

C U 2014 G U G I

A step-by-step guide to completing a greenhouse gas inventory at Colgate University

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LIST OF ACRONYMS/ABBREVIATIONS

Acronym	Meaning
AASHE	Association for the Advancement of Sustainability in Higher Education
ACUPCC	American College and University Presidents' Climate Commitment
B&G	Colgate's Buildings and Grounds Department
BoHP	Boiler Horsepower
Ca-CP	Clean Air – Cool Planet
CAP	Climate Action Plan
CH ₄	Methane
CO ₂	Carbon Dioxide
COVE	Colgate's Center for Outreach, Volunteerism, and Education
MTeCO ₂	Metric Tons of Carbon Dioxide Equivalents
U.S. EIA	United States Department of Energy: Energy Information Administration
ENST	Colgate's Environmental Studies Program
U.S. EPA	United States Environmental Protection Agency
FSEM	Colgate's First-Year Seminar
FTE	Full-time Equivalent Student
FY	Fiscal Year (July 1 to June 30)
GHG	Greenhouse Gases
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HCFC	Hydrochlorofluorocarbon
IRS	Internal Revenue Service
Kg	Kilogram
kWh	Kilowatt-hour
Lbs	Pounds
N ₂ O	Nitrous Oxide
NSF	National Science Foundation
PFC	Perfluorocarbons
PPA	Power Purchase Agreement
RECs	Renewable Energy Credits
SF ₆	Sulfur Hexafluoride
WBCSD	World Business Council on Sustainable Development
WRI	World Resources Institute

EXECUTIVE SUMMARY

This report provides the methods and results of Colgate University's 2014 Greenhouse Gas Emissions Inventory. The Inventory was completed in compliance with one of the key requirements of the American College and University President's Climate Commitment (ACUPCC)—with support from President Jeffrey Herbst. The data gathered follows the protocol specified in the ACUPCC Implementation Guide and the calculations were made using emissions factors from the Clean Air-Cool Planet Campus Carbon Calculator v7.0, also recommended in the ACUPCC guidelines. This is our sixth consecutive year completing Colgate's greenhouse gas inventory. Colgate's greenhouse gas emissions were 17,353 (2009), 14,505 (2010), 16,194 (2011), 13,468 (2012), 13,391 (2013), and 13,512 (2014). Colgate's inventory of emissions includes all Scope 1 emissions (on-campus stationary combustion of fossil fuels for space heating and domestic hot water, vehicle fleet emissions, fugitive refrigerant chemicals, and emissions associated with grounds maintenance) and Scope 2 emissions (purchased electricity). Scope 3 emissions include faculty and staff commuting, bus commuting (Colgate Cruiser), air travel (paid by or through the university), landfill waste, and paper use.

Compared to Colgate's 2009 baseline inventory, the university decreased its emissions by 4,842 MTeCO₂ (from 17,353 in 2009 to 13,002 in 2014), or by 27.9 percent. Emissions decreased by 389 MTeCO₂ in FY 2014 (13,512 MTeCO₂) compared to FY 2013 (13,391 MTeCO₂). Despite a dramatic increase in the consumption of fuel oil #2 following the heating plant upgrade and a particularly cold and long winter, 2014 marked a year of positive trends. Colgate's continuing drop in emissions associated with our vehicle fleet, refrigerant use, fertilizer use, electricity consumption, commuting, business travel, and paper use is due to the ongoing implementation of effective behavior change programs, numerous energy conservation and efficiency projects, and meticulous implementation of the projects and policies specified in our 2011 Sustainability and Climate Action Plan (S-CAP).

