

Stanford University

Detail Report - Control (Private)

Complete Inventory 2016

Description: Located between San Francisco and San Jose in the heart of Silicon Valley, Stanford University is recognized as one of the world's leading research and teaching institutions.

Industry: 61 - Educational Services

Address: Stanford University
327 Bonair Siding
1st Floor
Stanford, California US

Contact:
Moira Hafer
mbhafer@stanford.edu

Website: www.stanford.edu

Reporting Information

Reporting Protocol: General Reporting Protocol 2.1 and associated updates and clarifications

GWP Standard: SAR

Base Year:

Consolidation Methodology: Operational Control Only

Status: Submit Positive Verification Finding

Verification Information

Verification Body: Ruby Canyon Engineering Inc.

Level of Assurance: Reasonable

Entity Emissions | Total in metric tons of CO2e

Scope 1 - Direct Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t of CO ₂ e)	N ₂ O (t of CO ₂ e)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t of CO ₂ e)	SF ₆ (t of CO ₂ e)
Stationary Combustion	24,202.12757	24,142.59974	45.11283	14.415	0	0	0	0
Mobile Combustion	3,418.48712	3,374.56638	4.37094	39.5498	0	0	0	0
Fugitive	4,476.42637	38.43949	0.34818	15.965	2,046.1387	298.864	0	2,076.671
Total	32,097.04106	27,555.60561	49.83195	69.9298	2,046.1387	298.864	0	2,076.671
NetTotal	32,097.04106	27,555.60561	49.83195	69.9298	2,046.1387	298.864	0	2,076.671

Scope 2 - Location Based - Indirect Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t of CO ₂ e)	N ₂ O (t of CO ₂ e)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t of CO ₂ e)	SF ₆ (t of CO ₂ e)
Purchased Electricity - Location Based	78,852.17301	78,583.83434	96.22977	172.1089	0	0	0	0
Purchased Heating - Location Based	686.58769	684.91204	1.27575	0.3999	0	0	0	0
Total	79,538.7607	79,268.74638	97.50552	172.5088	0	0	0	0
NetTotal	79,538.7607	79,268.74638	97.50552	172.5088	0	0	0	0

Scope 2 - Market Based - Indirect Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t of CO ₂ e)	N ₂ O (t of CO ₂ e)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t of CO ₂ e)	SF ₆ (t of CO ₂ e)
Purchased Electricity - Market Based	72,043.24108	71,765.14158	99.7038	178.3957	0	0	0	0
Purchased Heating - Market Based	686.58769	684.91204	1.27575	0.3999	0	0	0	0
Total	72,729.82877	72,450.05362	100.97955	178.7956	0	0	0	0
NetTotal	72,729.82877	72,450.05362	100.97955	178.7956	0	0	0	0

Biogenic - Direct Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t of CO ₂ e)	N ₂ O (t of CO ₂ e)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t of CO ₂ e)	SF ₆ (t of CO ₂ e)
Mobile Biomass Combustion	202.78944	202.78944	0	0	0	0	0	0
Total	202.78944	202.78944	0	0	0	0	0	0
NetTotal	202.78944	202.78944	0	0	0	0	0	0

Entity Emissions | Total in metric tons of gas

Scope 1 - Direct Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Stationary Combustion	24,202.12757	24,142.59974	2.14823	0.0465	0	0	0	0
Mobile Combustion	3,418.48712	3,374.56638	0.20814	0.12758	0	0	0	0
Fugitive	4,476.42637	38.43949	0.01658	0.0515	2,046.1387	298.864	0	0.08689
Total	32,097.04106	27,555.60561	2.37295	0.22558	2,046.1387	298.864	0	0.08689

Scope 2 - Location Based - Indirect Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Purchased Electricity - Location Based	78,852.17301	78,583.83434	4.58237	0.55519	0	0	0	0
Purchased Heating - Location Based	686.58769	684.91204	0.06075	0.00129	0	0	0	0
Total	79,538.7607	79,268.74638	4.64312	0.55648	0	0	0	0

Scope 2 - Market Based - Indirect Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Purchased Electricity - Market Based	72,043.24108	71,765.14158	4.7478	0.57547	0	0	0	0
Purchased Heating - Market Based	686.58769	684.91204	0.06075	0.00129	0	0	0	0
Total	72,729.82877	72,450.05362	4.80855	0.57676	0	0	0	0

Biogenic - Direct Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Mobile Biomass Combustion	202.78944	202.78944	0	0	0	0	0	0
Total	202.78944	202.78944	0	0	0	0	0	0

Simplified Estimation Methods (SEMs)

	Total Estimated CO ₂ e (t)	Total Emissions (t of CO ₂ e)	Estimated CO ₂ e as a Percentage of Total*
Location Based	2,688.36225	111,838.5912	2.40378765608056%
Market Based	2,688.36225	105,029.65927	2.55962198552794%

