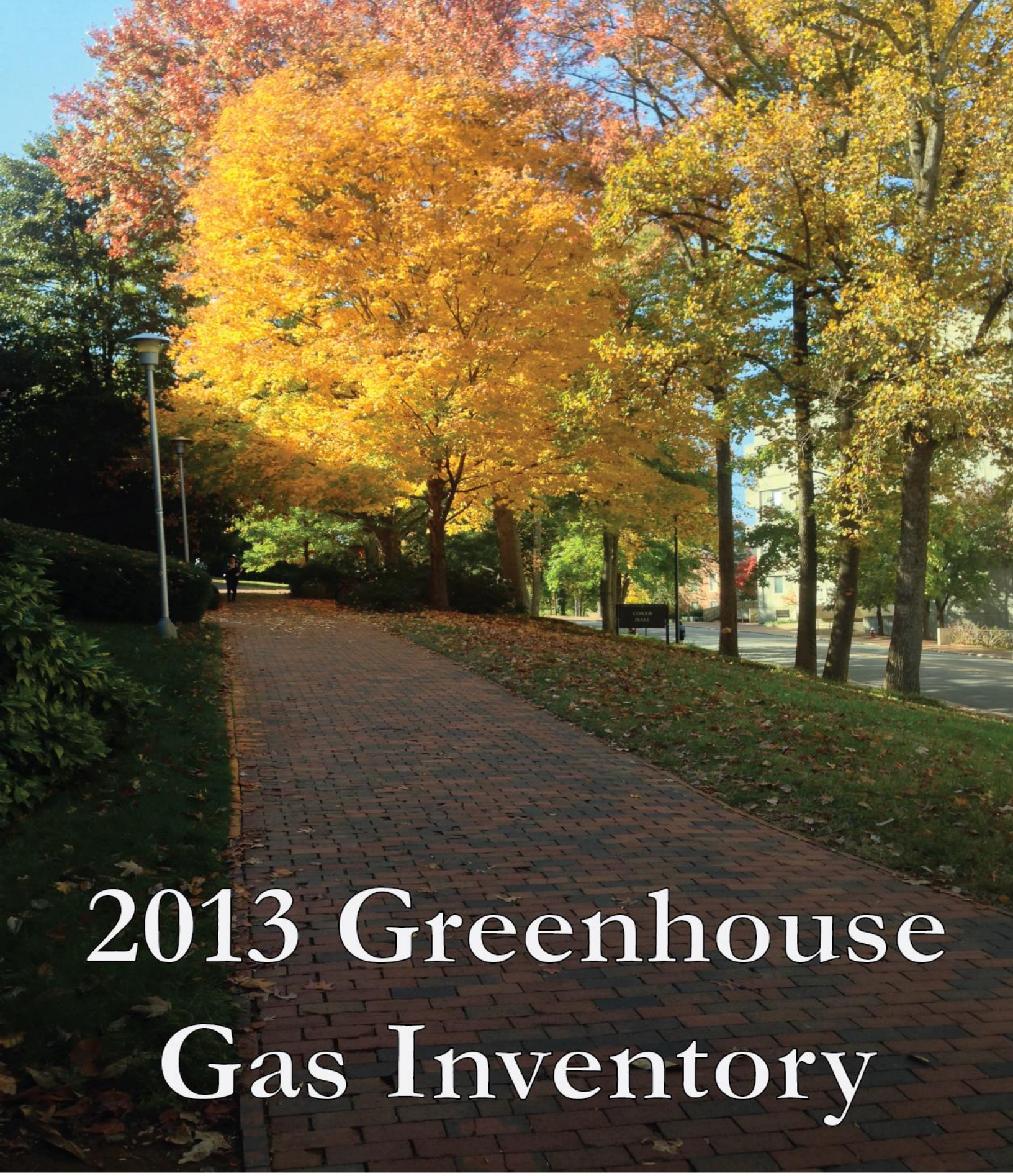


2013 Greenhouse Gas Inventory

THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Table of Contents

Executive Summary……...4

Background……...……6

Inventory Update……..8

Greenhouse Gas Inventory…….……...9

Key Metrics…….10

Campus Population……..…11

Building-related Emissions……...……12

Scope 1 and 2 Emissions Over Time……...…13

Scope 3 Emissions Over Time…….14

Stationary Combustion on Campus…….15

Energy Conservation Measures……....……15

Duke Energy Carolinas……..…..16

Scope One Emission Equivalents……16

Measuring Up To Other Campuses…….17

Landfill Gas Flare……18

Acknowledgements……..19

Appendix

Endnotes

List of Tables and Figures

Figure 1 – Greenhouse Gas Emissions over Time……5

Figure 5 – Equivalent measurements of one metric ton of CO_2…….....7

Table 1 – Current Global Warming Potentials for Greenhouse Gases……...……8

Table 2 – 2013 Greenhouse Gas Emissions and Totals……..……...….9

Figure 6 – Greenhouse Gas Emissions over Time……..…….10

Figure 7 – Greenhouse Gas Emissions by Demand……10

Figure 8 – Scope 1 and 2 Emissions and Campus Population……..11

Table 3 – Campus Population and Emissions…….....11

Figure 9 – Building-Related Emissions……..……..12

Table 4 – Building-Related Metrics….....12

Figure 10 – Scope 1 and 2 Emissions over Time...……..13

Figure 11 – Scope 3 Emissions over Time……..……..14

Figure 12 – UNC-CH Cogeneration System Emissions...……..……..15

Table 5 – Duke Energy Carolinas' Energy Sources and Percentages……...…….16

Table 6 – Duke Energy Carolinas' Carbon Intensity over Time…….16

Figure 13 – Equivalents to UNC-CH's Scope 1 Emissions……..16

Appendix A – Scope 1 and 2 Emissions Breakdown, 2007-2013……...20

Appendix B – Key Metrics, 2007-2013…….21

Executive Summary

In response to the threat of climate change, in 2007 the University of North Carolina at Chapel Hill (UNC-CH) became a signatory to the American College and University Presidents' Climate Commitment (ACUPCC), pledging to achieve carbon neutrality by 2050.

"I am excited about our progress in the fight against global warming here at the University of North Carolina at Chapel Hill." –Former UNC-CH Chancellor James C. Moeser

As part of the University's commitment to take action on climate change, UNC-CH's Energy Services Department conducts annual greenhouse gas emission inventories. This report encompasses the 2013 greenhouse gas inventory, as well as an analysis of emissions trends since the inaugural baseline greenhouse gas inventory in 2007.

