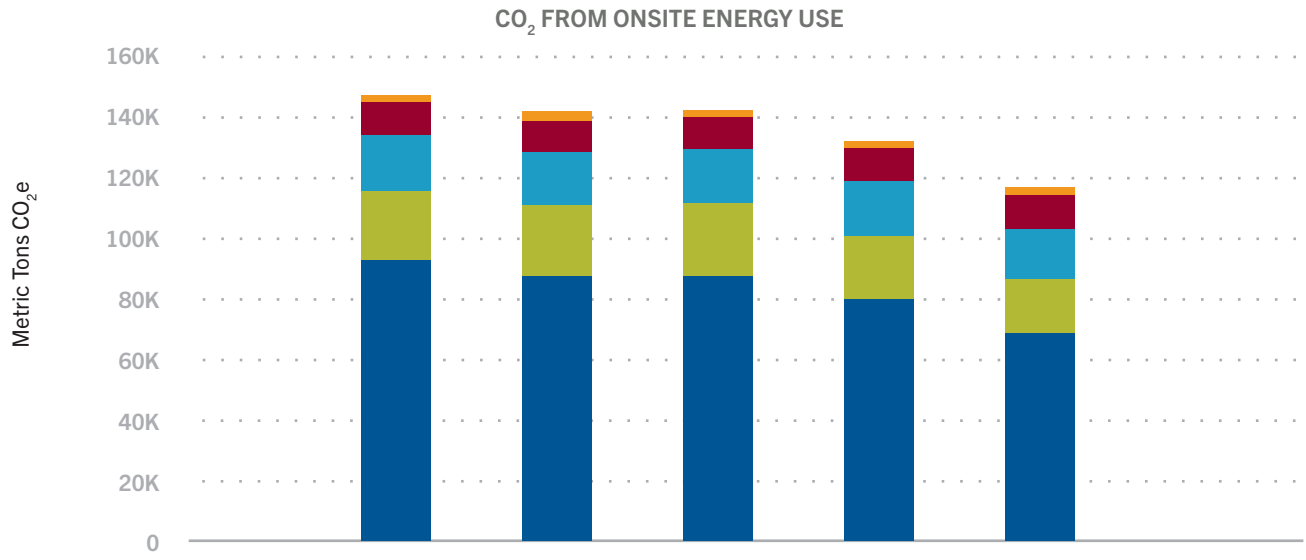
2018

Sustainability Data and Trends Report

INTRODUCTION

This report provides data and supporting information on Genentech's company-wide sustainability performance trends, including greenhouse gas emissions from onsite energy and transportation, water use, and waste to landfill. We also describe our methods and assumptions underlying the reported data.

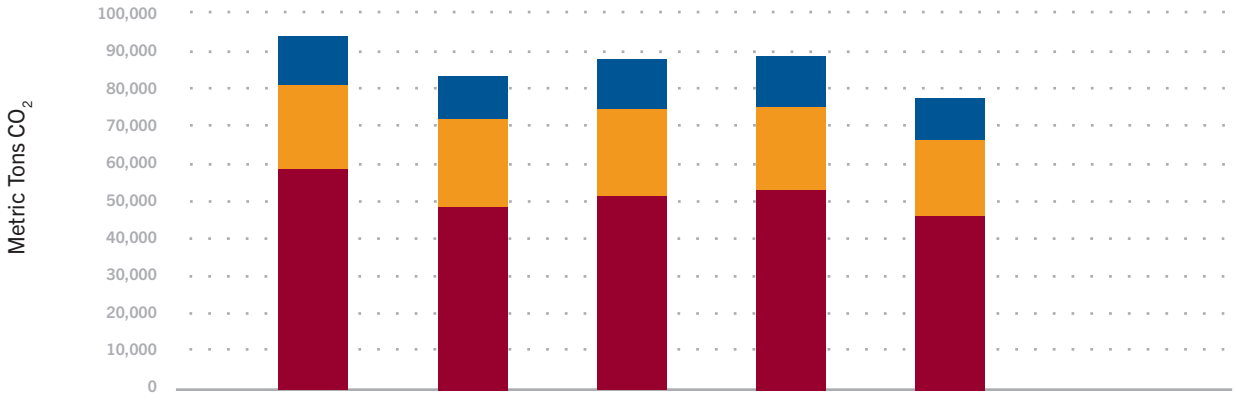
PERFORMANCE TRENDS



	2014	2015	2016	2017	2018
KENTUCKY	2,856	2,963	2,950	2,512	2,912
HILLSBORO	10,355	10,297	10,206	10,838	11,164
OCEANSIDE	18,882	17,788	17,830	17,941	16,999
VACAVILLE	23,169	23,332	24,321	21,252	17,998
SOUTH SAN FRANCISCO	92,339	87,396	87,285	79,750	68,241
TOTAL	**147,601**	**141,777**	**142,592**	**132,293**	**117,314**

