Annex 1E. Oil and Gas Production (IPCC 1A1cii)
to the Technical Support Document for California's Greenhouse Gas Emissions Inventory and the 1990 Emissions Level

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Variables Used in the Emissions Estimation Equations

Values last updated on Monday, November 19, 2007

IPCC category =1A1cii — Fuel Combustion Activities - Energy Industries - Manufacture of Solid Fuels and Other Energy Industries - Other Energy Industries

► ***Sector = Oil & Gas Extraction***

Activity = Fuel combustion - Associated gas

- Variable Name -	- Year -	- Value and Units -	- Reference -
Fuel combustion - Associated gas	1990	100,148,233,639 scf	Gough, 2007
Fuel combustion - Associated gas	1991	72,345,717,104 scf	Gough, 2007
Fuel combustion - Associated gas	1992	190,775,000,347 scf	Gough, 2007
Fuel combustion - Associated gas	1993	178,173,094,084 scf	Gough, 2007
Fuel combustion - Associated gas	1994	161,064,001,906 scf	Gough, 2007
Fuel combustion - Associated gas	1995	215,513,897,302 scf	Gough, 2007
Fuel combustion - Associated gas	1996	231,472,854,691 scf	Gough, 2007
Fuel combustion - Associated gas	1997	332,128,888,911 scf	Gough, 2007
Fuel combustion - Associated gas	1998	243,233,241,361 scf	Gough, 2007
Fuel combustion - Associated gas	1999	211,907,536,757 scf	Gough, 2007
Fuel combustion - Associated gas	2000	190,126,005,817 scf	Gough, 2007
Fuel combustion - Associated gas	2001	256,871,483,368 scf	Gough, 2007
Fuel combustion - Associated gas	2002	212,283,061,262 scf	Gough, 2007
Fuel combustion - Associated gas	2003	231,041,250,743 scf	Gough, 2007
Fuel combustion - Associated gas	2004	224,160,607,550 scf	Gough, 2007
Fuel CH4 emission	1990	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1991	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1992	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1993	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1994	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1995	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1996	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1997	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1998	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1999	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2000	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2001	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2002	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2003	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2004	1.000E-06 g / btu	IPCC_2006b
Fuel CO2 emission	1990	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1991	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1992	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1993	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1994	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1995	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1996	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1997	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1998	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	1999	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	2000	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	2001	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	2002	0.0651 g / btu	Wang, 2007
Fuel CO2 emission	2003	0.0651 g / btu	Wang, 2007

Fuel CO2 emission	2004	0.0651 g / btu	Wang, 2007
Fuel N2O emission	1990	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1991	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1992	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1993	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1994	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1995	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1996	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1997	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1998	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1999	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2000	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2001	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2002	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2003	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2004	1.000E-07 g / btu	IPCC_2006b
Heat Content	1990	808 btu / scf	Wang, 2007
Heat Content	1991	808 btu / scf	Wang, 2007
Heat Content	1992	808 btu / scf	Wang, 2007
Heat Content	1993	808 btu / scf	Wang, 2007
Heat Content	1994	808 btu / scf	Wang, 2007
Heat Content	1995	808 btu / scf	Wang, 2007
Heat Content	1996	808 btu / scf	Wang, 2007
Heat Content	1997	808 btu / scf	Wang, 2007
Heat Content	1998	808 btu / scf	Wang, 2007
Heat Content	1999	808 btu / scf	Wang, 2007
Heat Content	2000	808 btu / scf	Wang, 2007
Heat Content	2001	808 btu / scf	Wang, 2007
Heat Content	2002	808 btu / scf	Wang, 2007
Heat Content	2003	808 btu / scf	Wang, 2007
Heat Content	2004	808 btu / scf	Wang, 2007

Activity = Fuel combustion - Crude oil

- Variable Name -	*- Year -*	*- Value and Units -*	*- Reference -*
Fuel combustion - Crude oil	1990	242,203,920 gal	Campion, 2007
Fuel combustion - Crude oil	1991	143,195,388 gal	Campion, 2007
Fuel combustion - Crude oil	1992	49,932,624 gal	Campion, 2007
Fuel combustion - Crude oil	1993	16,458,834 gal	Campion, 2007
Fuel combustion - Crude oil	1994	13,834,380 gal	Campion, 2007
Fuel combustion - Crude oil	1995	958,314 gal	Campion, 2007
Fuel combustion - Crude oil	1996	0 gal	Not applicable
Fuel combustion - Crude oil	1997	0 gal	Not applicable
Fuel combustion - Crude oil	1998	0 gal	Not applicable
Fuel combustion - Crude oil	1999	0 gal	Not applicable
Fuel combustion - Crude oil	2000	0 gal	Not applicable
Fuel combustion - Crude oil	2001	0 gal	Not applicable
Fuel combustion - Crude oil	2002	0 gal	Not applicable
Fuel combustion - Crude oil	2003	0 gal	Not applicable
Fuel combustion - Crude oil	2004	0 gal	Not applicable
Fuel CH4 emission	1990	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1991	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1992	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1993	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1994	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1995	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1996	3.000E-06 g / btu	IPCC_2006b

