

Genentech Sustainability Data and Notes

2009 - 2014 Performance Data

	Units	2009	2010	2011	2012	2013	2014
Onsite Energy Use	1000 GJ						
Stationary Combustion		1,367	1,304	1,215	1,197	1,183	1,164
Purchased Electricity		1,153	1,125	1,081	1,044	1,069	1,115
<i>Total Energy Use</i>		2,520	2,429	2,296	2,241	2,252	2,279
Scope 1 and 2 GHG Emissions	Metric tons CO ₂ e						
Stationary Combustion		71,419	65,958	61,458	60,485	59,668	58,718
Purchased Electricity		108,324	99,529	92,569	89,499	85,516	89,219
Vehicle Fleet		27,820	22,635	18,176	13,008	12,321	12,457
Emissions from HFC Refrigerants		2,631	1,143	1,061	2,200	2,303	2,937
Process Gases		1,178	1,178	1,178	1,178	1,178	1,178
<i>Total Scope 1 and 2 GHG Emissions</i>		211,372	190,444	174,442	166,370	160,986	164,509
Scope 3 GHG Emissions	Metric tons CO ₂ e						
Business Travel (Air)		40,841	49,900	46,658	54,458	57,263	58,432
Employee Commuting (SSF only)		32,829	25,829	23,906	25,034	22,584	22,556
Non-GHG Emissions to Air	Metric tons R-11e						
Ozone Depleting Substances (ODS)		0.06	0.04	0.12	0.03	0.02	0.01
Total Water Use	Cubic meters	2,547,673	2,447,734	2,390,745	2,422,542	2,530,956	2,579,856
General Waste	Metric tons						
Landfill		3,691	3,380	2,930	2,698	2,824	2,797
Recycling		3,490	2,783	3,197	2,706	2,676	3,537
Composting		788	753	1,030	1,772	2,249	2,125
e-waste		81	272	426	316	231	209
Incineration with energy recovery		-	-	-	-	-	6
<i>Total General Waste</i>		8,049	7,188	7,583	7,492	7,980	8,674

NOTES TO SUPPORT THE DATA TABLE

General Notes

The data presented in this report are for the following production and fill/finish facilities: South San Francisco, Vacaville and Oceanside, California, and Hillsboro, Oregon. The data also include the research, development, commercial and administrative offices at our South San Francisco headquarters and our Louisville, Kentucky distribution facility.

This report includes data from 2009 to 2014 for all facilities. The annual Roche internal reporting timeline is in November and requires reporting of Jan-Oct data, extrapolated to provide a full year estimate. Unless otherwise stated, the reported data are extrapolated in line with the Roche reporting policy.

This report does not include performance data for joint ventures or outsourced operations, nor does it include data for sales offices. No data are shown for buildings that Genentech leases out to other parties.

Data are reported for new owned facilities and buildings from the point at which Genentech becomes responsible for payment of utilities and other services, such as waste disposal. Data are reported for new leased buildings from the point at which the building becomes occupied by Genentech.

All figures in the data table, with the exception of figures less than 20, are rounded to the nearest whole number. Due to this rounding,

the individual elements of the data table may not always add up to the totals.

All electricity, natural gas and water data are based on meter readings provided by our utility vendors.

Onsite Energy Use

The 2009 and 2010 onsite energy use data were externally audited in December 2010 by PricewaterhouseCoopers as part of the annual Roche Group sustainability data verification process.

Greenhouse Gas Emissions (General)

The greenhouse gases included in the reported data are carbon dioxide, methane, nitrous oxide and hydrofluorocarbons. The GHG emissions data are reported as CO₂ equivalents (CO₂e).

Small emission sources (i.e. those accounting for <1% of the total emissions) are held flat from 2009–2014.

Greenhouse Gas Emissions from Energy Use

2009 reported data are based on full year performance. 2010-2014 data combine the extrapolated fuel use data reported to Roche Group with the emission factors shown in the tables below.

