. oil imports and the difference between the actual market price of oil (influenced by market power) and what the price would have been in a competitive market.

Dislocation Losses are temporary reductions in GDP as a result of oil price shocks.

Loss of Potential Gross Domestic Product (GDP) results because a basic resource used by the economy to produce output has become more expensive. As a consequence, with the same endowment of labor, capital, and other resources, our economy cannot produce quite as much as it could have at a lower oil price.

Other parts of the world refine crude oil to produce more diesel fuel and less gasoline than does North America. The OECD Europe countries produce the lowest share of gasoline in 2011.

Figure 1.5. Refinery Gross Output by World Region, 2001 and 2011



Source:
International Energy Agency, *Monthly Oil Survey*, January 2012. (Additional resources: www.iea.org)

[a] Includes jet kerosene and other kerosene.
[b] Includes motor gasoline, jet gasoline, and aviation gasoline.
[c] Organization for Economic Cooperation and Development. See Glossary for membership.

Oxygenate refinery input increased significantly in 1995, most certainly due to the Clean Air Act Amendments of 1990 which mandated the sale of reformulated gasoline in certain areas beginning in January 1995. The use of MTBE has declined in recent years due to many states banning the additive. The other hydrocarbons and liquids category includes unfinished oils, motor gasoline blending components and aviation gasoline blending components. In 2005 the gasoline blending components rose significantly.

Table 1.10
U.S. Refinery Input of Crude Oil and Petroleum Products, 1987–2010
(thousand barrels)

			Oxygenates			Other	
Year	Crude oil	Natural gas liquids	Fuel ethanol	MTBE[a]	Other oxygenates[b]	hydrocarbons and liquids	Total input to refineries
1987	4,691,783	280,889	[c]	[c]	[d]	132,720	5,105,392
1988	4,848,175	304,566	[c]	[c]	[d]	105,645	5,258,386
1989	4,891,381	182,109	[c]	[c]	[d]	223,797	5,297,287
1990	4,894,379	170,589	[c]	[c]	[d]	260,108	5,325,076
1991	4,855,016	172,306	[c]	[c]	[d]	280,265	5,307,587
1992	4,908,603	171,701	[c]	[c]	[d]	272,676	5,352,980
1993	4,968,641	179,213	3,351	49,393	1,866	280,074	5,482,538
1994	5,061,111	169,868	3,620	52,937	1,918	193,808	5,483,262
1995	5,100,317	172,026	9,055	79,396	4,122	190,411	5,555,327
1996	5,195,265	164,552	11,156	79,407	3,570	214,282	5,668,232
1997	5,351,466	151,769	11,803	86,240	4,246	201,268	5,806,792
1998	5,434,383	146,921	11,722	89,362	4,038	206,135	5,892,561
1999	5,403,450	135,756	13,735	94,784	4,147	225,779	5,877,651
2000	5,514,395	138,921	15,268	90,288	4,005	201,135	5,964,012
2001	5,521,637	156,479	16,929	87,116	4,544	192,632	5,979,337
2002	5,455,530	155,429	26,320	90,291	2,338	224,567	5,955,475
2003	5,585,875	152,763	55,626	67,592	1,937	163,459	6,027,252
2004	5,663,861	154,356	74,095	47,600	940	194,203	6,135,055
2005	5,555,332	161,037	84,088	39,751	612	295,064	6,135,884
2006	5,563,354	182,924	117,198	11,580	57	322,989	6,198,102
2007	5,532,097	184,383	136,603	1,610	0	349,807	6,204,500
2008	5,361,287	177,559	190,084	480	0	548,843	6,277,893
2009	5,232,656	177,194	240,955	90	0	518,998	6,169,893
2010	5,374,094	161,479	285,883	901	0	523,015	6,345,372
			Average annual percentage change				
1987–2010	0.6%	-2.4%	[d]	[d]	[d]	6.1%	0.9%
2000–2010	-0.3%	1.5%	34.0%	-36.9%	-100.0%	10.0%	0.6%

Source:
U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Annual 2010, Vol. 1*, July 2011, Table 15, and annual. (Additional resources: www.eia.doe.gov)

[a] Methyl tertiary butyl ether (MTBE).
[b] Includes methanol and other oxygenates.
[c] Reported in "Other" category in this year.
[d] Data are not available.

When crude oil and other hydrocarbons are processed into products that are, on average, less dense than the input, a processing volume gain occurs. Due to this gain, the product yield from a barrel of crude oil is more than 100%. The processing volume gain has been growing over the years.