Total GHG emissions have decreased by 58,146 metric tons of carbon dioxide equivalents (CO_2e) since the 2007 baseline year, which is a reduction of more than 10 percent. Furthermore, since 2008 when the University's greenhouse gas emissions peaked, total emissions have decreased by 114,216 metric tons of CO_2e, a reduction of nearly 19 percent.

Scope One and Scope Two emissions decreased by 19 percent from the 2007 baseline year, or 85,131 metric tons of CO_2e. Since emissions peaked in 2008, Scope One and Two emissions have decreased by 26 percent, a reduction of 127,365 metric tons of CO_2e.

Scope Three emissions have increased by 26,984 metric tons of CO_2e from the 2007 baseline year, an increase of 26 percent.

In order to achieve carbon neutrality by 2050, the University needs to average a net annual emissions reduction of 12,955 metric tons of CO_2e. This is a two percent reduction in emissions annually. Currently, the University is 19,585 metric tons of CO_2e above this goal. The University has averaged an annual reduction of 9,691 metric tons of CO_2e, or just under two percent annually.

Although the campus population (FTE students and staff) has risen by four percent since 2007, total emissions per capita have in fact decreased by 14 percent.

Similarly, although the University has expanded its gross square footage of buildings by 21 percent since 2007, building emissions per 1,000 square feet have decreased by 32 percent.

Numerous factors have resulted in lower emissions over the previous six years. Annual energy intensity (Btu/Gross Square Footage) has declined by 31 percent since 2003, pointing to the immense success of the Energy Conservation Measure (ECM) Program. Not only has the ECM Program led to a reduction in our building-related emissions, it has also resulted in $27.8 million saved on energy bills, and a total of $223 million in energy cost avoidance since 2002.

Energy Services' Cogeneration Systems continues to replace aged thermal piping systems in its network. This has led to, and will continue to result in, increased thermal efficiency. The Chilled Water Systems continues to lower its emissions factor through an ongoing chiller update program.

Aside from curbing energy demand on campus, fuel-switching has also played a notable role in reduced emissions over the last several years. Coal and natural gas are the two primary fuel sources utilized at the Cogeneration Facility. As fuel prices fluctuate, Cogeneration Facility Management determines which fuel is most economically efficient to use at a given time.