Onsite energy use is responsible for almost 90% of Genentech's Scope 1 and 2 greenhouse gas (GHG) emissions. Since 2014, GHG emissions from onsite energy use have decreased by 21%. This has resulted from a combination of energy efficiency measures, our efforts to procure electricity from low and zero carbon sources and onsite solar generation at our Californian sites. In 2018, GHG emissions from onsite energy use were down 11%, compared with 2017. Each of our three Californian manufacturing sites used less energy in 2018 than the previous year, driving a 2% reduction in our total energy use. Our South San Francisco (SSF) and Vacaville sites substantially increased onsite solar power generation during 2018, and our SSF solar installation is now among the biggest installations in the Bay Area. Additionally, in 2018 the SSF campus met a higher percentage of its electricity needs through low and zero carbon sources purchased from Peninsula Clean Energy. As a result of these changes, 65% of the SSF campus' total electricity demand was met by renewable sources in 2018 and we are anticipating that this will increase to approximately 80% in 2019.

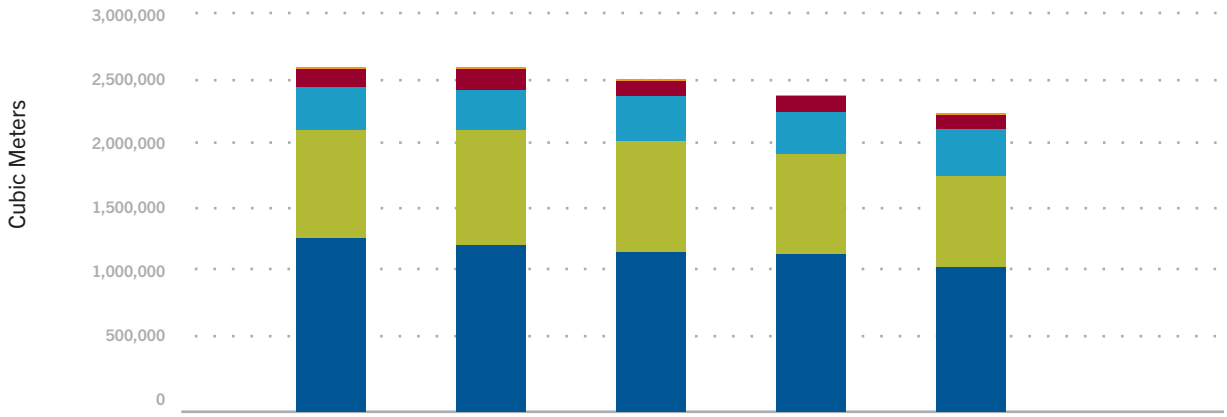
CO_2 FROM TRANSPORTATION



	2014	2015	2016	2017	2018
VEHICLE FLEET	12,457	11,798	13,402	13,748	11,649
EMPLOYEE COMMUTE (SSF)	22,556	22,899	22,979	21,996	19,675
AIR TRAVEL	58,432	48,736	51,490	52,781	46,288
TOTAL	**93,445**	**83,433**	**87,871**	**88,524**	**77,612**

Our transportation emissions are an important component of our overall carbon footprint and we are committed to reducing these emissions where we can. CO2 emissions from transportation include the vehicle fleet used by our sales employees, business air travel and our employees' commute activities. Emissions from each of these categories decreased in 2018 resulting in a 12% reduction in total emissions from transportation. Business air travel is the biggest contributor to our transportation emissions (60% in 2018). Reducing air travel is an important priority for our sustainability program - we are investing in virtual meeting technologies and working to increase employee visibility around our collective and individual air travel impacts. In 2018, we saw our SSF campus total commute emissions drop by 11% with emissions per employee decreasing by 5% from 2017 to 2018. This continues the trend since 2010 that has seen total commute emissions reduced by 24% and emissions per employee reduced by 46%. The 2017 to 2018 decrease in total commute emissions as well as the general downward trend of emissions per employee is due in large part to the popularity of our GenenBuses both as a primary means of commute and as a connection to other transit. In 2018, we introduced new double-decker electric buses to our fleet to further reduce our commute emissions. The decrease in vehicle fleet emissions in 2018 was driven by a 22% reduction in the distance traveled by our commercial sales fleet. Fuel efficiency is an important criterion for the group responsible for selecting vehicles for inclusion in our Leased Vehicle program and a range of hybrids have been made available to employees in this program.