Fuel CH4 emission	1997	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1998	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1999	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2000	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2001	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2002	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2003	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2004	3.000E-06 g / btu	IPCC_2006b
Fuel CO2 emission	1990	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1991	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1992	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1993	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1994	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1995	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1996	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1997	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1998	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	1999	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	2000	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	2001	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	2002	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	2003	0.0745 g / btu	USEPA, 2007c
Fuel CO2 emission	2004	0.0745 g / btu	USEPA, 2007c
Fuel N2O emission	1990	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1991	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1992	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1993	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1994	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1995	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1996	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1997	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1998	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1999	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2000	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2001	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2002	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2003	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2004	6.000E-07 g / btu	IPCC_2006b
Heat content	1990	138,095 btu / gal	USEPA, 2007c
Heat content	1991	138,095 btu / gal	USEPA, 2007c
Heat content	1992	138,095 btu / gal	USEPA, 2007c
Heat content	1993	138,095 btu / gal	USEPA, 2007c
Heat content	1994	138,095 btu / gal	USEPA, 2007c
Heat content	1995	138,095 btu / gal	USEPA, 2007c
Heat content	1996	138,095 btu / gal	USEPA, 2007c
Heat content	1997	138,095 btu / gal	USEPA, 2007c
Heat content	1998	138,095 btu / gal	USEPA, 2007c
Heat content	1999	138,095 btu / gal	USEPA, 2007c
Heat content	2000	138,095 btu / gal	USEPA, 2007c
Heat content	2001	138,095 btu / gal	USEPA, 2007c
Heat content	2002	138,095 btu / gal	USEPA, 2007c
Heat content	2003	138,095 btu / gal	USEPA, 2007c
Heat content	2004	138,095 btu / gal	USEPA, 2007c

Activity = Fuel combustion - Distillate

- Variable Name -	- Year -	- Value and Units -	- Reference -
Fuel combustion - Distillate	1990	20,723,200 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1991	10,783,880 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1992	14,236,482 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1993	15,658,694 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1994	14,288,942 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1995	9,684,030 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1996	4,794,800 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1997	5,209,826 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1998	5,987,068 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	1999	11,554,796 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	2000	9,773,598 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	2001	10,489,822 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	2002	12,520,896 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	2003	10,388,200 gal	Murtishaw et al. 2005
Fuel combustion - Distillate	2004	12,490,283 gal	Murtishaw et al. 2005
Fuel CH4 emission	1990	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1991	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1992	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1993	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1994	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1995	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1996	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1997	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1998	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1999	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2000	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2001	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2002	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2003	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2004	3.000E-06 g / btu	IPCC_2006b
Fuel CO2 emission	1990	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1991	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1992	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1993	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1994	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1995	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1996	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1997	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1998	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	1999	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	2000	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	2001	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	2002	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	2003	0.0731 g / btu	USEPA, 2007c
Fuel CO2 emission	2004	0.0731 g / btu	USEPA, 2007c
Fuel N2O emission	1990	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1991	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1992	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1993	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1994	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1995	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1996	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1997	6.000E-07 g / btu	IPCC_2006b

Fuel N2O emission	1998	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1999	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2000	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2001	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2002	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2003	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2004	6.000E-07 g / btu	IPCC_2006b
Heat content	1990	138,690 btu / gal	USEPA, 2007c
Heat content	1991	138,690 btu / gal	USEPA, 2007c
Heat content	1992	138,690 btu / gal	USEPA, 2007c
Heat content	1993	138,690 btu / gal	USEPA, 2007c
Heat content	1994	138,690 btu / gal	USEPA, 2007c
Heat content	1995	138,690 btu / gal	USEPA, 2007c
Heat content	1996	138,690 btu / gal	USEPA, 2007c
Heat content	1997	138,690 btu / gal	USEPA, 2007c
Heat content	1998	138,690 btu / gal	USEPA, 2007c
Heat content	1999	138,690 btu / gal	USEPA, 2007c
Heat content	2000	138,690 btu / gal	USEPA, 2007c
Heat content	2001	138,690 btu / gal	USEPA, 2007c
Heat content	2002	138,690 btu / gal	USEPA, 2007c
Heat content	2003	138,690 btu / gal	USEPA, 2007c
Heat content	2004	138,690 btu / gal	USEPA, 2007c