Electricity-Related Emission Factors

Site	Year	Emission Factor	Source
South San Francisco, Vacaville and Oceanside, California	2009	724.12 lb CO ₂ /MWh 0.03 lb CH ₄ /MWh 0.008 lb N ₂ O/MWh	U.S. EPA eGRID2007 v1.1 Regional emission factors for WECC California (CAMX)
	2010	681.01 lb CO ₂ /MWh 0.02 lb CH ₄ /MWh 0.006 lb N ₂ O/MWh	U.S. EPA eGRID2010 v1.1 Regional emission factors for WECC California (CAMX)
	2011-2012	658.58 lb CO ₂ /MWh 0.029 lb CH ₄ /MWh 0.006 lb N ₂ O/MWh	U.S. EPA eGRID2012 v1.1 Regional emission factors for WECC California (CAMX)
	2013-2014	610.82 lb CO ₂ /MWh 0.029 lb CH ₄ /MWh 0.006 lb N ₂ O/MWh	U.S. EPA eGRID2014 v1.1 Regional emission factors for WECC California (CAMX)
Louisville, Kentucky	2009	1510.44 lb CO ₂ /MWh 0.02 lb CH ₄ /MWh 0.026 lb N ₂ O/MWh	U.S. EPA eGRID2007 v1.1 Regional emission factors for SERC Tennessee Valley (SRTV)
	2010	1540.85 lb CO ₂ /MWh 0.02 lb CH ₄ /MWh 0.026 lb N ₂ O/MWh	U.S. EPA eGRID2010 v1.1 Regional emission factors for SERC Tennessee Valley (SRTV)
	2011-2012	1357.71 lb CO ₂ /MWh 0.017 lb CH ₄ /MWh 0.022 lb N ₂ O/MWh	U.S. EPA eGRID2012 v1.1 Regional emission factors for SERC Tennessee Valley (SRTV)
	2013-2014	1389.2 lb CO ₂ /MWh 0.018 lb CH ₄ /MWh 0.022 lb N ₂ O/MWh	U.S. EPA eGRID2014 v1.1 Regional emission factors for SERC Tennessee Valley (SRTV)
Hillsboro, Oregon	2009	902.24 lb CO ₂ /MWh 0.019 lb CH ₄ /MWh 0.0151 lb N ₂ O/MWh	U.S. EPA eGRID2007 v1.1 Regional emission factors for WECC Northwest (NWPP)
	2010	858.79 lb CO ₂ /MWh 0.016 lb CH ₄ /MWh 0.014 lb N ₂ O/MWh	U.S. EPA eGRID2010 v1.1 Regional emission factors for WECC Northwest (NWPP)
	2011-2012	819.12 lb CO ₂ /MWh 0.015 lb CH ₄ /MWh 0.013 lb N ₂ O/MWh	U.S. EPA eGRID2012 v1.1 Regional emission factors for WECC Northwest (NWPP)
	2013-2014	842.58 lb CO ₂ /MWh 0.016 lb CH ₄ /MWh 0.013 lb N ₂ O/MWh	U.S. EPA eGRID2014 v1.1 Regional emission factors for WECC Northwest (NWPP)

Natural Gas-Related Emission Factors

Site	Year	Emission Factor	Source
All Sites	2007-2011	5.306 kg CO ₂ /therm 0.5 g CH ₄ /therm 0.01 g N ₂ O/therm	U.S. EPA Climate Leaders Stationary Combustion Protocol (May 2008)
	2012-2014	5.302 kg CO ₂ /therm 0.1 g CH ₄ /therm 0.01 g N ₂ O/therm	Federal Register (2009) EPA; 40 CFR Part 98 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, Tables C-1 and C-2, pp. 54609-54610.

Diesel-Related Emission Factors

Site	Year	Emission Factor	Source
All Sites	2007-2010	10.15 kg CO ₂ /gallon 0.0014 kg CH ₄ /gallon 0.0001 kg N ₂ O/gallon	U.S. EPA Climate Leaders Stationary Combustion Protocol (May 2008)
	2011-2014	10.21 kg CO ₂ /gallon 0.0041 kg CH ₄ /gallon 0.00008 kg N ₂ O/gallon	Federal Register (2009) EPA; 40 CFR Part 98 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, Tables C-1 and C-2

Global Warming Potentials (GWP) Used to Calculate CO₂e

Year	Source
2009 - 2013	Intergovernmental Panel on Climate Change (IPCC) (1995): Second Assessment Report
2014	Intergovernmental Panel on Climate Change (IPCC) (2007): Fourth Assessment Report

In 2014, we updated the global warming potential (GWP) used to calculate CO₂ equivalents from CH₄ and N₂O. We did not update the GWPs used for calculating 2009-2013 emissions as the impact on the total GHG inventory was determined to be insignificant.

Greenhouse Gas Emissions from Vehicle Fleet

This category comprises emissions from the Genentech commercial fleet and on-site vehicles. In 2014, we added data for our South San Francisco intra-campus shuttles. The commercial fleet represents 95% of the total vehicle fleet emissions. Emissions from non-sales road business travel by employees (a scope 3 emission source) have not been included in the reported data.

The commercial fleet includes both employee-owned vehicles and vehicles leased by Genentech. In the case of employee-owned vehicles, fleet mileage is calculated from employee expense claims, and gallons are calculated using an average fuel economy. The average fuel economy value used for 2009 was taken from the Energy Information Administration's annual Transportation Energy Year Book. For 2010-2014, average mpg values were obtained from annual employee surveys. In the case of leased vehicles and onsite vehicles, actual fuel use data is tracked in and extracted from a proprietary database.