Recent projects that are contributing to reduced emissions include the continued purchase of tree-free paper from EcoCampus, LLC and our policy to purchase only recycled paper on campus. This policy led to a dramatic rise in the relative amount of recycled paper purchased which has a lower carbon footprint than non-recycled paper. During the summers of 2011 and 2012, Colgate also completed the installation of 585 low-flow shower heads throughout campus. This project has helped to reduce our total water consumption by over 15 million gallons since 2011. We estimate that the shower head project saved over \$150,000 last year in water and energy costs while also eliminating 350 tons of greenhouse gas emissions. In September 2013, we completed the installation of a solar thermal array on 100 Broad Street. This project saved over \$3,200 in energy costs last year and reduced emissions by 9.4 tons. Recent lighting upgrades include the installation of LED lighting in Love Auditorium during the summer of 2012 and the installation of high-efficiency T-5 fluorescent lighting in Sanford Field House. The Sanford lighting upgrade reduced our electricity consumption in that building by over 600,000 kWh, avoided over 37 tons of greenhouse gas emissions, and saved over \$32,000 last year in electricity and labor costs. Other projects that have helped to reduce our campus carbon footprint in FY 2014 include the replacement of all washers and dryers on campus to more water and energy efficient ENERGY STAR rated models. We also installed alarm systems on all 112 fume hoods on campus to help prevent energy waste when sashes are left open unnecessarily. We estimate that the fume hood project has reduced energy use by 20-30% in each of our science buildings. We also purchased four new bikes for our Green Bikes Program, maintained a reduced mowing program to include over 30 acres of land, and achieved LEED certification for the Lathrop Hall renovation. Finally, Colgate received American Tree Farm System certification for our 1,059 acres of forested land which confirms our long-term commitment to sustainable forest management. This certification coupled with a comprehensive tree survey estimated that 1,578 tons of carbon are sequestered annually by Colgate's forested lands.

In FY 2014, Colgate continued investing in carbon offset programs to reduce our net carbon footprint and overall impact to climate change. As in FY 2013, carbon sequestered through the growth of newly planted native trees in Patagonia, Chile through our partnership with Patagonia Sur, LLC offset 5,000 tons of carbon emissions. We also invested in

INTRODUCTION

The ACUPCC and Colgate's Commitment to Climate Neutrality

The American College and University Presidents' Climate Commitment (ACUPCC)¹ was officially announced in October 2006 during the AASHE² conference at Arizona State University. Signatories make a commitment to "

by eliminating or offsetting 100 percent of the institution's greenhouse gas emissions. One mandatory component of the ACUPCC is to complete a greenhouse gas emissions inventory as specified in the pledge³ under step 1, part b:

in 2019—an ambitious target date. Colgate's updated greenhouse gas inventories (including this one) will track our progress towards that goal.

As a result of our climate action planning efforts, Colgate was honored with Second Nature's 2011 Climate Leadership Award⁶. Colgate is has been certified as a AASHE STARS Gold institution as of 2014⁷ for its efforts related to sustainability across campus. With our wood-fired boiler, low-carbon electricity grid, sustainability-focused academic programming, and a campus culture that promotes sustainability, Colgate is well-positioned to continue as a leader in sustainability in the 21st century. !

⁶ <http://secondnature.org/blog/20110623/colgate-university-recognized-climate-leadership>

⁷ <https://stars.aashe.org/institutions/colgate-university-ny/report/2014-07-23/>

- Scope 1 Emissions. Scope 1 refers to direct GHG emissions occurring from sources that are owned or controlled by the institution. At Colgate, this includes on-campus stationary combustion of fossil fuels (such as fuel oil #2, kerosene, and propane), vehicle fleet emissions, fugitive refrigerant chemicals, and emissions associated with grounds maintenance.
- Scope 2 Emissions. Scope 2 refers to indirect emissions generated in the production of electricity consumed by the institution. To calculate these emissions, we have to determine how our electricity is produced (e.g., hydroelectric, coal, wind, etc.) and calculate the rate of greenhouse gas emissions associated with each source.
- Scope 3 Emissions. Scope 3 refers to all other indirect emissions – those that are a consequence of activities of the institution, but occur from sources not owned or controlled by the institution. Colgate's Scope 3 emissions include faculty and staff commuting, bus commuting (Colgate Cruisers), air travel (paid by or through the university), paper use, and solid waste.

De Minimus Emissions

Colgate is a residential campus with approximately 250 students (8 percent of population) renting apartments or houses that are not affiliated with the university. The students who do not live in Colgate housing tend to rent apartments or homes within a three-mile radius of campus. The vast majority of students live within walking distance of class. More specifically, all first-year and sophomore students live in residence halls on campus. Junior and senior students either live in University Apartments, the Townhouses, Broad Street houses, or off campus and share rides in automobiles.

the standard for which the other greenhouse gases are compared (hence the term carbon dioxide equivalent), and

Data Requested: The operation, research, and energy budgets for FY 2014.