Activity = Fuel combustion - Natural gas

- Variable Name -	*- Year -*	*- Value and Units -*	*- Reference -*
Fuel combustion - Natural gas	1990	104,596,214,089 scf	Gough, 2007
Fuel combustion - Natural gas	1991	140,554,287,963 scf	Gough, 2007
Fuel combustion - Natural gas	1992	44,848,438,340 scf	Gough, 2007
Fuel combustion - Natural gas	1993	18,205,053,029 scf	Gough, 2007
Fuel combustion - Natural gas	1994	15,444,528,389 scf	Gough, 2007
Fuel combustion - Natural gas	1995	15,415,172,031 scf	Gough, 2007
Fuel combustion - Natural gas	1996	13,474,458,805 scf	Gough, 2007
Fuel combustion - Natural gas	1997	9,918,341,300 scf	Gough, 2007
Fuel combustion - Natural gas	1998	50,349,243,632 scf	Gough, 2007
Fuel combustion - Natural gas	1999	44,571,221,915 scf	Gough, 2007
Fuel combustion - Natural gas	2000	52,343,906,260 scf	Gough, 2007
Fuel combustion - Natural gas	2001	16,617,044,640 scf	Gough, 2007
Fuel combustion - Natural gas	2002	12,790,880,767 scf	Gough, 2007
Fuel combustion - Natural gas	2003	35,450,792,147 scf	Gough, 2007
Fuel combustion - Natural gas	2004	38,157,549,131 scf	Gough, 2007
Fuel CH4 emission	1990	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1991	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1992	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1993	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1994	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1995	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1996	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1997	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1998	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1999	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2000	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2001	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2002	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2003	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2004	1.000E-06 g / btu	IPCC_2006b
Fuel CO2 emission	1990	0.053 g / btu	USEPA, 2007c

Fuel CO2 emission	1991	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1992	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1993	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1994	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1995	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1996	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1997	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1998	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1999	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2000	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2001	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2002	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2003	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2004	0.053 g / btu	USEPA, 2007c
Fuel N2O emission	1990	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1991	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1992	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1993	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1994	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1995	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1996	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1997	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1998	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1999	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2000	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2001	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2002	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2003	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2004	1.000E-07 g / btu	IPCC_2006b
Heat Content	1990	1,032 btu / scf	EIA, 2007a
Heat Content	1991	1,027 btu / scf	EIA, 2007a
Heat Content	1992	1,027 btu / scf	EIA, 2007a
Heat Content	1993	1,038 btu / scf	EIA, 2007a
Heat Content	1994	1,020 btu / scf	EIA, 2007a
Heat Content	1995	1,011 btu / scf	EIA, 2007a
Heat Content	1996	1,034 btu / scf	EIA, 2007a
Heat Content	1997	1,017 btu / scf	EIA, 2007a
Heat Content	1998	1,056 btu / scf	EIA, 2007a
Heat Content	1999	1,014 btu / scf	EIA, 2007a
Heat Content	2000	956 btu / scf	EIA, 2007a
Heat Content	2001	1,016 btu / scf	EIA, 2007a
Heat Content	2002	987 btu / scf	EIA, 2007a
Heat Content	2003	1,021 btu / scf	EIA, 2007a
Heat Content	2004	1,009 btu / scf	EIA, 2007a

Activity = Fuel combustion - Residual fuel oil

- Variable Name -	*- Year -*	*- Value and Units -*	*- Reference -*
Fuel combustion - Residual fuel oil	1990	1,126,632 gal	Murtishaw et al. 2005
Fuel combustion - Residual fuel oil	1991	2,212,798 gal	Murtishaw et al. 2005
Fuel combustion - Residual fuel oil	1992	5,362,364 gal	Murtishaw et al. 2005
Fuel combustion - Residual fuel oil	1993	2,753,519 gal	Average of available data except 2001
Fuel combustion - Residual fuel oil	1994	2,753,519 gal	Average of available data except 2001
Fuel combustion - Residual fuel oil	1995	2,753,519 gal	Average of available data except 2001
Fuel combustion - Residual fuel oil	1996	2,753,519 gal	Average of available data except 2001
Fuel combustion - Residual fuel oil	1997	2,753,519 gal	Average of available data except 2001
Fuel combustion - Residual fuel oil	1998	2,753,519 gal	Average of available data except 2001