In recent years, natural gas prices have declined significantly. In 2012, prices were the lowest they have been in more than a decade. This is in large part due to the recent technological advancements in hydraulic fracturing and horizontal drilling. Similarly, the infrastructure necessary to distribute the fuel has recently expanded as well. These developments have made natural gas more economically viable as a fuel. Using natural gas is a less carbon-intensive fueling method than using coal, which in turn results in lower greenhouse gas emissions.

This fuel-use strategy lends itself to achieving favorable greenhouse gas reduction results when natural gas is cheaper. Conversely, it is a strategy that results in high greenhouse gas emissions when coal is cheaper. Natural gas prices rose slightly from 2012 to 2013, leading to an increase in the market share of coal by one percent. This resulted in an increase in electric generation emissions nationally and at the Cogeneration Facility.

Figure 1: Greenhouse Gas Emissions over Time

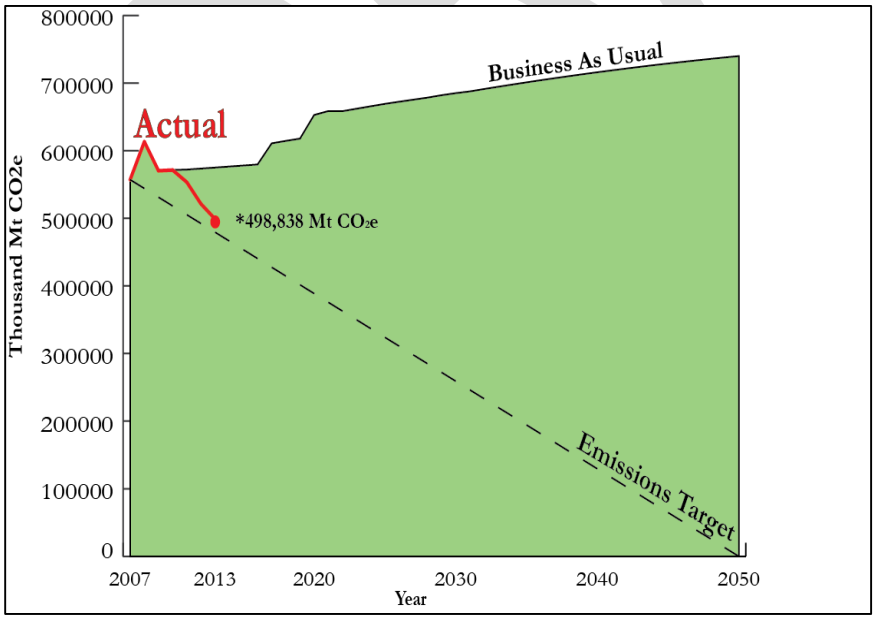


Figure 1 shows UNC-CH's greenhouse gas emissions over time in comparison with Business as Usual (BAU) projections. Included in the figure are the University's emission reduction targets necessary to achieve carbon neutrality by 2050.

Background

Greenhouse Gases

A greenhouse gas is a gaseous compound that absorbs infrared radiation, traps heat in the atmosphere, and contributes to the greenhouse effect. Pursuant to the Kyoto Protocol, the University accounts for five greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Accounting Protocol

Greenhouse Gas accounting is a relatively new practice. Methodologies and protocols are continually changing and becoming more accurate. Carolina adheres to the methodology developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), the *Greenhouse Gas Protocol for the US Public Sector*. This protocol is widely accepted and is utilized by agencies and organizations like the US Environmental Protection Agency (EPA), the EU Emissions Trading Scheme (EU-ETS), and Duke Energy. Where necessary, the inventory deviates from the *GHG Protocol* to most accurately reflect the unique nuances of the University's operations and energy use.

In accordance with the *GHG Protocol*, Energy Services strives to adhere to the following guiding principles throughout the inventory and reporting process: 1) Relevance, 2) Completeness, 3) Consistency, 4) Transparency, and 5) Accuracy.

Boundary Conditions

The boundaries for the University's inventory are defined by the Operational Control Approach. This approach allocates ownership of emissions to Carolina that are emitted from an entity that operates under the authority of the University.