As part of the integration of Genentech with Roche, the entire US commercial organization and associated vehicle fleet transitioned to Genentech SSF's responsibility early in 2010. The 2009 vehicle emissions were subsequently adjusted to account for the entire US commercial organization, and allow a like-for-like comparison of 2009 with later years.

2009-2011 greenhouse gas emissions were calculated using the emission factors in the tables below. 2012-2014 greenhouse gas emissions were calculated using emission factors of 0.069 tons CO₂ / GJ for gasoline and 0.074 tons CO₂/GJ for diesel. These are the emission factors used across the Roche organization.

Vehicle Fleet Emission Factors (Gasoline)

GHG	Year	Emission Factor	Source
CO ₂	2009-2010	8.81 kg/gallon	US EPA (2008); GHG Inventory Protocol Core Module Guidance - Direct Emissions from Mobile Combustion Sources, EPA Climate Leaders, Table 5.
	2011	8.78 kg/gallon	Federal Register (2009) EPA; 40 CFR Part 98 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, Tables C-1 and C-2, pp. 54609-54610.
CH ₄	2008-2011	0.0051 g/mile	US EPA (2011) Inventory of U.S. GHG Emissions and Sinks: 1990-2009, EPA 430-R-11-005. All Values are calculated from Tables A-97 through A-100. Based on an assumed SUV: passenger car mix.
N ₂ O	2008-2011	0.0168 g/mile	

Vehicle Fleet Emission Factors (Diesel)

GHG	Year	Emission Factor	Source
CO ₂	2008-2010	10.15 kg/gallon	US EPA (2008); GHG Inventory Protocol Core Module Guidance - Direct Emissions from Mobile Combustion Sources, EPA Climate Leaders, Table 5
	2011	10.21 kg/gallon	Federal Register (2009) EPA; 40 CFR Part 98 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, Tables C-1 and C-2, pp. 54609-54610.
CH ₄	2008-2011	0.0015 g/mile	US EPA (2008); GHG Inventory Protocol Core Module Guidance - Direct Emissions from Mobile Combustion Sources, EPA Climate Leaders, Table 3. Emission factor for 1996-present for advanced light trucks.
N ₂ O	2008-2011	0.001 g/mile	

Global Warming Potentials (GWP) for methane and nitrous oxide from combustion of gasoline and diesel are as shown in the Greenhouse Gas Emissions from Energy Use section above.

Greenhouse Gas Emissions from HFC Gases

This category includes emissions from stationary air conditioning, cooling and fire suppression equipment.

For 2009¹-2014, the reported data are based on leak reports generated during servicing and maintenance. Full year data are reported for 2009.

In 2014, we updated the global warming potentials (GWP) used to calculate CO₂ equivalents from HFCs. We did not update the GWPs used for calculating 2009 - 2013 emissions as the impact on the total GHG inventory was determined to be insignificant.

Global Warming Potentials (GWP) Used to Calculate CO₂e from HFCs

Year	Source
2009-2013	US EPA (Climate) Leaders Direct HFC and PFC Emissions from Use of Refrigeration and Air Conditioning Equipment
2014	Intergovernmental Panel on Climate Change (IPCC) (2007): Fourth Assessment Report

Greenhouse Gas Emissions from Process Gases

CO₂ emissions from dry ice and liquid and gas CO₂, were estimated in 2008 using purchase data from vendors. In the absence of standard calculation methods, Genentech assumes that 100% of the CO₂ used for these purposes is vented to the atmosphere. As these gases are a small source, the 2008 emissions have been held flat for 2009-2014.

GHG emissions from Genentech's use of CH₄ and N₂O in manufacturing and research and development were also calculated in 2008 using vendor purchase data and US EPA Climate Leaders emission factors. Emissions are reported as CO₂ equivalents and have been held flat for 2009-2014 as they are also a small source.

Greenhouse Gas Emissions from Business Travel (Air)

Air travel includes the use of commercial aircraft for the purpose of business travel. Genentech does not own, operate or charter private aircraft.

The air travel data present CO₂e emissions arising from flights made by Genentech employees, which were booked through Genentech's official travel agencies. Travel booked through alternative means is not included. Full year data are reported for 2009-2014.

As part of the integration of Genentech with Roche, the entire US commercial organization transitioned to Genentech SSF's responsibility early in 2010. The 2009 air travel emissions were subsequently adjusted to account for the entire US commercial organization, and allow a like-for-like comparison of 2009 with later years.

The raw data we received on air travel miles for 2009-2010 have been broken down into short, medium, and long haul flights. GWPs for methane and nitrous oxide are as shown in the Energy Use section above.

2009 and 2010 greenhouse gas emissions were calculated using emission factors from the DEFRA GHG Conversion Factor Guidelines. In line with this guidance, all emission factors below are combined with a 109% uplift factor in order to estimate total GHG emissions. All emission factors are for coach class travel.