Fuel combustion - Residual fuel oil	1999	1,273,318 gal	Murtishaw et al. 2005
Fuel combustion - Residual fuel oil	2000	2,753,519 gal	Average of available data except 2001
Fuel combustion - Residual fuel oil	2001	18,463,000 gal	Murtishaw et al. 2005
Fuel combustion - Residual fuel oil	2002	5,832,000 gal	Murtishaw et al. 2005
Fuel combustion - Residual fuel oil	2003	714,000 gal	Murtishaw et al. 2005
Fuel combustion - Residual fuel oil	2004	2,753,519 gal	Average of available data except 2001
Fuel CH4 emission	1990	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1991	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1992	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1993	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1994	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1995	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1996	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1997	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1998	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1999	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2000	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2001	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2002	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2003	3.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2004	3.000E-06 g / btu	IPCC_2006b
Fuel CO2 emission	1990	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1991	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1992	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1993	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1994	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1995	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1996	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1997	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1998	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	1999	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	2000	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	2001	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	2002	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	2003	0.0787 g / btu	USEPA, 2007c
Fuel CO2 emission	2004	0.0787 g / btu	USEPA, 2007c
Fuel N2O emission	1990	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1991	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1992	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1993	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1994	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1995	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1996	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1997	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1998	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1999	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2000	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2001	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2002	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2003	6.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2004	6.000E-07 g / btu	IPCC_2006b
Heat content	1990	149,690 btu / gal	USEPA, 2007c
Heat content	1991	149,690 btu / gal	USEPA, 2007c
Heat content	1992	149,690 btu / gal	USEPA, 2007c
Heat content	1993	149,690 btu / gal	USEPA, 2007c

Heat content	1994	149,690 btu / gal	USEPA, 2007c
Heat content	1995	149,690 btu / gal	USEPA, 2007c
Heat content	1996	149,690 btu / gal	USEPA, 2007c
Heat content	1997	149,690 btu / gal	USEPA, 2007c
Heat content	1998	149,690 btu / gal	USEPA, 2007c
Heat content	1999	149,690 btu / gal	USEPA, 2007c
Heat content	2000	149,690 btu / gal	USEPA, 2007c
Heat content	2001	149,690 btu / gal	USEPA, 2007c
Heat content	2002	149,690 btu / gal	USEPA, 2007c
Heat content	2003	149,690 btu / gal	USEPA, 2007c
Heat content	2004	149,690 btu / gal	USEPA, 2007c

► *Sector = Pipelines : Natural Gas Pipelines*

Activity = Fuel combustion - Natural gas

- Variable Name -	*- Year -*	*- Value and Units -*	*- Reference -*
Fuel combustion - Natural gas	1990	13,269 scf	Gough, 2007
Fuel combustion - Natural gas	1991	41,000 scf	Gough, 2007
Fuel combustion - Natural gas	1992	75,369 scf	Gough, 2007
Fuel combustion - Natural gas	1993	7,878,085 scf	Gough, 2007
Fuel combustion - Natural gas	1994	15,026,384 scf	Gough, 2007
Fuel combustion - Natural gas	1995	34,094,807 scf	Gough, 2007
Fuel combustion - Natural gas	1996	1,303,749,978 scf	Gough, 2007
Fuel combustion - Natural gas	1997	229,838,828 scf	Gough, 2007
Fuel combustion - Natural gas	1998	38,897,237 scf	Gough, 2007
Fuel combustion - Natural gas	1999	32,920,598 scf	Gough, 2007
Fuel combustion - Natural gas	2000	65,051,634 scf	Gough, 2007
Fuel combustion - Natural gas	2001	48,938,053 scf	Gough, 2007
Fuel combustion - Natural gas	2002	264,524,621 scf	Gough, 2007
Fuel combustion - Natural gas	2003	405,688,579 scf	Gough, 2007
Fuel combustion - Natural gas	2004	394,490,402 scf	Gough, 2007
Fuel CH4 emission	1990	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1991	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1992	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1993	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1994	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1995	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1996	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1997	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1998	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1999	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2000	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2001	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2002	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2003	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2004	1.000E-06 g / btu	IPCC_2006b
Fuel CO2 emission	1990	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1991	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1992	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1993	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1994	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1995	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1996	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1997	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1998	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1999	0.053 g / btu	USEPA, 2007c

