

**Annex 2E. Semiconductor Manufacturing (IPCC 2E)
to the Technical Support Document for the 2000-2011 California's Greenhouse Gas
Emissions Inventory**

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Variables Used in the Emissions Estimation Equations

Values last updated on Thursday, August 01, 2013

IPCC category = 2E — Electronics Industry

► Sector = Manufacturing : Electric & Electronic Equip. : Semiconductors & Related Products >

Activity = Semiconductor manufacture - C2F6

- Variable Name -	- Year -	- Value and Units -	- Reference -
Semiconductor manufacture	2000	Not used in estimates	None, see text
Semiconductor manufacture	2001	Not used in estimates	None, see text
Semiconductor manufacture	2002	Not used in estimates	None, see text
Semiconductor manufacture	2003	Not used in estimates	None, see text
Semiconductor manufacture	2004	Not used in estimates	None, see text
Semiconductor manufacture	2005	Not used in estimates	None, see text
Semiconductor manufacture	2006	Not used in estimates	None, see text
Semiconductor manufacture	2007	Not used in estimates	None, see text
Semiconductor manufacture	2008	Not used in estimates	None, see text
Semiconductor manufacture	2009	Not used in estimates	None, see text
Semiconductor manufacture	2010	Not used in estimates	None, see text
Semiconductor manufacture	2011	Not used in estimates	None, see text
Ratio of 2006 California survey to US emissions	2000	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2001	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2002	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2003	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2004	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2005	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2007	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2008	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2009	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2010	0.0725	TSD General
Ratio of 2006 California survey to US emissions	2011	0.0725	TSD General
US emissions from semiconductor manufacture	2000	321 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2001	229 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2002	241 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2003	226 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2004	224 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2005	216 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2006	240 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2007	259 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2008	257 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2009	187 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2010	284 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2011	255 Mg (tonnes)	USEPA, 2013d

Activity = Semiconductor manufacture - C3F8

- Variable Name -	- Year -	- Value and Units -	- Reference -
Semiconductor manufacture	2000	Not used in estimates	None, see text
Semiconductor manufacture	2001	Not used in estimates	None, see text
Semiconductor manufacture	2002	Not used in estimates	None, see text
Semiconductor manufacture	2003	Not used in estimates	None, see text
Semiconductor manufacture	2004	Not used in estimates	None, see text
Semiconductor manufacture	2005	Not used in estimates	None, see text
Semiconductor manufacture	2006	Not used in estimates	None, see text

Variables Used in the Emissions Estimation Equations

Values last updated on Thursday, August 01, 2013

Semiconductor manufacture	2007	Not used in estimates	None, see text
Semiconductor manufacture	2008	Not used in estimates	None, see text
Semiconductor manufacture	2009	Not used in estimates	None, see text
Semiconductor manufacture	2010	Not used in estimates	None, see text
Semiconductor manufacture	2011	Not used in estimates	None, see text
Ratio of 2006 California survey to US emissions	2000	0.771	TSD General
Ratio of 2006 California survey to US emissions	2001	0.771	TSD General
Ratio of 2006 California survey to US emissions	2002	0.771	TSD General
Ratio of 2006 California survey to US emissions	2003	0.771	TSD General
Ratio of 2006 California survey to US emissions	2004	0.771	TSD General
Ratio of 2006 California survey to US emissions	2005	0.771	TSD General
Ratio of 2006 California survey to US emissions	2007	0.771	TSD General
Ratio of 2006 California survey to US emissions	2008	0.771	TSD General
Ratio of 2006 California survey to US emissions	2009	0.771	TSD General
Ratio of 2006 California survey to US emissions	2010	0.771	TSD General
Ratio of 2006 California survey to US emissions	2011	0.771	TSD General
US emissions from semiconductor manufacture	2000	18 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2001	14 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2002	10 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2003	14 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2004	6 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2005	5 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2006	5 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2007	6 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2008	13 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2009	5 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2010	5 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2011	6 Mg (tonnes)	USEPA, 2013d