Table 1.11
Refinery Yield of Petroleum Products from a Barrel of Crude Oil, 1978–2011
(percentage)

Year	Motor gasoline	Distillate fuel oil	Jet fuel	Liquefied petroleum gas	Other[a]	Total[b]
1978	44.1	21.4	6.6	2.3	29.6	104.0
1979	43.0	21.5	6.9	2.3	30.3	104.0
1980	44.5	19.7	7.4	2.4	30.0	104.0
1981	44.8	20.5	7.6	2.4	28.7	104.0
1982	46.4	21.5	8.1	2.2	26.2	104.4
1983	47.6	20.5	8.5	2.7	24.8	104.1
1984	46.7	21.5	9.1	2.9	24.2	104.4
1985	45.6	21.6	9.6	3.1	24.6	104.5
1986	45.7	21.2	9.8	3.2	24.8	104.7
1987	46.4	20.5	10.0	3.4	24.5	104.8
1988	46.0	20.8	10.0	3.6	24.4	104.8
1989	45.7	20.8	10.1	4.0	24.2	104.8
1990	45.6	20.9	10.7	3.6	24.1	104.9
1991	45.7	21.3	10.3	3.8	24.1	105.2
1992	46.0	21.2	9.9	4.3	24.0	105.4
1993	46.1	21.9	9.2	4.1	23.3	104.6
1994	45.5	22.3	9.8	4.2	23.2	105.0
1995	46.4	21.8	9.7	4.5	22.8	105.2
1996	45.7	22.7	10.4	4.5	22.4	105.7
1997	45.7	22.5	10.3	4.6	22.4	105.5
1998	46.2	22.3	9.9	4.4	22.9	105.7
1999	46.5	22.3	10.2	4.5	22.4	105.9
2000	46.2	23.1	10.3	4.5	22.0	106.1
2001	46.2	23.8	9.8	4.3	21.6	105.7
2002	47.3	23.2	9.8	4.3	21.5	106.1
2003	46.9	23.7	9.5	4.2	22.1	106.4
2004	46.8	23.9	9.7	4.0	22.2	106.6
2005	46.2	25.0	9.8	3.6	21.6	106.2
2006	45.8	25.4	9.3	3.9	21.7	106.1
2007	45.5	26.1	9.1	4.1	21.5	106.3
2008	44.2	27.8	9.7	4.1	20.7	106.5
2009	46.1	26.9	9.3	4.1	20.2	106.6
2010	45.7	27.5	9.3	4.3	20.3	107.1
2011	45.0	28.9	9.4	4.0	19.8	107.1

Source:
Department of Energy, Energy Information Administration, *Petroleum Supply Navigator*, April 2012. (Additional resources: www.eia.doe.gov)

[a] Includes aviation gasoline (0.1%), kerosene (0.1%), residual fuel oil (4.0%), naphtha and other oils for petrochemical feedstock use (1.0%), other oils for petrochemical feedstock use (1.0%), special naphthas (0.2%), lubricants (1.0%), waxes (0.1%), petroleum coke (5.3%) asphalt and road oil (2.4%), still gas (4.3%), and miscellaneous products (0.5%).

[b] Products sum greater than 100% due to processing gain. The processing gain for years 1978 to 1980 is assumed to be 4 percent.

Domestic petroleum production increased in 2009 for the first time in 20 years and has continued to increase. Most of the petroleum imported by the United States is in the form of crude oil. The United States does export small amounts of petroleum, mainly refined petroleum products which go to Canada and Mexico.

Table 1.12
United States Petroleum Production, Imports and Exports, 1950–2011
(million barrels per day)