Fuel CO2 emission	2000	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2001	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2002	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2003	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2004	0.053 g / btu	USEPA, 2007c
Fuel N2O emission	1990	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1991	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1992	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1993	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1994	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1995	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1996	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1997	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1998	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1999	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2000	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2001	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2002	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2003	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2004	1.000E-07 g / btu	IPCC_2006b
Heat Content	1990	1,032 btu / scf	EIA, 2007a
Heat Content	1991	1,027 btu / scf	EIA, 2007a
Heat Content	1992	1,027 btu / scf	EIA, 2007a
Heat Content	1993	1,038 btu / scf	EIA, 2007a
Heat Content	1994	1,020 btu / scf	EIA, 2007a
Heat Content	1995	1,011 btu / scf	EIA, 2007a
Heat Content	1996	1,034 btu / scf	EIA, 2007a
Heat Content	1997	1,017 btu / scf	EIA, 2007a
Heat Content	1998	1,056 btu / scf	EIA, 2007a
Heat Content	1999	1,014 btu / scf	EIA, 2007a
Heat Content	2000	956 btu / scf	EIA, 2007a
Heat Content	2001	1,016 btu / scf	EIA, 2007a
Heat Content	2002	987 btu / scf	EIA, 2007a
Heat Content	2003	1,021 btu / scf	EIA, 2007a
Heat Content	2004	1,009 btu / scf	EIA, 2007a

► *Sector = Pipelines : Non Natural Gas Pipelines*

Activity = Fuel combustion - Natural gas

- Variable Name -	*- Year -*	*- Value and Units -*	*- Reference -*
Fuel combustion - Natural gas	1990	2,327,067,877 scf	Gough, 2007
Fuel combustion - Natural gas	1991	2,841,595,930 scf	Gough, 2007
Fuel combustion - Natural gas	1992	2,345,904,301 scf	Gough, 2007
Fuel combustion - Natural gas	1993	1,526,365,459 scf	Gough, 2007
Fuel combustion - Natural gas	1994	1,309,526,783 scf	Gough, 2007
Fuel combustion - Natural gas	1995	1,433,731,309 scf	Gough, 2007
Fuel combustion - Natural gas	1996	1,544,290,558 scf	Gough, 2007
Fuel combustion - Natural gas	1997	1,456,712,624 scf	Gough, 2007
Fuel combustion - Natural gas	1998	1,200,070,181 scf	Gough, 2007
Fuel combustion - Natural gas	1999	1,197,275,535 scf	Gough, 2007
Fuel combustion - Natural gas	2000	1,295,096,201 scf	Gough, 2007
Fuel combustion - Natural gas	2001	2,445,205,178 scf	Gough, 2007
Fuel combustion - Natural gas	2002	2,364,436,477 scf	Gough, 2007
Fuel combustion - Natural gas	2003	1,519,619,701 scf	Gough, 2007
Fuel combustion - Natural gas	2004	1,698,608,470 scf	Gough, 2007
Fuel CH4 emission	1990	1.000E-06 g / btu	IPCC_2006b

Fuel CH4 emission	1991	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1992	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1993	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1994	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1995	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1996	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1997	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1998	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	1999	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2000	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2001	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2002	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2003	1.000E-06 g / btu	IPCC_2006b
Fuel CH4 emission	2004	1.000E-06 g / btu	IPCC_2006b
Fuel CO2 emission	1990	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1991	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1992	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1993	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1994	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1995	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1996	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1997	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1998	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	1999	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2000	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2001	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2002	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2003	0.053 g / btu	USEPA, 2007c
Fuel CO2 emission	2004	0.053 g / btu	USEPA, 2007c
Fuel N2O emission	1990	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1991	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1992	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1993	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1994	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1995	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1996	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1997	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1998	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	1999	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2000	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2001	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2002	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2003	1.000E-07 g / btu	IPCC_2006b
Fuel N2O emission	2004	1.000E-07 g / btu	IPCC_2006b
Heat Content	1990	1,032 btu / scf	EIA, 2007a
Heat Content	1991	1,027 btu / scf	EIA, 2007a
Heat Content	1992	1,027 btu / scf	EIA, 2007a
Heat Content	1993	1,038 btu / scf	EIA, 2007a
Heat Content	1994	1,020 btu / scf	EIA, 2007a
Heat Content	1995	1,011 btu / scf	EIA, 2007a
Heat Content	1996	1,034 btu / scf	EIA, 2007a
Heat Content	1997	1,017 btu / scf	EIA, 2007a
Heat Content	1998	1,056 btu / scf	EIA, 2007a
Heat Content	1999	1,014 btu / scf	EIA, 2007a
Heat Content	2000	956 btu / scf	EIA, 2007a
Heat Content	2001	1,016 btu / scf	EIA, 2007a

Heat Content	2002	987 btu / scf	EIA, 2007a
Heat Content	2003	1,021 btu / scf	EIA, 2007a
Heat Content	2004	1,009 btu / scf	EIA, 2007a