Activity = Semiconductor manufacture - C4F8

- Variable Name -	- Year -	- Value and Units -	- Reference -
Semiconductor manufacture	2000	Not used in estimates	None, see text
Semiconductor manufacture	2001	Not used in estimates	None, see text
Semiconductor manufacture	2002	Not used in estimates	None, see text
Semiconductor manufacture	2003	Not used in estimates	None, see text
Semiconductor manufacture	2004	Not used in estimates	None, see text
Semiconductor manufacture	2005	Not used in estimates	None, see text
Semiconductor manufacture	2006	Not used in estimates	None, see text
Semiconductor manufacture	2007	Not used in estimates	None, see text
Semiconductor manufacture	2008	Not used in estimates	None, see text
Semiconductor manufacture	2009	Not used in estimates	None, see text
Semiconductor manufacture	2010	Not used in estimates	None, see text
Semiconductor manufacture	2011	Not used in estimates	None, see text
Ratio of 2006 California survey to US emissions	2000	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2001	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2002	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2003	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2004	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2005	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2007	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2008	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2009	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2010	0.0884	TSD General
Ratio of 2006 California survey to US emissions	2011	0.0884	TSD General
US emissions from semiconductor manufacture	2000	0 g	USEPA, 2012e

US emissions from semiconductor manufacture	2001	0 g	USEPA, 2012e
US emissions from semiconductor manufacture	2002	6 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2003	9 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2004	9 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2005	13 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2006	13 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2007	7 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2008	7 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2009	4 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2010	4 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2011	4 Mg (tonnes)	USEPA, 2013d

Activity = Semiconductor manufacture - CF4

- Variable Name -	- Year -	- Value and Units -	- Reference -
Semiconductor manufacture	2000	Not used in estimates	None, see text
Semiconductor manufacture	2001	Not used in estimates	None, see text
Semiconductor manufacture	2002	Not used in estimates	None, see text
Semiconductor manufacture	2003	Not used in estimates	None, see text
Semiconductor manufacture	2004	Not used in estimates	None, see text
Semiconductor manufacture	2005	Not used in estimates	None, see text
Semiconductor manufacture	2006	Not used in estimates	None, see text
Semiconductor manufacture	2007	Not used in estimates	None, see text
Semiconductor manufacture	2008	Not used in estimates	None, see text
Semiconductor manufacture	2009	Not used in estimates	None, see text
Semiconductor manufacture	2010	Not used in estimates	None, see text
Semiconductor manufacture	2011	Not used in estimates	None, see text
Ratio of 2006 California survey to US emissions	2000	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2001	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2002	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2003	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2004	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2005	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2007	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2008	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2009	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2010	0.0459	TSD General
Ratio of 2006 California survey to US emissions	2011	0.0459	TSD General
US emissions from semiconductor manufacture	2000	281 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2001	202 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2002	173 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2003	161 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2004	171 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2005	168 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2006	181 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2007	205 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2008	213 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2009	166 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2010	259 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2011	252 Mg (tonnes)	USEPA, 2013d

Activity = Semiconductor manufacture - HFC-23

- Variable Name -	- Year -	- Value and Units -	- Reference -
Semiconductor manufacture	2000	Not used in estimates	None, see text
Semiconductor manufacture	2001	Not used in estimates	None, see text
Semiconductor manufacture	2002	Not used in estimates	None, see text
Semiconductor manufacture	2003	Not used in estimates	None, see text

Semiconductor manufacture	2004	Not used in estimates	None, see text
Semiconductor manufacture	2005	Not used in estimates	None, see text
Semiconductor manufacture	2006	Not used in estimates	None, see text
Semiconductor manufacture	2007	Not used in estimates	None, see text
Semiconductor manufacture	2008	Not used in estimates	None, see text
Semiconductor manufacture	2009	Not used in estimates	None, see text
Semiconductor manufacture	2010	Not used in estimates	None, see text
Semiconductor manufacture	2011	Not used in estimates	None, see text

Ratio of 2006 California survey to US emissions	2000	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2001	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2002	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2003	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2004	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2005	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2007	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2008	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2009	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2010	0.0427	TSD General
Ratio of 2006 California survey to US emissions	2011	0.0427	TSD General