	Domestic production			Net imports			Exports		
	Crude oil	Natural gas plant liquids	Total[a]	Crude oil	Petroleum products	Total	Crude oil	Petroleum products	Total
1950	5.41	0.50	5.91	0.49	0.36	0.85	0.10	0.21	0.31
1955	6.81	0.77	7.58	0.78	0.47	1.25	0.03	0.34	0.37
1960	7.05	0.93	7.98	1.02	0.80	1.82	0.01	0.19	0.20
1965	7.80	1.21	9.01	1.24	1.23	2.47	0.00	0.18	0.19
1970	9.64	1.66	11.30	1.32	2.10	3.42	0.01	0.25	0.26
1975	8.38	1.63	10.01	4.11	1.95	6.06	0.01	0.20	0.21
1980	8.60	1.57	10.17	5.26	1.65	6.91	0.29	0.26	0.54
1985	8.97	1.61	10.58	3.20	1.87	5.07	0.20	0.58	0.78
1986	8.68	1.55	10.23	4.18	2.04	6.22	0.15	0.63	0.79
1987	8.35	1.60	9.95	4.67	2.01	6.68	0.15	0.61	0.76
1988	8.16	1.63	9.97	5.11	2.29	7.40	0.16	0.66	0.82
1989	7.61	1.55	9.16	5.84	2.22	8.06	0.14	0.72	0.86
1990	7.36	1.56	8.91	5.89	2.13	8.02	0.11	0.75	0.86
1991	7.42	1.66	9.08	5.78	1.85	7.63	0.12	0.89	1.00
1992	7.18	1.70	8.88	6.08	1.81	7.89	0.09	0.86	0.95
1993	6.85	1.74	8.59	6.79	1.83	8.62	0.10	0.90	1.00
1994	6.66	1.73	8.39	7.06	1.94	9.00	0.10	0.84	0.94
1995	6.56	1.76	8.32	7.23	1.61	8.84	0.10	0.86	0.95
1996	6.47	1.83	8.30	7.51	1.97	9.48	0.11	0.87	0.98
1997	6.45	1.82	8.27	8.23	1.93	10.16	0.11	0.90	1.00
1998	6.25	1.76	8.01	8.71	2.00	10.71	0.11	0.84	0.95
1999	5.88	1.85	7.73	8.73	2.12	10.85	0.12	0.82	0.94
2000	5.82	1.91	7.73	9.07	2.39	11.46	0.05	0.99	1.04
2001	5.80	1.87	7.67	9.33	2.54	11.87	0.02	0.95	0.97
2002	5.75	1.88	7.63	9.14	2.39	11.53	0.01	0.98	0.98
2003	5.68	1.72	7.40	9.67	2.59	12.26	0.01	1.01	1.03
2004	5.42	1.81	7.23	10.09	3.06	13.15	0.03	1.02	1.05
2005	5.18	1.72	6.90	10.13	3.58	13.71	0.03	1.13	1.17
2006	5.10	1.74	6.84	10.12	3.59	13.71	0.03	1.29	1.32
2007	5.06	1.78	6.85	10.03	3.44	13.47	0.03	1.41	1.43
2008	4.95	1.78	6.73	9.78	3.13	12.92	0.03	1.77	1.80
2009	5.36	1.91	7.27	9.01	2.68	11.69	0.04	1.98	2.02
2010	5.47	2.07	7.55	9.21	2.58	11.79	0.04	2.31	2.35
2011	5.67	2.18	7.86	8.92	2.44	11.36	0.05	2.88	2.92
				Average annual percentage change					
1950–2011	0.1%	2.4%	0.5%	4.9%	3.2%	4.3%	-1.1%	4.4%	3.7%
1970–2011	-1.3%	0.7%	0.9%	4.8%	0.4%	3.0%	4.0%	6.1%	6.1%
2001–2011	-0.3%	1.3%	0.2%	-0.2%	0.2%	-0.1%	0.0%	11.3%	10.9%

Source:
U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, March 2012, Tables 3.1 and 3.3b. (Additional resources: www.eia.gov)

[a] Total domestic production includes crude oil, natural gas plant liquids and small amounts of other liquids.

The U.S. is responsible for 22% of the world's petroleum consumption. The United States relies heavily on imported petroleum. Imports accounted for nearly 45% of U.S. petroleum consumption in 2011.

Table 1.13
Petroleum Production and Transportation Petroleum Consumption in Context, 1950–2011

	Domestic petroleum production[a]	Net petroleum imports	Transportation petroleum consumption	U.S. petroleum consumption	World petroleum consumption	Net imports as a share of U.S. consumption	U.S. petroleum consumption as a share of world consumption	Transportation petroleum use as a share of domestic production
	(million barrels per day)							
1950	5.91	0.55	3.36	6.46	[b]	8.4%	[b]	56.8%
1955	7.58	0.88	4.46	8.46	[b]	10.4%	[b]	58.8%
1960	7.99	1.62	5.15	9.82	21.34	16.5%	46.0%	64.5%
1965	9.01	2.28	6.04	11.51	31.14	19.8%	37.0%	67.0%
1970	11.30	3.16	7.78	14.70	46.81	21.5%	31.4%	68.9%
1975	10.01	5.85	8.95	16.32	56.20	35.8%	29.0%	89.4%
1980	10.17	6.36	9.57	17.06	63.11	37.3%	27.0%	94.1%
1985	10.58	4.29	9.84	15.73	60.08	27.3%	26.2%	93.0%
1986	10.23	5.44	10.19	16.28	61.80	33.4%	26.3%	99.6%
1987	9.94	5.91	10.50	16.67	63.08	35.5%	26.4%	105.7%
1988	9.76	6.59	10.88	17.28	64.96	38.1%	26.6%	111.4%
1989	9.16	7.20	10.94	17.33	66.07	41.6%	26.2%	119.4%
1990	8.91	7.16	10.89	16.99	66.52	42.2%	25.5%	122.2%
1991	9.08	6.63	10.76	16.71	67.20	39.6%	24.9%	118.5%
1992	8.87	6.94	10.91	17.03	67.39	40.8%	25.3%	123.0%
1993	8.58	7.62	11.12	17.24	67.57	44.2%	25.5%	129.7%
1994	8.39	8.05	11.13	17.72	68.89	45.5%	25.7%	132.6%
1995	8.32	7.89	11.61	17.73	70.10	44.5%	25.3%	139.5%
1996	8.30	8.50	11.91	18.31	71.69	46.4%	25.5%	143.5%
1997	8.27	9.16	12.05	18.62	73.45	49.2%	25.4%	145.7%
1998	8.01	9.76	12.36	18.92	74.10	51.6%	25.5%	154.3%
1999	7.73	9.91	12.70	19.52	75.87	50.8%	25.7%	164.3%
2000	7.73	10.42	12.98	19.70	76.78	52.9%	25.7%	167.9%
2001	7.67	10.90	12.86	19.65	77.51	55.5%	25.4%	167.7%
2002	7.63	10.55	13.12	19.76	78.16	53.4%	25.3%	172.0%
2003	7.40	11.24	13.20	20.03	79.71	56.1%	25.1%	178.4%
2004	7.23	12.10	13.61	20.73	82.56	58.4%	25.1%	188.2%
2005	6.90	12.55	13.79	20.80	84.09	60.3%	24.7%	199.9%
2006	6.84	12.39	13.95	20.69	85.13	59.9%	24.3%	203.9%
2007	6.85	12.04	14.00	20.68	85.81	58.2%	24.1%	204.4%
2008	6.73	11.11	13.33	19.50	85.44	57.0%	22.8%	198.0%
2009	7.27	9.67	12.82	18.77	84.68	51.5%	22.2%	176.4%
2010	7.55	9.44	12.94	19.18	87.14	49.2%	22.0%	171.4%
2011	7.89	8.44	12.68	18.84	87.28	44.8%	21.6%	160.8%
			Average annual percentage change					
1950–2011	0.5%	4.6%	2.2%	1.8%	[b]			
1970–2011	-0.9%	2.4%	1.2%	0.6%	1.5%			
2001–2011	0.1%	-0.6%	0.0%	-0.1%	0.3%			