Key Contact(s): Budget Reporting Analyst (Roy Langworthy) or Associate Vice President for Budget and Financial Aid (John Collins)

Data Requested: The number of full-time students, faculty members, and staff members for FY 2014.

Key Contact(s): Director of Institutional Planning and Research for student enrollment (Brendt Simpson) and Human Resources for faculty/staff employment (Jill Dinski)

Data Requested: The university's total building space in square-feet for FY 2014.

Key Contact(s): Associate Vice President for Budget and Financial Aid (John Collins)

Energy and Water Costs

Tracking energy and water costs is valuable because it establishes a frame of historical reference and allows us to perform useful climate action planning analyses. Moreover, relatively small changes in our energy and water costs per unit can have big impacts on our operating budget. For these reasons, it is necessary to track energy and water costs as part of our inventory data collection process (Table 4).

Table 4. , 2009 2014

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Data Requested: Cost per gallon of fuel oil #6, fuel oil #2, kerosene, and propane for FY 2014.

Key Contacts: Director of Purchasing can provide the contractual pricing for all fuels.

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Data Requested: Cost per ton of wood chips for FY 2014.

Key Contact(s): Associate Director of Facilities and Manager of Engineering Services (Dan McCoach).

Table 5. , 2007 2014.

Scope 1 Emissions

Scope 1 emissions are direct emissions from sources that are owned and/or controlled by Colgate University. This includes combustion of fossil fuels in university-owned facilities or vehicles, fugitive emissions from refrigerant chemicals, and emissions associated with grounds maintenance.

On-Campus Stationary Combustion of Fossil Fuels

In 2014, Colgate University used three types of fossil fuels to provide heat and hot water to campus buildings: fuel oil #2, kerosene, and propane (Table 6).

Colgate's central steam plant heats 37 main campus buildings and provides the heat source for laundry equipment, domestic water heating, dining hall food preparation, laboratory, library, ice rink humidity control, and building humidification. While Colgate's primary source of steam production comes from the campus 900 boiler horsepower (BoHP) wood chip boiler, we use fuel oil #2 as our secondary fuel in the central steam plant, which replaced fuel oil #6 at the start of the fiscal year as a part of the heating plant upgrade that prepared the system to accept natural gas. Fuel oil #2 is also used as the primary heating fuel for 486,700 gross square-feet of facilities that do not have access to steam from the Central Plant. This includes Colgate's buildings on Broad Street (e.g., fraternity and sorority houses, Sanford Field House, and others). Kerosene provides heat energy to a few buildings including 80 Broad Street, Seven Oaks Club House and Repair Shop, Schupf Art Studio, and the Student Health Center. And, finally, propane is used for fireplaces, heating, cooking, and hot water in a few buildings including a number of buildings on Broad Street, the Coop, Parker Commons, the Heating Plant, Frank Dining Hall, Bryan Dining Hall, Base Camp, Merrill House, Trap Range, 13 East

Table 6. , 2009 2014.

On-Campus Stationary Combustion of Fossil Fuels				
Fiscal Year	Fuel Type	Consumption (gallons)	Emission Factor (MTeCO2/gallon)	GHG Emissions (MTeCO2)
2009	Fuel Oil #6	371,457	0.011757907	4,368
	Fuel Oil #2	185,503	0.01004635	1,864
	Kerosene	-	-	-
	Propane	-	-	-
2010	Fuel Oil #6	283,974	0.011757907	3,339
	Fuel Oil #2	174,399	0.01004635	1,752
	Kerosene	4,604	0.01004635	46
	Propane	-	-	-

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Data Requested: Gallons of fuel oil #6 consumed for FY 2014.

Key Contact(s): The data can be found in the Buildings and Grounds fileshare (Wood and Fuel Reports). This report can be retrieved with the assistance of the Office Manager of the Facilities Department (Amy Davidson) or the Associate Director of Facilities and Manager of Engineering Services (Dan McCoach). Director of Sustainability (John Pumilio) has access.

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Data Requested: Gallons of fuel oil #2 for FY 2014.