US emissions from semiconductor manufacture	2000	23 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2001	15 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2002	15 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2003	16 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2004	17 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2005	18 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2006	22 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2007	24 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2008	25 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2009	20 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2010	31 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2011	29 Mg (tonnes)	USEPA, 2013d

Activity = Semiconductor manufacture - NF3

- Variable Name -	- Year -	- Value and Units -	- Reference -
Semiconductor manufacture	2000	Not used in estimates	None, see text
Semiconductor manufacture	2001	Not used in estimates	None, see text
Semiconductor manufacture	2002	Not used in estimates	None, see text
Semiconductor manufacture	2003	Not used in estimates	None, see text
Semiconductor manufacture	2004	Not used in estimates	None, see text
Semiconductor manufacture	2005	Not used in estimates	None, see text
Semiconductor manufacture	2006	Not used in estimates	None, see text
Semiconductor manufacture	2007	Not used in estimates	None, see text
Semiconductor manufacture	2008	Not used in estimates	None, see text
Semiconductor manufacture	2009	Not used in estimates	None, see text
Semiconductor manufacture	2010	Not used in estimates	None, see text
Semiconductor manufacture	2011	Not used in estimates	None, see text
Ratio of 2006 California survey to US emissions	2000	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2001	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2002	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2003	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2004	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2005	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2007	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2008	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2009	0.0233	TSD General
Ratio of 2006 California survey to US emissions	2010	0.0233	TSD General

Ratio of 2006 California survey to US emissions	2011	0.0233	TSD General
US emissions from semiconductor manufacture	2000	11 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2001	12 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2002	32 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2003	30 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2004	30 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2005	26 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2006	40 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2007	30 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2008	33 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2009	33 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2010	32 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2011	38 Mg (tonnes)	USEPA, 2013d

Activity = Semiconductor manufacture - SF6

- Variable Name -	- Year -	- Value and Units -	- Reference -
Semiconductor manufacture	2000	Not used in estimates	None, see text
Semiconductor manufacture	2001	Not used in estimates	None, see text
Semiconductor manufacture	2002	Not used in estimates	None, see text
Semiconductor manufacture	2003	Not used in estimates	None, see text
Semiconductor manufacture	2004	Not used in estimates	None, see text
Semiconductor manufacture	2005	Not used in estimates	None, see text
Semiconductor manufacture	2006	Not used in estimates	None, see text
Semiconductor manufacture	2007	Not used in estimates	None, see text
Semiconductor manufacture	2008	Not used in estimates	None, see text
Semiconductor manufacture	2009	Not used in estimates	None, see text
Semiconductor manufacture	2010	Not used in estimates	None, see text
Semiconductor manufacture	2011	Not used in estimates	None, see text
Ratio of 2006 California survey to US emissions	2000	0.045	TSD General
Ratio of 2006 California survey to US emissions	2001	0.045	TSD General
Ratio of 2006 California survey to US emissions	2002	0.045	TSD General
Ratio of 2006 California survey to US emissions	2003	0.045	TSD General
Ratio of 2006 California survey to US emissions	2004	0.045	TSD General
Ratio of 2006 California survey to US emissions	2005	0.045	TSD General
Ratio of 2006 California survey to US emissions	2007	0.045	TSD General
Ratio of 2006 California survey to US emissions	2008	0.045	TSD General
Ratio of 2006 California survey to US emissions	2009	0.045	TSD General
Ratio of 2006 California survey to US emissions	2010	0.045	TSD General
Ratio of 2006 California survey to US emissions	2011	0.045	TSD General
US emissions from semiconductor manufacture	2000	45 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2001	31 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2002	28 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2003	35 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2004	35 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2005	40 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2006	40 Mg (tonnes)	USEPA, 2012e
US emissions from semiconductor manufacture	2007	35 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2008	36 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2009	29 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2010	42 Mg (tonnes)	USEPA, 2013d
US emissions from semiconductor manufacture	2011	39 Mg (tonnes)	USEPA, 2013d