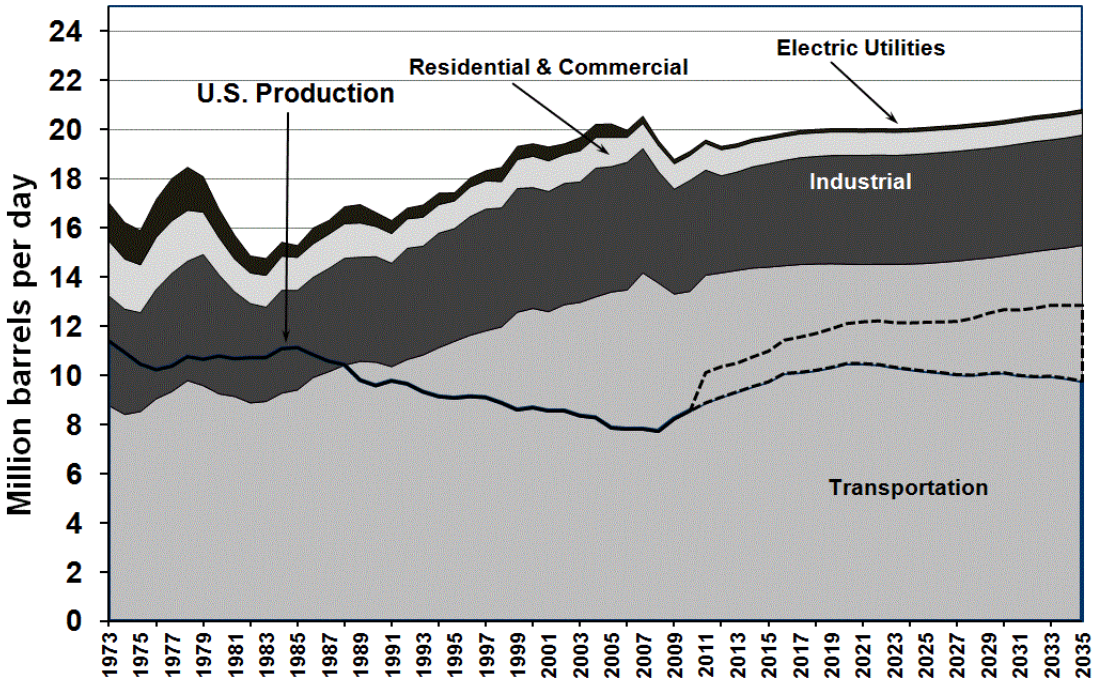
Sources:

U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, March 2012, Tables 2.5, 3.1, and A3. (Pre-1973 data from the *Annual Energy Review*). World petroleum consumption - U.S. Department of Energy, Energy Information Administration, *International Energy Statistics Website*, May 2012. (Additional resources: www.eia.doe.gov)

[a] Total domestic production includes crude oil, natural gas plant liquids and small amounts of other liquids.
[b] Data are not available.

Before 1989 the U.S. produced enough petroleum to meet the needs of the transportation sector, but was still short of meeting the petroleum needs of all the sectors, including industrial, residential and commercial, and electric utilities. In 1973 the gap between what the U.S. produced and what was consumed was 5.6 million barrels per day. By 2035, the gap is expected to be at least 8.0 million barrels per day if all sources of petroleum are included or 11.1 million barrels per day if only conventional petroleum sources are used.