Colgate University

Key Contact(s): The data can be found in the Buildings and Grounds fileshare. This report can be retrieved with the

Data Requested: Gallons of gasoline and diesel consumed for FY 2014.

Key Contact(s): Director of Purchasing (Alan Leonard) can provide annual consumption from supplier billing.

Data Requested: Gallons of gasoline consumed for FY 2014.

Key Contact(s): Buildings and Grounds tracks vehicle fleet gasoline reimbursements throughout the year and can provide total consumption. The data can be found on the Google Spreadsheet kept by B&G.

Data Requested: Gallons of gasoline consumed in FY 2014.

Key Contact(s): Campus Safety Administrative Assistant (Sue Marks) tracks Campus Safety gasoline use throughout the year and can provide total gasoline consumption.

Refrigerants (HFC-314a and HCFC-22)

Colgate University has an on-campus chiller for space cooling, water fountains, and refrigerators across campus that use HFC-134a refrigerant. Additionally, Starr Hockey Rink and the Dana Arts Center use HCFC-22. These refrigerant hydrocarbons meet all the required standards specified by the U.S. EPA in order to reduce the rate of ozone depletion. Unfortunately, hydrocarbons are powerful greenhouse gases. HFC-134a, for example, has a global warming potential of 1,430 (meaning that it is 1,430 times more potent as a greenhouse gas than carbon dioxide). Therefore, it is important to calculate the amount of refrigerant chemicals Colgate uses on an annual basis. In 2011, refrigerants accounted for more than 592 tons of GHG emissions, but that number has fallen dramatically in recent years. (Table 8).

Table 8. -134 -22 , 2011-2014

Refrigerant Chemicals							
Fiscal Year	HFC-134a Refrigerant Loss	Emission Factor	GHG Emissions	HCFC-22 Refrigerant Loss	Emission Factor	GHG Emissions	Total GHG Emissions
	(lbs)	(MTeCO2/lb)	(MTeCO2)	(lbs)	(MTeCO2/lb)	(MTeCO2)	(MTeCO2)
2011	108	0.589670081	64	685	0.771107029	528	592
2012	46	0.648637089	30	543	0.771107029	419	449
2013	1	0.648637089	1	281	0.82100219	231	231
2014	12	0.648637089	8	128	0.82100219	105	113

Data Requested: The total usage (in pounds) of the refrigerant type for HFC-134a for FY 2014.

Key Contact(s): Physical Plant Foreperson (Brian Belden).

Data Requested: The total usage (in pounds) of the refrigerant type HCFC-22 for FY 2014.

Key Contact(s): Physical Plant Foreperson (Brian Belden).

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Fertilizer Application (Organic)

Data Received: The 2014 Commuter Survey gave us an average of how many days per week and weeks per year each individual drove to campus, the distance traveled, and the average miles per gallon of their vehicle for the 348 individuals who completed the survey.

Calculations: Based on 343 responses, the average Colgate employee used 82.6 gallons of gasoline in FY 2014 to commute back and forth to work. Multiply 82.6 gallons by 966 employees equals 81,904 gallons in total for FY 2014. Multiply 81,904 gallons by the emissions factor for gasoline (0.008648022 MTeCO₂ per gallon) equals 708 MTeCO₂ (Table 11).

Comments: The Annual Commuter Survey should be distributed to the campus community via email in late September or early October to maintain consistency between years. The substantial drop in commuting between 2013 and 2014 might be attributed to having many more survey respondents state that they do not drive to work.

Table 11. Faculty and Staff Commuting, 2010-2014.

Faculty and Staff Commuting			
Fiscal Year	Total Gasoline	Emission Factor	GHG Emissions
	(gallons)	(MTeCO ₂ /gallon)	(MTeCO ₂)
2010	157,740	0.008924124	1,408
2011	153,057	0.008928806	1,367
2012	154,872	0.009097265	1,409
2013	145,866	0.008648022	1,261
2014	81,904	0.008648022	708

Directly Financed Outsourced Bus Travel

Colgate University contracts through Birnie Bus Services, Inc. to provide free transportation service around campus and to select locations in the downtown area called the Colgate Cruiser. Birnie Bus also provides service to Colgate's athletic teams for competition away from home.