Air Travel Emission Factors, 2009

Flight Type/Gas	Emission Factor	Source
Short Haul (<300 miles)		
CO ₂	0.171 kg/km	2009 Guidelines to DEFRA GHG Conversion Factors for Company Reporting, Annex 6
CO ₂ e from CH ₄	0.00013 kg/km	
CO ₂ e from N ₂ O	0.00168 kg/km	
Medium Haul (300 - 2,300 miles)		
CO ₂	0.0098 kg/km	2009 Guidelines to DEFRA GHG Conversion Factors for Company Reporting, Annex 6
CO ₂ e from CH ₄	0.00001 kg/km	
CO ₂ e from N ₂ O	0.00097 kg/km	
Long Haul (>2,300 miles)		
CO ₂	0.112 kg/km	2009 Guidelines to DEFRA GHG Conversion Factors for Company Reporting, Annex 6
CO ₂ e from CH ₄	0.00001 kg/km	
CO ₂ e from N ₂ O	0.0011 kg/km	

The 2010 emission factors are the same as for 2007-2009 with the following exceptions.

Air Travel Emission Factors, 2010

Flight Type/Gas	Emission Factor	Source
Short Haul (<300 miles)		
CO ₂	0.175 kg/km	2010 Guidelines to DEFRA GHG Conversion Factors for Company Reporting, Annex 6
CO ₂ e from N ₂ O	0.00169 kg/km	
Medium Haul (300 - 2,300 miles)		
CO ₂	0.0097 kg/km	2010 Guidelines to DEFRA GHG Conversion Factors for Company Reporting, Annex 6
CO ₂ e from N ₂ O	0.00095 kg/km	
Long Haul (>2,300 miles)		
CO ₂	0.113 kg/km	2010 Guidelines to DEFRA GHG Conversion Factors for Company Reporting, Annex 6

2011-2014 greenhouse gas emissions were calculated using an emission factor of 0.071 tons CO₂ / GJ which is the emission factor used across the Roche organization.

¹ With the exception of the South San Francisco site which estimated 2009 emissions based on changes over the year in the onsite inventory of HFC gases (including the addition of HFCs brought on site by contractors and HFC disposal)

Greenhouse Gas Emissions from Employee Commute

Employee commuting emissions estimates are based on the results of cordon counts to establish modal split at the points of entry to Genentech's South San Francisco facility. These data are supported by additional information related to the Genentech shuttle fleet and data available from third parties, such as emission factors for local public transit providers including Bay Area Rapid Transit (BART) and Caltrain. The model used to estimate employee commute emissions is updated and refined as better data and more detailed information becomes available. The 2014 estimates include:

- Updated commute mode share based on cordon count at South San Francisco campus
- Updated drive alone emissions factors from the 2014 US Department of Energy Transportation and Energy Data Book (33rd Edition)
- Updated GenenBus emissions based on B20 fuel consumed in the previous 12 months

The 2013 estimates incorporate updated emissions from the Alameda-Oyster Point ferry based on ridership increases since its first year of operation in 2012.

Non-GHG Emissions to Air

Ozone Depleting Substances (ODS)

This category includes emissions of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbon (HCFCs) gases from stationary air conditioning, cooling and fire suppression equipment.

The reported data are taken from leak reports generated during servicing and maintenance.

In accordance with the Global Reporting Initiative reporting guidelines, we have reported CFC and HCFC releases as R-11 equivalents, using the ozone depletion potentials below.

Gas Name	ODP	Source
R-11	1.0	http://www.epa.gov/ozone/science/ods/classone.html
R-12	1.0	http://www.epa.gov/ozone/science/ods/classone.html
R-22	0.055	http://www.epa.gov/ozone/science/ods/classtwo.html
R-123	0.02	http://www.epa.gov/ozone/science/ods/classtwo.html
R-502	0.25	http://www.uneptie.org/ozonaction/topics/hcfcblends.htm

General Waste

General waste includes trash, recyclables, food waste and other compostable materials and used electronic and electrical equipment. General waste excludes wastes that are managed by the Genentech Environmental, Health and Safety group, due to their regulated and/or hazardous nature.

Before 2011, most categories of waste from the SSF facility had been estimated using a standard weight per container multiplied by the number of container pick-ups during the reporting year. In 2011, SSF began to receive actual weight data from its waste vendor for the landfilled waste stream and several of the recycling streams. SSF estimates for 2009 and 2010 have been updated based on the average per container weight calculated in 2011.

We show reused/recycled electronic waste as an individual line item in the General Waste category. Included are electronic items such as computers, monitors, keyboards, lab equipment, cold storage units and cell phones.

In 2014, we added a new waste category, "incineration with energy recovery" to account for new waste diversion efforts at our Kentucky facility.