Figure 1.6. United States Petroleum Production and Consumption – All Sectors, 1973–2035



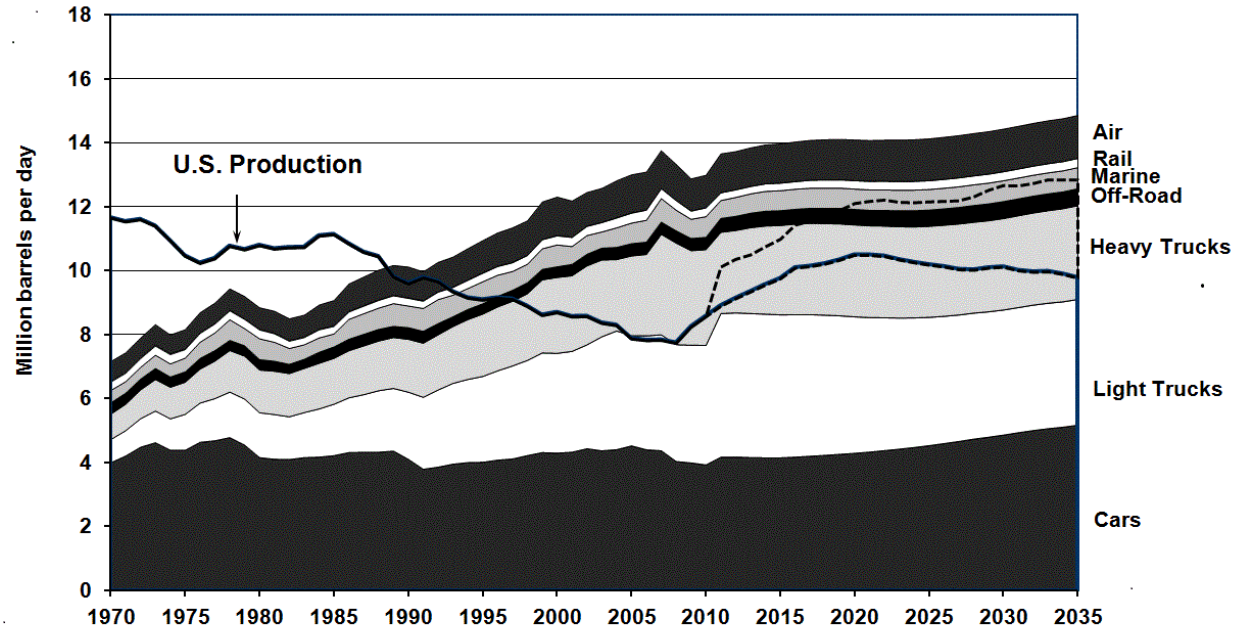
Source:
See Tables 1.12 and 2.7. Projections are from the Energy Information Administration, *Annual Energy Outlook 2012*, January 2012.

Notes: The U.S. Production has two lines after 2010. The solid line is conventional sources of petroleum, including crude oil, natural gas plant liquids, and refinery gains. The dashed line adds in other non-petroleum sources, including ethanol, biomass, liquids from coal, other blending components, other hydrocarbons, and ethers.

The sharp increase in values between 2006 and 2007 is the result of the FHWA's methodology change. The data change from historical to projected values occurs between 2010 and 2011.

In 1989 the transportation sector petroleum consumption surpassed U.S. petroleum production for the first time, creating a gap that must be met with imports of petroleum. By the year 2035, transportation petroleum consumption is expected to grow to more than 15 million barrels per day; at that time, the gap between U.S. production and transportation consumption will be about 2.5 million barrels per day (when including the non-petroleum sources).

Figure 1.7. United States Petroleum Production, and Transportation Consumption, 1970–2035



Source:
See Tables 1.12 and 2.7. Projections are from the Energy Information Administration, *Annual Energy Outlook 2012*, January 2012.

Notes: The U.S. Production has two lines after 2010. The solid line is conventional sources of petroleum, including crude oil, natural gas plant liquids, and refinery gains. The dashed line adds in other non-petroleum sources, including ethanol, biomass, liquids from coal, other blending components, other hydrocarbons, and ethers.

The sharp increase in values between 2010 and 2011 are caused by the data change from historical to projected values. The sharp increase in the value for heavy trucks between 2006 and 2007 is the result of the FHWA's methodology change.

Transportation accounted for almost 70% of the U.S. petroleum use in 2010 and 2011. Total petroleum consumption reached more than 20 million barrels per day from 2004 to 2007, but has been below that level from 2008 through present. Though petroleum consumption increased slightly from 2009 to 2010, it declined again in 2011.