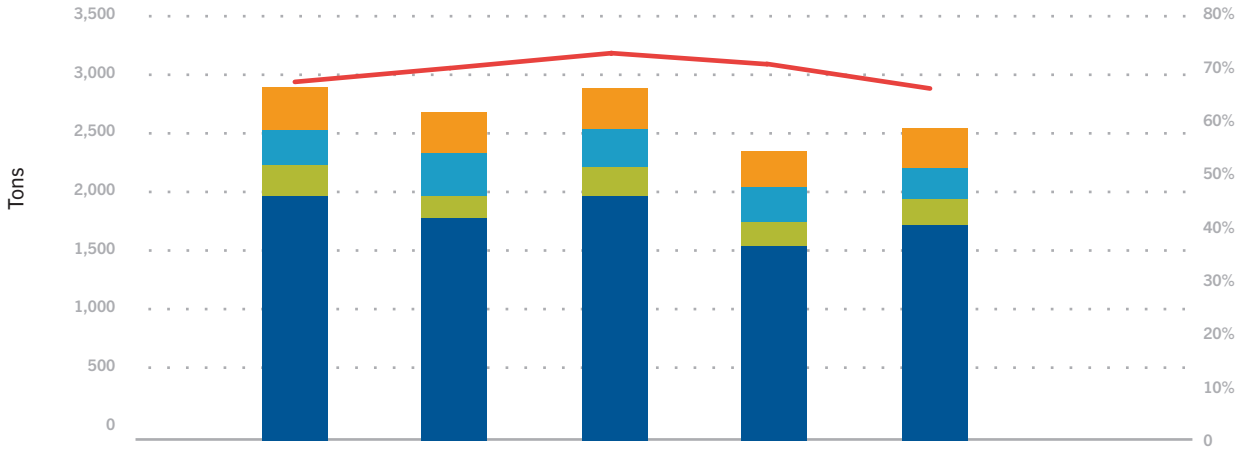
WATER USE BY SITE



	2014	2015	2016	2017	2018
KENTUCKY	7,768	6,678	8,740	5,549	5,583
HILLSBORO	137,922	161,873	111,761	119,855	105,845
OCEANSIDE	303,163	304,489	340,217	317,706	349,217
VACAVILLE	822,617	857,724	832,368	755,285	682,359
SOUTH SAN FRANCISCO	1,308,386	1,256,373	1,201,628	1,183,156	1,088,381
TOTAL	**2,579,856**	**2,587,137**	**2,494,714**	**2,381,551**	**2,231,385**

Our efforts to conserve water have resulted in a 14% reduction in water use since 2014 and a 6% reduction in 2018 compared to 2017. Manufacturing operations at our SSF, Vacaville and Oceanside facilities account for approximately 75% of our total water use and we focus our water reduction initiatives towards our manufacturing sites in California, a region that is predicted to experience ongoing frequent and prolonged periods of water quantity and quality challenges. The SSF campus which is responsible for 50% of our total water use achieved an 8% reduction in potable water use in 2018, driven in part by a substantial increase in the internal reuse of a process wastewater stream. Since 2015, water use reductions at our Vacaville site have been driven by changes in our manufacturing environment and water conservation projects, including xeriscaping to reduce water used for irrigation. Building on these reductions, we are committed to further reducing our potable water use. We are implementing longer-term solutions to reuse and recycle water internally and we expect the expansion of such solutions to drive water savings over the next several years, making us more resilient to a future that could result in supply challenges due to longer and more severe periods of drought. For example, we have installed purple pipes throughout our SSF campus to enable reclaimed water to be transported for internal reuse as it becomes available.