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Data Requested: Gallons of diesel consumed for each of the buses that make up the Colgate Cruiser bus service in FY 2014.

Key Contact(s): The Birnie Bus terminal in Hamilton, NY (315-824-1260) provides the Cruiser data upon request. We received a quick response after submitting a form through the Birnie Bus Website.

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Data Requested: Gallons of diesel consumed in FY 2014 for bus service for varsity athletic travel.

Key Contact(s): Administrative Assistant, Athletics (Lori Godshalk).

Data Received: Gallons of diesel consumed for FY 2014 for bus service for varsity athletic travel.

Comments: Sport club outings use the "T" vans that are owned by Colgate, and therefore, included within the 'Colgate Vehicle Fleet' data as Scope 1 emissions.

Table 12.

Table 13.

, 2014.

Employee Business Ground Travel							
Fiscal Year	Reimbursement Cost	Reimbursement Cost	Total Reimbursement for Gasoline	Average Cost per Gallon of Gasoline	Total Gasoline Consumption	Emission Factor	GHG Emissions
	(\$)	(%)	(\$)	(\$)	(gallons)	(MTeCO ₂ /gallon)	(MTeCO ₂)
2011	\$286,687	57%	\$163,411.59	\$3.05	53,578	0.008928806	478
2012	\$339,941	60%	\$203,964.60	\$3.54	96,029	0.009097265	874
2013	\$292,828	60%	\$175,697.39	\$3.49	83,905	0.008864802	744
2014	\$231,701	60%	\$139,020.52	\$3.65	38,088	0.008864802	338

Air Travel

Air travel plays a vital role in many university functions, a role that is arguably exacerbated by Colgate's rural location and our commitment to certain institutional priorities. Faculty travel by air to support research and conference participation, for example, and professional staff throughout the university require air travel to pursue their work. Colgate's commitment to robust off-campus study opportunities, as well as to Division I athletics, also underscores the centrality of air travel to the university's mission.

The Air Travel Subcommittee distinguished the amount of air travel by various institutional categories in FY 2010 (Figure 2). They did this both to capture a recent institutional profile of air travel at Colgate and to allow for tracking trends across the institution over time.

Figure 2. A , 2010.

All air travel paid by the university on the behalf of faculty, staff, students, and invited guests is being tracked through the new account code -386. By compiling -386 expenditures across the institution—including budget charges, direct reimbursements, and JPMorgan charges—and adding to this other air travel expenditures such as tickets purchased on behalf of athletic teams, we are now able to efficiently capture the vast majority of Colgate's required Scope III air travel emissions. For FY 2010, as for FY 2009 (our baseline greenhouse gas inventory), our accounting office was able to determine air travel expenditures across the institution through a more labor-intensive process that involved "manually"

Table 14. , 2009 2014.

A -386

Data Requested: Annual air travel paid for by or through the university to conduct Colgate business in FY 2014 in miles.

Key Contact(s): Staff Accountant (Leta Wiley).

Data Received: Total FY 2014 air travel expenditures for accounting code -386.

Calculations: According to accounting code -386, the total money spent on faculty and staff air travel in FY 2014 was

a potent greenhouse gas (methane) as it decomposes. However, different landfills have different techniques for how they handle methane emissions and these different techniques result in very different levels of greenhouse gas emissions. Therefore, it is necessary to know how the Madison County Landfill handles its methane emissions in order to determine the emission factor for Colgate's landfill waste.

In FY 2010, the Madison County Landfill installed a methane capture and electric generation system that has much lower greenhouse gas emissions per ton:

- Prior to FY 2010 (no methane recovery): emissions factor = 1.0842857 MTeCO₂/short ton
- FY 2010 and beyond (methane recovery and electric generation): emissions factor = -0.03 MTeCO₂/short ton.

As a result, Colgate's overall emissions associated with our landfill waste were significantly reduced (Table 15).