*Total based on scope 1, scope 2 & biomass emissions

Facility Emissions | Carbon Footprint

Equity share - 100% | Entity controls the facility emissions - Yes

327 Bonair Siding, Stanford, California, 94305, US

Scope 1 - Direct Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Stationary Combustion	24,202.12757	24,142.59974	2.14823	0.0465	0	0	0	0
Mobile Combustion	3,418.48712	3,374.56638	0.20814	0.12758	0	0	0	0
Fugitive	4,476.42637	38.43949	0.01658	0.0515	2,046.1387	298.864	0	0.08689
Total	32,097.04106	27,555.60561	2.37295	0.22558	2,046.1387	298.864	0	0.08689

Scope 2 - Location Based - Indirect Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Purchased Electricity - Location Based	78,852.17301	78,583.83434	4.58237	0.55519	0	0	0	0
Purchased Heating - Location Based	686.58769	684.91204	0.06075	0.00129	0	0	0	0
Total	79,538.7607	79,268.74638	4.64312	0.55648	0	0	0	0

Scope 2 - Market Based - Indirect Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Purchased Electricity - Market Based	72,043.24108	71,765.14158	4.7478	0.57547	0	0	0	0
Purchased Heating - Market Based	686.58769	684.91204	0.06075	0.00129	0	0	0	0
Total	72,729.82877	72,450.05362	4.80855	0.57676	0	0	0	0

Biogenic - Direct Emissions	Total CO ₂ e (t)	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	HFC (t of CO ₂ e)	PFC (t of CO ₂ e)	NF ₃ (t)	SF ₆ (t)
Mobile Biomass Combustion	202.78944	202.78944	0	0	0	0	0	0
Total	202.78944	202.78944	0	0	0	0	0	0

Source Emissions | Diesel for BGM generators - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO ₂ e (t)
Stationary Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				0.00901	0.18921

Source Emissions | Diesel for BGM generators - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO ₂ e (t)
Stationary Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				67.28538	67.28538

Source Emissions | Diesel for BGM generators - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO ₂ e (t)
Stationary Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				0.00054	0.1674

Source Emissions | Diesel for School of Medicine Generators - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO ₂ e (t)
Stationary Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.00433	0.09093

Source Emissions | Diesel for School of Medicine Generators - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				32.33679	32.33679

Source Emissions | Diesel for School of Medicine generators - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.00026	0.0806

Source Emissions | Electrical distribution system - SF6

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	SF6	N/A	All	Unspecified Technology	PreCalculated	No		N/A				0	0

Source Emissions | Electricity purchased for new Central Energy Facility & Campus - CH4 - Location Based

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Location Based	CH4	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				3.98099	83.60079

Source Emissions | Electricity purchased for new Central Energy Facility & Campus - CH4 - Market Based

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Market Based	CH4	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				3.98099	83.60079

Source Emissions | Electricity purchased for new Central Energy Facility & Campus - CO2 - Location Based

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Location Based	CO2	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				68,386.48293	68,386.48293

Source Emissions | Electricity purchased for new Central Energy Facility & Campus - CO2 - Market Based

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Market Based	CO2	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				68,386.48293	68,386.48293

Source Emissions | Electricity purchased for new Central Energy Facility & Campus - N2O - Location Based

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Location Based	N2O	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.48109	149.1379

Source Emissions | Electricity purchased for new Central Energy Facility & Campus - N2O - Market Based

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Market Based	N2O	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.48109	149.1379

Source Emissions | Fire suppression system

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	CO2	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.09072	0.09072

Source Emissions | Fuel for hot water generators - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				17.79611	17.79611

Source Emissions | Fuel used for hot water generators - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.00238	0.04998

Source Emissions | Fuel used for hot water generators - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.00014	0.0434

Source Emissions | Natural gas for CEF/Process steam plant - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.85873	18.03333

Source Emissions | Natural gas for CEF/Process steam plant - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				9,679.87632	9,679.87632

Source Emissions | Natural gas for CEF/Process steam plant - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.01827	5.6637

Source Emissions | Non-CEF electricity purchases - CO2 - Location Based

Includes PG&E commercial, PG&E residential, and CPAU, as well as estimated electricity for leased properties using the Average Intensity method

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Location Based	CO2	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				10,197.35141	10,197.35141

Source Emissions | Non-CEF electricity purchases - N2O - Location Based

Includes PG&E commercial, PG&E residential, City of Palo Alto Utilities, and electricity estimated from leased properties using the Average Intensity method

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Location Based	N2O	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.0741	22.971

Source Emissions | Non-CEF electricity purchases - N2O - Market Based

Includes PG&E commercial, PG&E residential, City of Palo Alto Utilities, and electricity estimated from leased properties using the Average Intensity method

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Market Based	N2O	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.09438	29.2578

Source Emissions | Non-CEF electricity purchases (CH4) - Location Based

Includes PG&E commercial, PG&E residential, and CPAU, as well as estimated electricity for leased properties using the Average Intensity method

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Location Based	CH4	Regional Grid-Average	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.60138	12.62898

Source Emissions | Non-CEF electricity purchases (CH4) Market Based

Includes PG&E commercial, PG&E residential, City of Palo Alto Utilities & estimated electricity from leased properties using the Average Intensity method