All UNC Hospital System emissions associated with electricity use are not included in the inventory. Although the University shares space and infrastructure with the hospitals, the hospitals are funded, operated, and managed separately from the University.

Types of Emissions

Scope One

Scope One emissions are all emissions that are a direct result of the institution's operations. We have direct ownership of, and responsibility for these emissions from "cradle-to-grave". For Carolina, this includes stationary combustion emissions, fugitive emissions, as well as mobile combustion emissions. Scope One emissions are also the most accurately reported emissions, as all data in this category is measured directly.

Scope Two

Scope Two emissions are all indirect emissions that are sourced from purchased electricity, heat, or steam. Though Carolina does not create these emissions, it does create the demand for them. Because Carolina creates the demand for them, the University is obligated to assume ownership upon purchasing them. For Carolina, Scope Two emissions come from all

of our purchases from Duke Energy. The data reported in this category, though very reliable, is not always as complete as Scope One data.

Scope Three

Scope Three includes a broad range of emission sources, and is considered optional for reporting under the *GHG Accounting Protocol*. Scope Three includes all other indirect emissions associated with our operations and activities that do not fall into Scope One or Two. In reporting Carolina's Scope Three emissions, the focus is on targeting significant emissions sources, as well as sources that have accessible and reliable data. Major Scope Three sources that are included in Carolina's inventory include emissions from commuters, solid waste, air travel, and food consumption. This data is inherently less reliable than Scope One and Two, and often is based on best estimations.

What is a metric ton of CO_2?

It can be difficult to grasp what one metric ton of CO_2 really is. To better understand a greenhouse gas inventory, as well as the impacts that our actions have on the climate, it can be helpful to equate CO_2 into everyday terms and uses. Unless there is some level of comprehension of what one metric ton of CO_2 actually is, it is impossible to expect people or an organization to effect real change. *Figure 5* helps put one metric ton of carbon dioxide into perspective.