Table 1.14
Consumption of Petroleum by End-Use Sector, 1973–2011
(million barrels per day)

Year	Transportation	Percentage	Residential	Commercial	Industrial	Electric utilities	Total
1973	9.05	52.3%	1.46	0.77	4.48	1.54	17.31
1974	8.84	53.1%	1.33	0.70	4.30	1.48	16.65
1975	8.95	54.8%	1.29	0.65	4.04	1.39	16.32
1976	9.40	53.7%	1.40	0.72	4.46	1.52	17.51
1977	9.76	53.0%	1.39	0.75	4.82	1.71	18.43
1978	10.16	53.9%	1.35	0.72	4.87	1.75	18.84
1979	10.00	54.0%	1.07	0.65	5.34	1.44	18.51
1980	9.57	56.0%	0.89	0.63	4.86	1.15	17.10
1981	9.49	59.1%	0.79	0.54	4.27	0.96	16.06
1982	9.31	60.8%	0.75	0.50	4.06	0.69	15.30
1983	9.41	61.8%	0.72	0.57	3.85	0.68	15.23
1984	9.62	61.0%	0.79	0.60	4.20	0.56	15.78
1985	9.84	62.6%	0.81	0.53	4.07	0.48	15.72
1986	10.19	62.6%	0.80	0.57	4.09	0.64	16.29
1987	10.51	63.0%	0.85	0.55	4.21	0.55	16.67
1988	10.88	62.7%	0.87	0.54	4.36	0.69	17.34
1989	10.94	62.8%	0.88	0.51	4.33	0.75	17.40
1990	10.89	64.7%	0.74	0.49	4.15	0.57	16.84
1991	10.76	63.2%	0.74	0.46	4.53	0.53	17.03
1992	10.91	64.2%	0.76	0.44	4.45	0.44	16.99
1993	11.08	63.7%	0.77	0.41	4.64	0.50	17.39
1994	11.36	64.7%	0.76	0.41	4.57	0.47	17.57
1995	11.61	64.9%	0.74	0.38	4.83	0.33	17.90
1996	11.91	64.6%	0.81	0.40	4.96	0.36	18.44
1997	12.05	65.2%	0.78	0.38	4.86	0.41	18.47
1998	12.36	65.6%	0.72	0.36	4.84	0.58	18.86
1999	12.70	65.3%	0.82	0.37	5.03	0.53	19.46
2000	12.98	65.9%	0.87	0.42	4.92	0.51	19.68
2001	12.86	65.7%	0.85	0.41	4.89	0.56	19.57
2002	13.12	66.7%	0.82	0.38	4.93	0.43	19.67
2003	13.20	66.3%	0.85	0.43	4.90	0.53	19.91
2004	13.61	65.9%	0.84	0.42	5.23	0.54	20.63
2005	13.79	66.8%	0.81	0.39	5.10	0.55	20.63
2006	13.95	68.2%	0.69	0.34	5.19	0.29	20.45
2007	14.00	68.7%	0.71	0.34	5.05	0.29	20.38
2008	13.33	69.7%	0.72	0.34	4.53	0.21	19.14
2009	12.82	70.0%	0.69	0.36	4.27	0.17	18.31
2010	12.94	69.4%	0.67	0.36	4.51	0.17	18.64
2011	12.68	69.4%	0.67	0.36	4.45	0.13	18.28
			Average annual percentage change				
1973–2011	1.0%		-2.0%	-2.0%	0.0%	-6.3%	0.1%
2001–2011	-0.1%		-2.4%	-1.3%	-0.9%	-13.6%	-0.7%

Source:
U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, March 2012, Tables 2.2–2.6. Converted to million barrels per day using Table A3. (Additional resources: www.eia.doe.gov)

Light trucks include pick-ups, minivans, sport-utility vehicles, and vans. See Table 2.7 for highway energy use in trillion Btu.

Table 1.15
Highway Transportation Petroleum Consumption by Mode, 1970–2010[a]
(thousand barrels per day)