Further emission reductions occurred because Colgate reduced its landfill waste per full-time equivalent student (FTE) through:

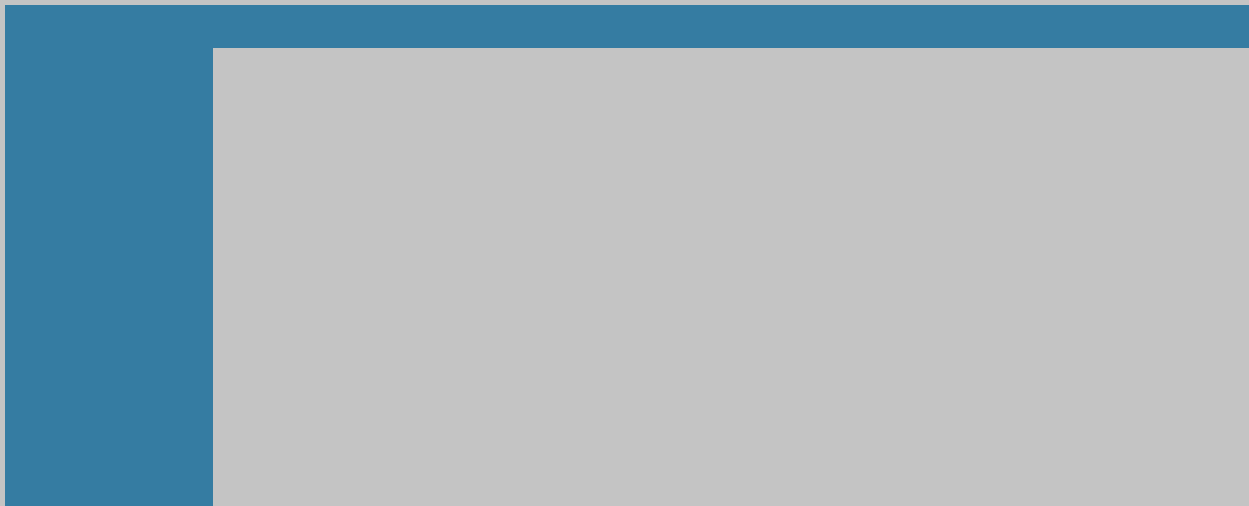
- improved recycling of paper and bottles and cans;
- a new electronic waste recycling program;
- a new composting program;
- decreased overall paper consumption by over four million sheets of paper; and
- increased use of reusable containers (instead of one-time use disposable containers).

Data Requested: Total annual landfill waste in short tons for FY 2014.

Key Contact(s): Monthly billing statements from Madison County Landfill with Colgate's tons of landfill obtained from accounting. Director of Sustainability (John Pumilio) has copies.

Calculations: Add the monthly reports to get the annual total.

Table 15. , 2008 2014.



Paper Consumption

Colgate University's paper consumption is tracked through two main sources: 1) departmental purchasing and 2) the Print Shop. We track the amount of paper consumed by its recycled content (e.g., non-recycled, 30 percent, 50 percent,

been significantly reduced (Tables 17 and 18). This was accomplished by adding print-release stations in public printing areas, by setting double-sided printing as the default on campus machines in common areas, by widening margins, and through increased awareness and more conscious printing. In 2012 we introduced tree-free sugar cane paper to campus. This paper is purchased through a student-owned business called Eco-Campus LLC, which grew out of a 2011 Thought into Action project. The sugar cane paper is made from a byproduct of the sugar industry and thus the use of this resource does not generate any new emissions. Table 18 also highlights the overall reduction in the purchase and use of non-recycled (virgin) paper on campus since 2009. FY 2012 was the first year in which purchasing non-recycled paper was not an option for departments.

Data Requested: The total amount of paper purchased in pounds through departmental purchasing by recycled content for FY 2014.

Key Contact(s): Director of Purchasing

Comments: The Office of Sustainability and Purchasing department eliminated the option to purchase non-recycled paper in FY 2012.

Notes: Tree-free paper calculations come from Eco-Campus LLC (a student company). However, with ever-changing leadership, sometimes numbers are unavailable.

Calculations: To convert pounds of paper to sheets divide pounds by 5.05 (average weight of one package) and multiply by 500 (sheets per package).

Table 17. (), 2009 2014.