LANDFILL WASTE BY SITE



	2014	2015	2016	2017	2018
KENTUCKY	347	349	235	301	338
HILLSBORO	0	0	0	0	0
OCEANSIDE	304	340	376	278	252
VACAVILLE	238	189	267	206	204
SOUTH SAN FRANCISCO	2,016	1,824	1,589	1,588	1,774
TOTAL	2,905	2,702	2,466	2,373	2,568
DIVERSION RATE	68%	70%	73%	71%	66%

Our largest campus in SSF is responsible for 74% of our total general waste. SSF has decreased total landfill by 41% and 49% per employee since 2010. Due to a significant shift in the international recycling market for plastics and a change in our composting program at one of our buildings, this site experienced an increase in landfilled waste in 2018, reducing our Genentech-wide diversion rate. The site is working on several levels to address the challenges it faces in further reducing landfilled waste, including expanding internal materials re-use programs, partnering with catering vendors and employees to minimize food waste, engaging suppliers to reduce incoming packaging, and facilitating correct sorting by employees.

Following China's decision not to accept waste plastics from other countries, our Oceanside facility was sending its lab plastics to landfill while it sought a better alternative. The site is now sending lab plastics for waste to energy incineration which was the driver for its 2018 landfill reduction. While our Hillsboro site saw an increase in landfill in 2018, a new materials staging area under construction will enable this facility to divert more waste from landfill in future years. Our Kentucky distribution center sends all general waste off site for recycling or incineration with energy recovery.

2014–2018 ENVIRONMENTAL SUSTAINABILITY DATA

	Units	2014	2015	2016	2017	2018
Onsite Energy Use	1000 GJ					
Stationary Combustion		1,164	1,125	1,158	1,173	1,152
Purchased Electricity		1,115	1,117	1,093	1,019	947
Onsite Renewables Generation		2.5	2.4	16.3	61.7	106
Total Energy Use		2,282	2,244	2,267	2,254	2,205
Scope 1 & 2 GHG Emissions	Metric tons CO_2e					
Stationary Combustion		64,154	61,983	63,874	64,673	63,479
Purchased Electricity - Location		89,219	93,218	91,664	71,878	67,788
Purchased Electricity - Market		83,447	79,793	78,717	67,620	53,836
Vehicle Fleet (onsite and sales fleet)		12,457	11,798	13,402	13,748	11,649
Emissions from HFC Refrigerants		2,937	1,777	3,883	1,712	1,950
Process Gases		1,178	1,178	1,178	1,178	1,178
Total Scope 1 & 2 (market) GHG Emissions		164,173	156,530	161,054	148,931	132,092
Scope 3 GHG Emissions	Metric tons CO_2e					
Business Travel (Air)		58,432	48,736	51,490	52,781	46,288
Employee Commuting (SSF only)		22,556	22,899	22,979	21,996	19,675
Non-GHC Emissions to Air	Metric tons R-11e					
Ozone-Depeleting Substances		0.01	0.01	0.02	0.02	0.01
Total Water Use	1000 m^3	2,580	2,587	2,495	2,382	2,231
General Waste	Metric tons					
Landfill		2,905	2,702	2,466	2,373	2,568
Recycling		3,580	3,547	3,453	3,185	2,976
Composting		2,326	2,453	2,909	2,119	1,860
e-waste		209	297	347	409	144
Incineration with energy recovery		6	7	7	13	42
Diversion Rate	%	68	70	73	71	66

NOTES TO SUPPORT OUR DATA

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 2014 to 2018 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. In general, the reported data are extrapolated in line with Roche policy, with a few exceptions where forecasting is used in place of extrapolation[1] or 12 months of actual data is reported[2]. 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, except for figures less than 1, 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

Greenhouse Gas Emissions

The greenhouse gases included in the reported data are carbon dioxide, methane, nitrous oxide and hydrofluorocarbons. The GHG emissions data are reported as CO_2 equivalents (CO_2e). Small emission sources (i.e. those accounting for <1% of the total emissions) are held flat from 2014-2018.

Greenhouse Gas Emissions from Energy Use

In order to align with the WRI GHG Protocol Scope 2 guidance published in January 2015, we have calculated our 2014-2018 purchased electricity emissions per the location- and market-based methods. The data presented in our Data Table and in our GHG emissions graphs follow the market-based method. Our location-based emissions are presented in the table below.