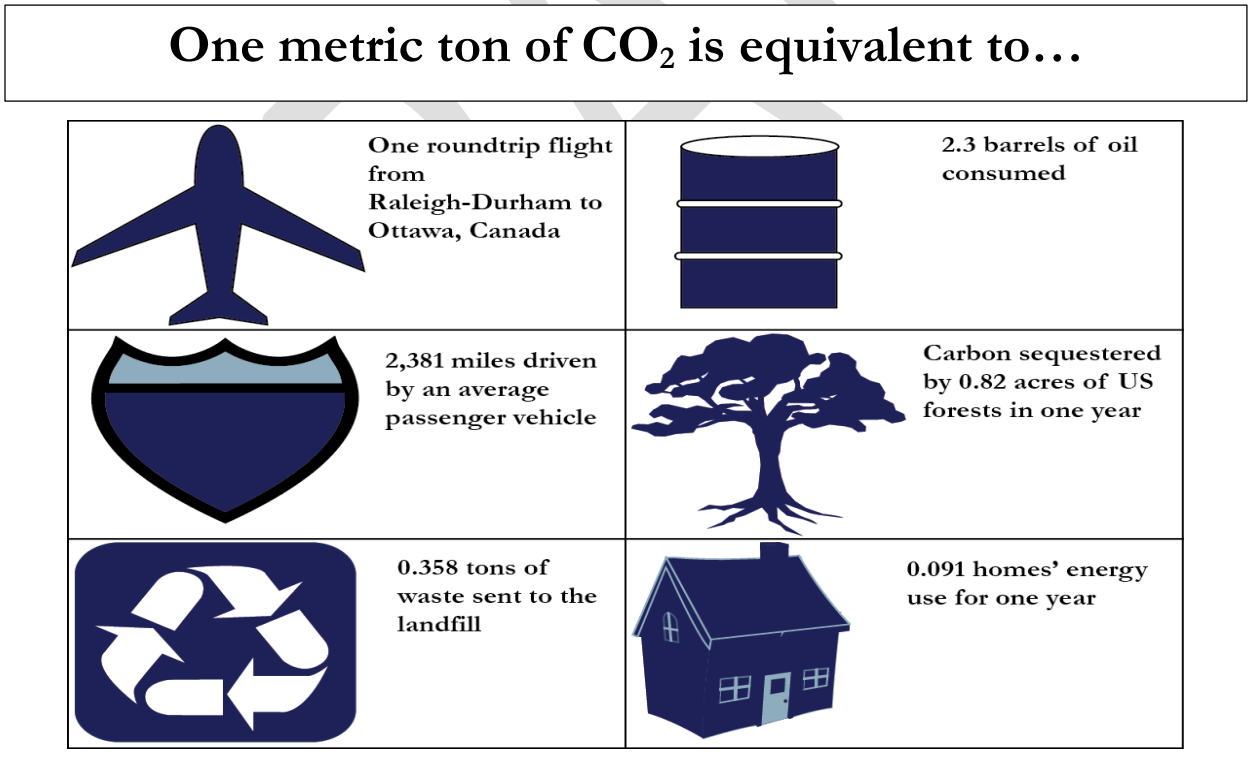


Figure 5 shows equivalent measurements of one metric ton of carbon dioxide.

Inventory Update

To maintain the integrity of a greenhouse gas inventory database, it is necessary to regularly update the inventory as new acceptable practices and protocols are adopted, and as new scientific consensus emerges on various critical aspects of climate science.

Most notably, Carolina's inventory database currently reflects updates from the Environmental Protection Agency regarding the 100-year Global Warming Potential (GWP) of methane (CH_4) and nitrous oxide (N_2O). These updates are reflected in this report and in all ensuing comparative analyses.

Greenhouse gases are most commonly reported in units of carbon dioxide equivalents (CO_2e). This is the standard unit of measurement that is used throughout Carolina's inventory. The six different greenhouse gases are normalized by converting them all to the same standard (CO_2e). The conversion is calculated through the application of each gas's unique GWP. This normalization allows for a true comparison of the impact of different GHGs, rather than simply comparing the quantities of each gas emitted, which would be an inaccurate metric by which to consider their impact on the climate.

Is A Restatement Necessary?

An inventory restatement is recommended when emissions change more than five percent compared to previous statements. Although Carolina's inventory database has undergone recent alterations (largely due to updates in climate science and accounting protocols), these changes have not resulted in a cumulative difference of more than five percent.

Table 1 shows the current Global Warming Potentials (GWP's) for each of the six greenhouse gases accounted for in UNC's inventory

CO_2	1