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Market Based	CH4	Utility-Specific Rate	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.76681	16.10301

Source Emissions | Non-CEF electricity purchases (CO2) - Market Based

Includes PG&E commercial, PG&E residential, and CPAU, as well as estimated electricity for leased properties using the Average Intensity method

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Electricity - Market Based	CO2	Utility-Specific Rate	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				3,378.65865	3,378.65865

Source Emissions | Non-CEF natural gas purchases - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				1.2714	26.6994

Source Emissions | Non-CEF natural gas purchases - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				14,331.66275	14,331.66275

Source Emissions | Non-CEF natural gas purchases - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.02705	8.3855

Source Emissions | Propane - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				0.00238	0.04998

Source Emissions | Propane - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				13.64239	13.64239

Source Emissions | Propane - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Stationary Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				0.00024	0.0744

Source Emissions | Purchased heating for leased spaces - CH4 - Location Based

Calculated using the Average Intensity Method with US Natural Gas Intensity

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Heating - Location Based	CH4	Fuel-Specific Factor	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.06075	1.27575

Source Emissions | Purchased heating for leased spaces - CH4 - Market Based

Calculated using the Average Intensity Method with US Natural Gas Intensity

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Heating - Market Based	CH4	Fuel-Specific Factor	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.06075	1.27575

Source Emissions | Purchased heating for leased spaces - CO2 - Location Based

Calculated using the Average Intensity Method with US Natural Gas Intensity

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Heating - Location Based	CO2	Fuel-Specific Factor	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				684.91204	684.91204

Source Emissions | Purchased heating for leased spaces - CO2 - Market Based

Calculated using the Average Intensity Method with US Natural Gas Intensity

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Heating - Market Based	CO2	Fuel-Specific Factor	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				684.91204	684.91204

Source Emissions | Purchased heating for leased spaces - N2O - Location Based

Calculated using the Average Intensity Method with US Natural Gas Intensity

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Heating - Location Based	N2O	Fuel-Specific Factor	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.00129	0.3999

Source Emissions | Purchased heating for leased spaces - N2O - Market Based

Calculated using the Average Intensity Method with US Natural Gas Intensity

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Purchased Heating - Market Based	N2O	Fuel-Specific Factor	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.00129	0.3999

Source Emissions | Refrigerant - chillers at CEF

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	HFC-134a	N/A	All	Unspecified Technology	PreCalculated	No		N/A				0.45359	589.667

Source Emissions | Refrigerant - stationary sources

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	HFC-134a	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.58116	755.508

Source Emissions | Refrigerant - vehicle & building air conditioning - R410A

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	R-410A	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.12474	215.1765

Source Emissions | Refrigerant - vehicle & building air conditioning systems - R134A

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	HFC-134a	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.03334	43.342

Source Emissions | Refrigerant - vehicle & building air conditioning systems - R404A

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	R-404A	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.02177	70.9702

Source Emissions | Research gas - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	CH4	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.01658	0.34818

Source Emissions | Research gas - HFC-23

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	HFC-23	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.03175	371.475

Source Emissions | Research gas - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	N2O	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.0515	15.965

Source Emissions | Research gas - PFC-116

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	PFC-116	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.01361	125.212

Source Emissions | Research gas - PFC-318

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	PFC-318	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.01996	173.652

Source Emissions | Research gas - SF6

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	SF6	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.01114	266.246

Source Emissions | Research gas - solid and gaseous CO2 and acetylene

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	CO2	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				38.34877	38.34877

Source Emissions | SF6 used in labs

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	SF6	N/A	All	Unspecified Technology	PreCalculated	No		N/A				0.0694	1,658.66

Source Emissions | SF6 used in labs - additional estimated

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Fugitive	SF6	N/A	All	Unspecified Technology	PreCalculated	Yes		N/A				0.00635	151.765

Source Emissions | SU fleet vehicles - biodiesel - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Mobile Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.01198	0.25158

Source Emissions | SU fleet vehicles - biodiesel - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Mobile Biomass Combustion - Biomass	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				202.78944	202.78944

Source Emissions | SU fleet vehicles - biodiesel - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Mobile Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				0.00724	2.2444

Source Emissions | SU fleet vehicles - gasoline & diesel - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Mobile Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	No		PreCalculated				3,037.13702	3,037.13702

Source Emissions | SU fleet vehicles - gasoline, diesel & off-ledger - CH4

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Mobile Combustion	CH4	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				0.19616	4.11936

Source Emissions | SU fleet vehicles - gasoline, diesel & off-ledger - N2O

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Mobile Combustion	N2O	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				0.12034	37.3054

Source Emissions | SU fleet vehicles - off ledger fueling - CO2

Activity Type	Gas	Fuel Type	End Use Sector	Technology	Calculation Method	SEM	Additional Information	Fuel	Fuel Quantity	Emission Factor (EF)	EF Reference	Gas Quantity	CO2e (t)
Mobile Combustion	CO2	PreCalculated	PreCalculated	PreCalculated	PreCalculated	Yes		PreCalculated				337.42936	337.42936