Scope 2 Location-Based Emissions

	2014	2015	2016	2017	2018
Scope 2 location-based emissions (metric tons CO_2e)	89,219	93,218	91,664	71,878	67,788

[1] South San Francisco electricity and natural gas use

[2] South San Francisco water use (actual data reported for full calendar year) and air travel (data is for 1 October - 30 September)

ELECTRICITY-RELATED EMISSION FACTORS — LOCATION-BASED EMISSION FACTORS

SITE	YEAR	EMISSION FACTOR	SOURCE
SOUTH SAN FRANCISCO, VACAVILLE, OCEANSIDE, CALIFORNIA	2017-2018	527.9 lb CO_2/MWh .033 lb CH_4/MWh .004 lb N_2O /MWh	US EPA eGRID2016, Feb 2018 Regional emission factors for WECC California (CAMX)
	2015-2016[3]	650.31 lb CO_2/MWh 0.031 lb CH_4/MWh 0.006 lb N_2O /MWh	US EPA eGRID2012, Oct 2015 Regional emission factors for WECC California (CAMX)
	2014	610.82 lb CO_2/MWh 0.029 lb CH_4/MWh 0.006 lb N_2O /MWh	US EPA eGRID 9th Edition (2010 data) Regional emission factors for WECC California (CAMX)
HILLSBORO, OREGON	2017-2018	651.2 lb CO_2/MWh .061 lb CH_4/MWh .009 lb N_2O /MWh	US EPA eGRID2016, Feb 2018 Regional emission factors for WECC Northwest (NWPP)
	2015-2016	665.75 lb CO_2/MWh 0.013 lb CH_4/MWh 0.010 lb N_2O/MWh	US EPA eGRID2012, Oct 2015 Regional emission factors for WECC Northwest (NWPP)
	2014	842.58 lb CO_2/MWh 0.016 lb CH_4/MWh 0.013 lb N_2O/MWh	US EPA eGRID 9th Edition (2010 data) Regional emission factors for WECC Northwest (NWPP)
LOUISVILLE, KENTUCKY	2017-2018	1185.40 lb CO_2/MWh 0.093 lb CH_4/MWh 0.017 lb N_2O/MWh	US EPA eGRID2016, Feb 2018 Regional emission factors for SERC Tennessee Valley (SRTV)
	2015-2016	1337.15 lb CO_2/MWh 0.017 lb CH_4/MWh 0.021 lb N_2O/MWh	US EPA eGRID2012, Oct 2015 Regional emission factors for SERC Tennessee Valley (SRTV)
	2014	1389.20 lb CO_2/MWh 0.018 lb CH_4/MWh 0.022 lb N_2O/MWh	US EPA eGRID 9th Edition (2010 data) Regional emission factors for SERC Tennessee Valley (SRTV)

[3] A significant methodology change was made for assigning plants to eGRID subregions in eGRID2014, resulting in large changes in subregion emission factors. Whereas, in eGRID2012 and earlier, plants were assigned based on the utility company/ territory that they supplied, in eGRID2014 plants were assigned based on geography where they are physically located. Because the U.S. EPA, at the time, was considering reverting back to the previous methodology, Genentech elected to use eGRID2012 to calculate 2015-2016 Scope 2 location-based emissions for all U.S. operations. In Feb. 2018, the EPA did revert back to the previous methodology for eGRID 2016.

MARKET-BASED EMISSION FACTORS

SITE	YEAR	LB CO_2/MWH	SUPPLIER SPECIFIC EMISSION FACTORS
South San Francisco, CA (PG&E Contract) and Vacaville, CA	2018	294	PG&E
	2016-2017	435	
	2014-2015	427	
South San Francisco, CA (Peninsula Clean Energy)	2018	142	PCE
	2017	189	
South San Francisco, CA (Silicon Valley Power)	2018	143	Silicon Valley Power
	2017	666	
Oceanside, CA	2014-2018	630	SDG&E
Hillsboro, OR	2018	884	PGE
	2016-2017	897	

SITE	YEAR	LB CO_2/MWH	RESIDUAL MIX EMISSION FACTORS
South San Francisco, CA (Direct Access contract)	2018	804.68	Green-E - WECC NERC Region
	2017	903.92	
	2016	889.08	
	2014-2015	960.73	
Louisville, KY	2014-2018	Location based emission factors used as these are higher than the available residual mix emission factors.	See Location Based Emission Factors table

SITE	YEAR	LB CO_2/MWH	ENERGY CONTRACT FACTORS
South San Francisco, CA (Fuel Cells)	2018	836	Bloom Energy
	2016-2017	754	

NATURAL GAS-RELATED EMISSION FACTORS

SITE	YEAR	T CO_2/ GJ	SOURCE
All Sites	2014-2018	0.055	Roche SHE Reporting Guidelines