CH_4	25
N_2O	298
HFC/PFC	140-11,700/6,500-9,200
SF_6	22,200

Note: All gases are converted to CO_2 equivalents. Therefore, carbon dioxide has a GWP of 1 since it is the baseline unit.

*HFCs and PFCs are used in numerous forms, each of which have their own assigned GWP. HFC/PFC GWPs range anywhere from 675 to 14,800.

2013 Greenhouse Gas Inventory

Table 2. 2013 GHG Inventory Sources and Emission Totals (**Note: all values are reported in metric tons of CO_2e*)

SOURCE	CO_2	CH_4	N_2O	HFC/CFC	SF_6	SUBTOTAL
Scope 1	236,865.39	24.79	1,084.18	3,934.33	1,995.33	243,904.03
Blackstart Generators	31.06	0.03	0.08			31.17
Building Boilers	6,401.66	2.47	47.44			6,451.57
Cogeneration	219,898.70	18.30	893.47			220,810.46
Emergency Generators	33.52	0.01	0.00			33.53
Manning Steam Plant	8,187.60	3.18	3.79			8,194.58
HVAC				1,276.76		1,276.76
Laboratory Gases				2,657.57		2,657.57
Water Chillers	112.61		136.79			249.41
Switchgear					1,903.5	1,903.5
Vehicle Fleet	2,200.23	0.79	2.61			2,203.64
Scope 2	121,304.55	101.33	969.02			122,374.90
Duke Energy	148,992.40	102.27	991.41			150,086.07
Progress Energy	251.36	0.13	1.23			252.71
Hospital Sales	(27,939.20)	(1.06)	(23.62)			(27,963.89)
Scope 3	129,008.06	3,274.22	167.96	200.28		132,650.52
Mass Transit	4,383.70	1.97	22.05	200		4,607.99
Faculty/Staff	14,685.79	22.06	53.59			14,761.44
Students	9,006.15	15.08	34.58			9,055.81
Air Travel	66,466.16					66,466.16
Compost		(412.59)				(412.59)
Landfill		2,883.71				2,883.71
Recycling		(7,437.25)				(7,437.25)
Food Consumption	34,809.90					34,809.90
Forest Carbon Sequestration	(6,120)					(6,120)
Landscaping	3.09		21.63			24.72
Paper Use	1,101.43					1,101.43
Upstream Natural Gas	4,671.84	8,201.24	36.12			12,909.20
Grand Totals	**452,368**	**3,400**	**2,221**	**4,135**	**1,995**	**498,838**