Print Shop

Table 18. (), 2010 2014

COLGATE'S GROSS GREENHOUSE GAS EMISSIONS

Colgate's greenhouse gas footprint was 17,353 MTeCO₂ (6.23 tons / FTE¹⁶) in 2009, 14,505 MTeCO₂ (5.24 tons / FTE) in 2010, 16,194 MTeCO₂ (5.63 tons / FTE) in 2011, 13,486 MTeCO₂ (4.59 tons/FTE) in 2012, 13,391 MTeCO₂ (4.57 tons/FTE) in 2013, and 13,512 MTeCO₂ (4.44 tons / FTE) in 2014 (Table 19). This includes all Scope 1 emissions (on-site stationary combustion of fossil fuels, vehicle fleet emissions, fugitive refrigerant chemicals, and emissions associated with grounds mainter ((on-)n0 0 1 72 646.4912 cm BT 9 0 0 9 0 0 Tm /A

Colgate University

For each of the years we have completed Colgate's greenhouse gas footprint, the stationary combustion of fossil fuels for space heating and domestic hot water remains the largest single source of emissions (Figures 3 & 4).

Figure 4. FY 2014 percentage of gross emissions by source.

- Stationary Fossil Fuels
- Air Travel
- Electricity
- Commuting
- Vehicle Fleet
- Refrigerants

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CARBON OFFSETS AND NET GREENHOUSE GAS EMISSIONS

Thus far we have examined Colgate's activities that add greenhouse gases into the atmosphere. However, we also need to consider activities that sequester and/or avoid emitting greenhouse gases in order to determine our net carbon budget. In FY 2014, Colgate's source of offsets included the annual rate of carbon sequestration of our purchased offsets in Patagonia Sur as well as other purchased offsets described below. As a result, Colgate's net greenhouse gas emissions in FY 2014 is 5,114 MTeCO₂ (Table 21).

Forest Preservation

In FY 2014, Colgate completed a detailed survey of its forested lands. As a result of the survey, we determined that 1,578 tons of carbon are sequestered each year and Colgate's 1,059 acres of forested land contains 165,491 tons of stored carbon. Given this information, Colgate has begun to count the amount of carbon sequestered by its forests in our Greenhouse Gas Inventory. The detailed methodology for this survey can be found on Colgate's sustainability website¹⁸.

Purchased Offsets

In FY 2014, Colgate purchased enough renewable energy credits (RECs) to offset its electricity consumption. These offsets were purchased through Sterling Planet and accounted for a reduction of 1,790 tons of carbon.

Patagonia Sur

FY 2012 was the first year that Colgate purchased offsets from Patagonia Sur. Patagonia Sur is a Verified Carbon Standard (VCS) credited carbon offset vendor in Patagonia, Chile. Patagonia Sur is a for-profit conservation venture, which reforests and educates people about the Chilean environment. Patagonia Sur will plant the equivalent number of trees to absorb 5,000 tons of carbon from the atmosphere annually. The contract is set to last for the next 15 years.

Table 20. , 2009 2014.

Carbon Offsets and Net Greenhouse Gas Emissions				
Fiscal Year	Total Emissions (MTeCO ₂)	Total Carbon Offsets (MTeCO ₂)		Total Net Carbon Emissions (MTeCO ₂)
		Forest Sequestration	Renewable Energy Credits	

CONCLUSION

The 2014 Comprehensive Greenhouse Gas Inventory for Colgate University calculated Colgate's greenhouse gas emissions for FY 2014 in relation to our FY 2009 baseline. Since 2009, the university has reduced its gross emissions by 22 percent (from 17,353 MTeCO₂ in FY 2009 to 13,512 MTeCO₂ in FY 2014) and reduced our emissions per student (FTE) by 28 percent (from 6.23 MTeCO₂/FTE in FY 2009 to 4.61 MTeCO₂/FTE in FY 2014). This is all despite the fact that we have added an additional 150 students, 13 faculty members, and 9,543 square feet of building space. Not to mention a much colder winter in FY 2014 (compared to FY 2013) that resulted in a rise in the amount of stationary combustion of fossil fuels. The stationary combustion of fossil fuels (fuel oil #2, propane, and kerosene), air travel, and electricity are our largest source of emissions comprising almost 90 percent of our overall footprint.

Carbon sequestered by Colgate's forested land (previously estimated to be 1,239 MTeCO₂) was determined to sequester