DIESEL-RELATED EMISSION FACTORS

SITE	YEAR	T CO_2/ GJ	SOURCE
All Sites	2014-2018	0.074	Roche SHE Reporting Guidelines

GLOBAL WARMING POTENTIALS (GWP) USED TO CALCULATE CO_2E

YEAR	SOURCE
2014-2018	Intergovernmental Panel on Climate Change (IPCC) (2007); Fourth Assessment Report

In 2017, we updated emission factors for stationary combustion (natural gas and diesel) back to 2014 to ensure that the associated GHG values reported internally via Roche, and that roll up into Roche's external reporting are consistent with the data reported externally by Genentech.

Greenhouse Gas Emissions from Vehicle Fleet

This category comprises emissions from the Genentech commercial fleet, onsite security vehicles and our SSF campus shuttle buses. 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 is 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.

2014-2018 greenhouse gas emissions were calculated using emission factors of 0.069 tons CO_2 / GJ for gasoline and 0.074 tons CO_2/GJ for diesel. These are the emission factors used across the Roche organization.

GWPs from 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 2014-2018, the reported data are based on leak reports gener¬ated during servicing and maintenance. In 2014, we updated the global warming potentials (GWP) used to calculate CO_2 equivalents from HFCs.

GLOBAL WARMING POTENTIALS (GWP) USED TO CALCULATE CO_2E FROM HFCS

YEAR	SOURCE
2014-2018	Intergovernmental Panel on Climate Change (IPCC) (2007); Fourth Assessment Report

Greenhouse Gas Emissions from Process Gases

CO_2 emissions from dry ice and liquid and gas CO_2, were estimated in 2008 using purchase data from vendors. In the absence of standard calculation methods, Genentech assumes that 100% of the CO_2 used for these purposes is vented to the atmosphere. As these gases are a small source, the 2008 emissions have been held flat for 2014-2018.

GHG emissions from Genentech's use of CH_4 and N_2O 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 CO_2 equivalents and have been held flat for 2014-2018 as they are also a small source.

Greenhouse Gas Emissions from Business Travel (Air)

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

The air travel data present CO_2 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. Air travel CO_2 values have been revised for 2015 and 2016 to remove double counting of rescheduled flights in the raw flight data originally used to calculate the values for these years.

GWPs for methane and nitrous oxide are as shown in the Energy Use section above.

Air travel greenhouse gas emissions are calculated using an emission factor of 0.071 tons CO_2 / GJ which is the emission factor used across the Roche organization.

Greenhouse Gas Emissions for Employee Commute

Employee commuting emissions estimates are based

on how Genentech employees travel to work. Employee mode splits were established using cordon counts at campus points of entry. 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), Caltrain, and the Oyster Point Ferry. The model used to estimate employee commute emissions is updated and refined as better data and more detailed information becomes available.

The 2018 estimates include:

- Updated commute mode share based on the 2018 Fall Commute Study at the South San Francisco campus
- Updated vehicle emissions factors based on updates to US Department of Energy guidance
- Updated number of employees – including those working on campus, working remotely, on business travel, or offsite for other reasons
- GenenBus annual fuel consumption for 2018

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-22	0.055	http://www.epa.gov/ozone/science/ods/classtwo.html
R-123	0.02	
R-502	0.25	http://www.uneptie.org/ozonaction/topics/hcfcblends.htm

Water Use

Water use is the withdrawal of potable water from municipal sources. It would also include water withdrawn directly from surface and/or groundwater resources which is currently not applicable to Genentech.

Grey water sourced from internal and external sources as well as collected rainwater are not included.

General Waste

General waste includes landfill, recyclables, compostables like food waste, yard waste, and bioplastics. Our recycling streams include lab plastics, paper, cardboard, bottles and cans, heavy plastics, amber glass, styrofoam, metals, toner cartridges, and other items. General waste excludes construction wastes as well as wastes that are managed by the Genentech Environmental, Health and Safety group, due to their regulated and/or hazardous nature, and any materials donated or reused.

Where available, the general waste data is based on actual weights provided by the vendor. Where this data is not available weights are estimated using a standard assumed weight per container multiplied by the number of container pick-ups during the reporting year.

We show recycled electronic waste as an individual line item in the General Waste category. Included are non-working electronic items that were not able to be donated or repaired, such as computers, monitors, keyboards, lab equipment, and cell phones.