Year	Cars	Light trucks	Light vehicle subtotal	Motor-cycles	Buses	Class 3-6 trucks	Class 7-8 trucks	Heavy Trucks subtotal		Highway subtotal	Total transportation[b]
1970	4,424	803	5,227	4	62	140	598	738		6,031	7,333
1971	4,654	880	5,534	5	60	146	624	771		6,369	7,654
1972	4,954	988	5,942	6	59	161	685	846		6,852	8,179
1973	5,103	1,098	6,201	7	58	177	757	934		7,200	8,601
1974	4,842	1,087	5,929	7	57	178	758	935		6,928	8,310
1975	4,836	1,245	6,081	7	58	181	771	952		7,099	8,472
1976	5,107	1,359	6,466	8	63	191	814	1,005		7,542	8,969
1977	5,157	1,460	6,617	8	65	212	903	1,114		7,805	9,314
1978	5,261	1,576	6,837	9	66	237	1,010	1,247		8,160	9,793
1979	4,996	1,595	6,591	11	68	247	1,052	1,299		7,969	9,725
1980	4,565	1,552	6,117	13	68	247	1,055	1,302		7,500	9,118
1981	4,508	1,546	6,054	14	69	253	1,077	1,329		7,466	9,175
1982	4,509	1,481	5,989	13	71	253	1,077	1,330		7,403	8,944
1983	4,587	1,562	6,149	11	72	257	1,097	1,354		7,586	9,077
1984	4,609	1,670	6,280	11	69	266	1,132	1,398		7,758	9,364
1985	4,665	1,785	6,450	12	72	265	1,131	1,396		7,930	9,537
1986	4,773	1,897	6,670	12	76	271	1,155	1,426		8,184	9,896
1987	4,782	1,996	6,778	12	77	279	1,190	1,469		8,336	10,111
1988	4,784	2,130	6,914	13	80	284	1,211	1,495		8,503	10,343
1989	4,821	2,170	6,992	14	79	291	1,242	1,534		8,618	10,505
1990	4,538	2,323	6,861	12	78	304	1,294	1,597		8,549	10,425
1991	4,196	2,493	6,688	12	83	310	1,320	1,630		8,413	10,246
1992	4,268	2,670	6,938	12	87	315	1,345	1,660		8,698	10,583
1993	4,374	2,795	7,169	13	86	325	1,386	1,711		8,979	10,820
1994	4,428	2,878	7,305	13	86	343	1,463	1,806		9,211	11,091
1995	4,440	2,975	7,415	13	87	357	1,523	1,881		9,396	11,346
1996	4,515	3,089	7,604	13	88	367	1,564	1,931		9,636	11,601
1997	4,559	3,222	7,781	13	91	370	1,579	1,949		9,834	11,776
1998	4,677	3,292	7,969	13	93	382	1,630	2,012		10,086	12,014
1999	4,780	3,448	8,228	14	96	420	1,792	2,212		10,550	12,644
2000	4,766	3,453	8,219	14	98	437	1,861	2,298		10,630	12,794
2001	4,798	3,491	8,290	13	93	436	1,859	2,295		10,690	12,665
2002	4,923	3,602	8,525	12	91	456	1,944	2,401		11,029	12,945
2003	4,866	3,963	8,829	12	90	443	1,890	2,334		11,265	13,128
2004	4,919	4,137	9,055	13	92	411	1,752	2,162		11,323	13,395
2005	5,050	3,840	8,890	12	93	461	1,965	2,426		11,422	13,563
2006	4,893	3,959	8,852	14	94	470	2,006	2,476	[c]	11,436	13,604
2007	4,852	4,034	8,885	31	92	585	2,495	3,080		12,089	14,295
2008	4,492	4,082	8,574	32	95	591	2,521	3,112		11,813	13,863
2009	4,451	4,120	8,571	31	95	549	2,341	2,890		11,587	13,419
2010	4,395	4,193	8,588	28	90	557	2,375	2,933		11,639	13,548
						Average annual percentage change					
1970–2010	0.0%	4.2%	1.2%	5.0%	0.9%	3.5%	3.5%	3.5%		1.7%	1.5%
2000–2010	-0.8%	2.0%	0.4%	7.2%	-0.8%	2.5%	2.5%	2.5%		0.9%	0.6%

Source:
See Appendix A for Highway Energy Use.

[a] Each gallon of petroleum product was assumed to equal one gallon of crude oil. The oil used to produce electricity is also estimated. See Appendix A, p. 18 for details.

[b] Total transportation figures do not include military and off-highway energy use and may not include all possible uses of fuel for transportation (e.g., snowmobiles).

[c] Due to changes in the FHWA fuel use methodology, motorcycle, bus, and heavy truck data are not comparable with data before the year 2007.

Although about 18% of transportation energy use is for nonhighway modes, only 14% of transportation petroleum use is for nonhighway. This is because some nonhighway modes, such as pipelines and transit rail, use electricity. An estimate for the petroleum used to make electricity is included in the data. See Table 2.8 for nonhighway transportation energy use in trillion Btu.

Table 1.16
Nonhighway Transportation Petroleum Consumption by Mode, 1970–2010[a]
(thousand barrels per day)