Key Metrics

Overview

Figure 6 shows where UNC-CH is regarding its goal to be carbon neutral. Total emissions in 2013 were 498,838 metric tons (Mt) of CO_2e. This represents a 13 percent reduction in actual versus Business As Usual (BAU) emissions. UNC-CH is currently 76,162 Mt CO_2e below BAU projections, which is 575,000 Mt CO_2e for 2013. Carolina's emissions are higher than the linear annual reduction of emissions necessary to achieve net zero emissions by 2050. The emissions target for 2013 is 479,344 Mt CO_2e. UNC-CH is currently 19,494 Mt CO_2e above that goal, or four percent.

Figure 7 shows emissions by demand over time. Though this data is broken down into more detail later, *Figure 7* gives an overview of key metrics and how the University is measuring up over time. Building energy, the largest demand category, has decreased significantly over time. While air travel has increased notably, commuting and vehicle fleet have increased only slightly. Waste management has seen a significant reduction, while fugitive emissions have been reduced only slightly.

Figure 6 Shows UNC-CH's GHG emissions over time.

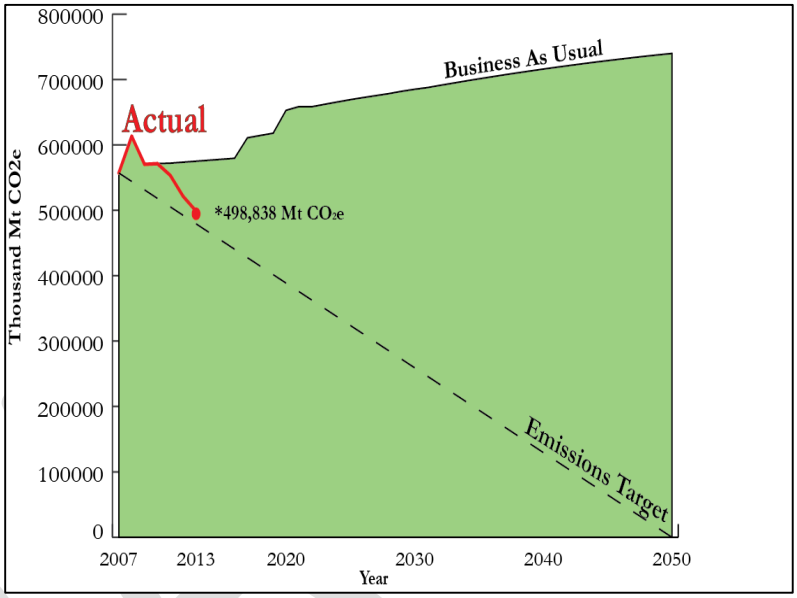
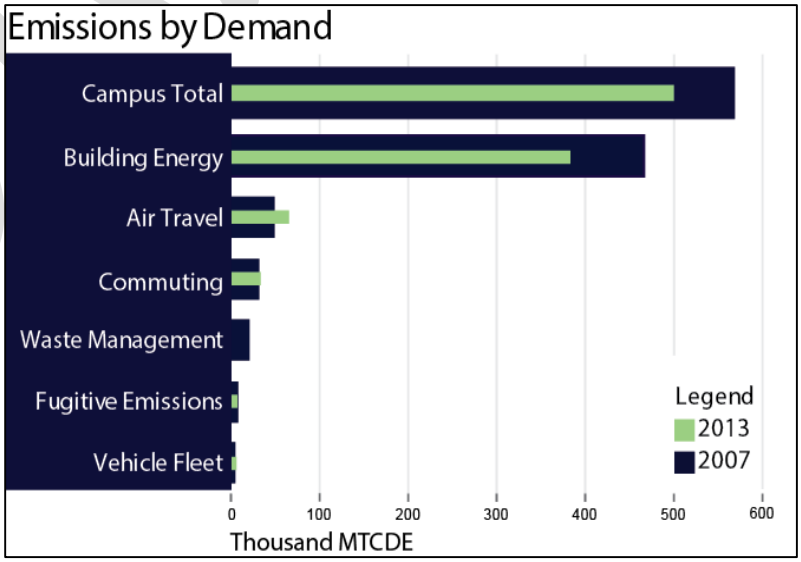
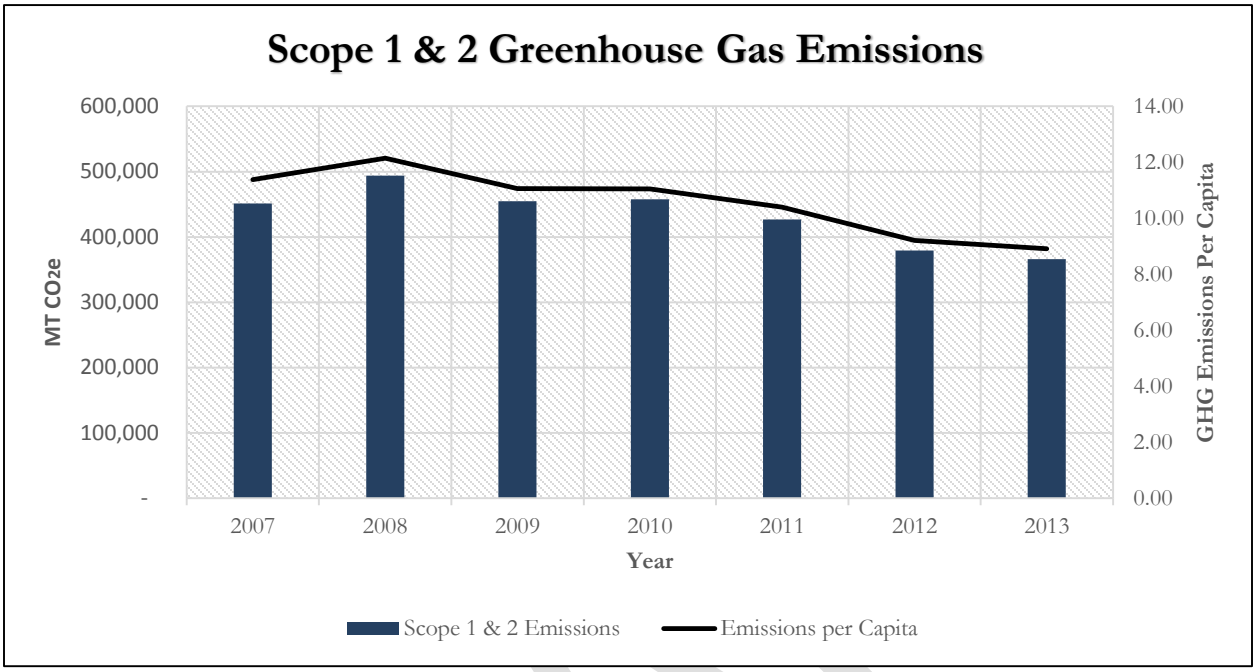