Year	Air	Water	Pipeline	Rail	Nonhighway subtotal	Total transportation[b]
1970	625	381	43	253	1,302	7,333
1975	651	423	50	249	1,373	8,472
1980	697	625	35	262	1,618	9,118
1981	706	722	29	253	1,709	9,175
1982	701	604	21	214	1,541	8,944
1983	699	561	20	212	1,491	9,077
1984	781	577	16	232	1,606	9,364
1985	814	564	13	216	1,606	9,537
1986	884	601	17	210	1,712	9,896
1987	920	626	15	213	1,775	10,111
1988	958	644	18	220	1,840	10,343
1989	960	688	18	221	1,887	10,505
1990	991	655	14	216	1,876	10,425
1991	928	690	12	202	1,833	10,246
1992	942	724	10	208	1,885	10,583
1993	961	653	11	215	1,841	10,820
1994	1,004	635	11	230	1,880	11,091
1995	1,036	668	7	239	1,950	11,346
1996	1,068	644	8	245	1,965	11,601
1997	1,113	574	9	246	1,942	11,776
1998	1,102	566	12	248	1,927	12,014
1999	1,202	625	11	257	2,095	12,644
2000	1,236	662	10	256	2,164	12,794
2001	1,161	546	11	257	1,975	12,665
2002	1,079	572	8	257	1,917	12,945
2003	1,094	496	10	263	1,863	13,128
2004	1,188	596	10	278	2,073	13,395
2005	1,226	625	10	281	2,142	13,563
2006	1,216	661	5	286	2,168	13,604
2007	1,215	709	5	277	2,206	14,295
2008	1,160	621	4	265	2,050	13,863
2009	1,029	579	3	220	1,832	13,419
2010	1,040	626	3	240	1,909	13,548
			Average annual percentage change			
1970–2009	1.3%	1.2%	-6.4%	-0.1%	1.0%	1.5%
1999–2009	-1.7%	-0.6%	-11.3%	-0.6%	-1.2%	0.6%

Source:
See Appendix A for Nonhighway Energy Use.

[a] Each gallon of petroleum product was assumed to equal one gallon of crude oil. The oil used to produce electricity is also estimated. See Appendix A, p. 18 for details.

[b] Total transportation figures do not include military and off-highway energy use and may not include all possible uses of fuel for transportation (e.g., snowmobiles).

Highway vehicles were responsible for 85.9% of all transportation petroleum use in 2010. See Table 2.7 for transportation energy use in trillion Btu.

Table 1.17
Transportation Petroleum Use by Mode, 2009–2010[a]

	Thousand barrels per day		Percentage of total		Percentage of total U.S. petroleum consumption	
	2009	2010	2009	2010	2009	2010
HIGHWAY	11,586.6	11,639.0	86.3%	85.9%	61.7%	60.7%
Light vehicles	8,602.0	8,616.1	64.1%	63.6%	45.8%	44.9%
Cars	4,450.6	4,395.2	33.2%	32.4%	23.7%	22.9%
Light trucks[b]	4,120.0	4,193.1	30.7%	31.0%	21.9%	21.9%
Motorcycles	31.5	27.8	0.2%	0.2%	0.2%	0.1%
Buses	94.6	90.3	0.7%	0.7%	0.5%	0.5%
Transit	43.7	41.5	0.3%	0.3%	0.2%	0.2%
Intercity	14.6	14.0	0.1%	0.1%	0.1%	0.1%
School	36.3	34.8	0.3%	0.3%	0.2%	0.2%
Medium/heavy trucks	2,890.0	2,932.6	21.5%	21.6%	15.4%	15.3%
Class 3-6	549.1	557.2	4.1%	4.1%	2.9%	2.9%
Class 7-8	2,340.9	2,375.4	17.4%	17.5%	12.5%	12.4%
NONHIGHWAY	1,832.2	1,908.5	13.7%	14.1%	9.8%	10.0%
Air	1,029.5	1,039.7	7.7%	7.7%	5.5%	5.4%
General aviation	103.2	108.8	0.8%	0.8%	0.5%	0.6%
Domestic air carriers	739.7	734.2	5.5%	5.4%	3.9%	3.8%
International air carriers	186.6	196.6	1.4%	1.5%	1.0%	1.0%
Water	579.1	625.9	4.3%	4.6%	3.1%	3.3%
Freight	453.3	500.4	3.4%	3.7%	2.4%	2.6%
Recreational	125.8	125.5	0.9%	0.9%	0.7%	0.7%
Pipeline	3.4	3.2	0.0%	0.0%	0.0%	0.0%
Rail	220.3	239.8	1.6%	1.8%	1.2%	1.3%
Freight (Class I)	210.0	229.6	1.6%	1.7%	1.1%	1.2%
Passenger	10.2	10.2	0.1%	0.1%	0.1%	0.1%
Transit	0.0	0.0	0.0%	0.0%	0.0%	0.0%
Commuter	6.2	6.1	0.0%	0.0%	0.0%	0.0%
Intercity	4.0	4.1	0.0%	0.0%	0.0%	0.0%
HWY & NONHWY TOTAL[c]	13,418.9	13,547.5	100.0%	100.0%	71.5%	70.6%
Off-Highway	999.5	1,018.2				

Source:
See Appendix A for Energy Use Sources.

[a] Each gallon of petroleum product was assumed to equal one gallon of crude oil. The oil used to produce electricity is also estimated. See Appendix A, p. 18 for details.

[b] Two-axle, four-tire trucks.

[c] Civilian consumption only. Totals may not include all possible uses of fuels for transportation (e.g., snowmobiles).