Figure 7 Shows UNC-CH's GHG emissions by demand over time.



Emissions and Campus Population

Figure 8 illustrates how Scope 1 & Scope 2 emissions have changed over time, as well as emissions per capita.



As seen in *Figure 7*, Scope 1 and 2 emissions have decreased since 2007. The net decrease from 2007 is 85,222 Mt CO_2e, which is a reduction of nearly 19 percent. Also, Scope 1 and 2 reductions are greater than total reductions. As net Scope 1 and 2 emissions have decreased, so have emissions per capita. It is worth noting that, as Scope 1 and 2 emissions and emissions per capita have both decreased since 2007, the campus population has actually increased by four percent (1,441 people), adding significance to the drop in emissions per capita.

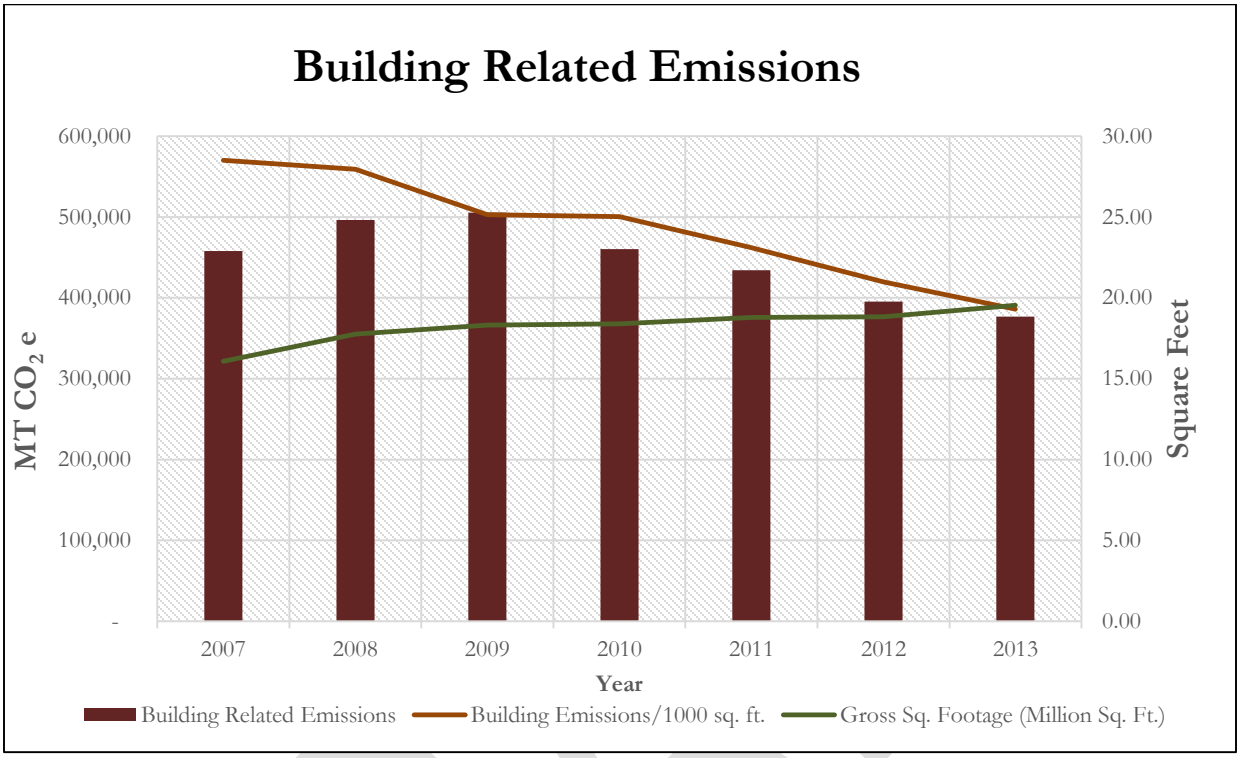
Table 3. Shows the key metrics associated with campus population and emissions.

Key Metrics	2007	2008	2009	2010	2011	2012	2013	Change Over Time	
FTE Students	25,895	26,356	26,707	27,006	26,837	27,069	26,989	1,094	4%
Emissions per FTE	21.51	23.26	21.35	21.16	20.62	19.06	18.48	3.03	0.14
Campus Population	39,669	40,649	41,119	41,442	41,046	41,178	41,110	1,441	4%
Emissions per Capita	14.04	15.08	13.87	13.79	13.48	12.53	12.13	1.91	14%
Scope 1 & 2 Emissions per Capita	11.38	12.14	11.06	11.05	10.40	9.21	8.91	2.47	22%

Full-time equivalent students (FTEs) and the campus population both increased from 2007 to 2013. FTE Students increased by 1,094, or four percent. However, emissions per FTE decreased by 3.03 MT CO_2e, or 14 percent. Similarly, the campus population increased by 1,441 individuals, or four percent, while emissions per capita decreased by 1.91, or 14 percent. Scope 1 and 2 emissions per capita, which institutions have the most control over, decreased by 2.47 Mt CO_2e, or 22 percent.

Building-Related Emissions

Figure 9 displays building-related emissions, gross square footage and emissions per 1,000 square feet.



As seen in *Figure 9*, gross square footage of UNC-CH building space has increased steadily since 2007. Square footage has increased a total of 3.45 million square feet, growing a total of 21 percent, which is nearly four percent growth annually. Meanwhile, Carolina's building-related emissions have decreased. The total change over time is a reduction of 80,924 Mt CO_2e annually, which is an 18 percent total reduction and a two percent reduction annually. The critical component to this metric is building emissions per 1,000 square feet. As building gross square footage has grown, as has campus population, building emissions per 1,000 square feet have decreased by 9.18 Mt CO_2e. This is a 32 percent reduction total and a five percent annual reduction.

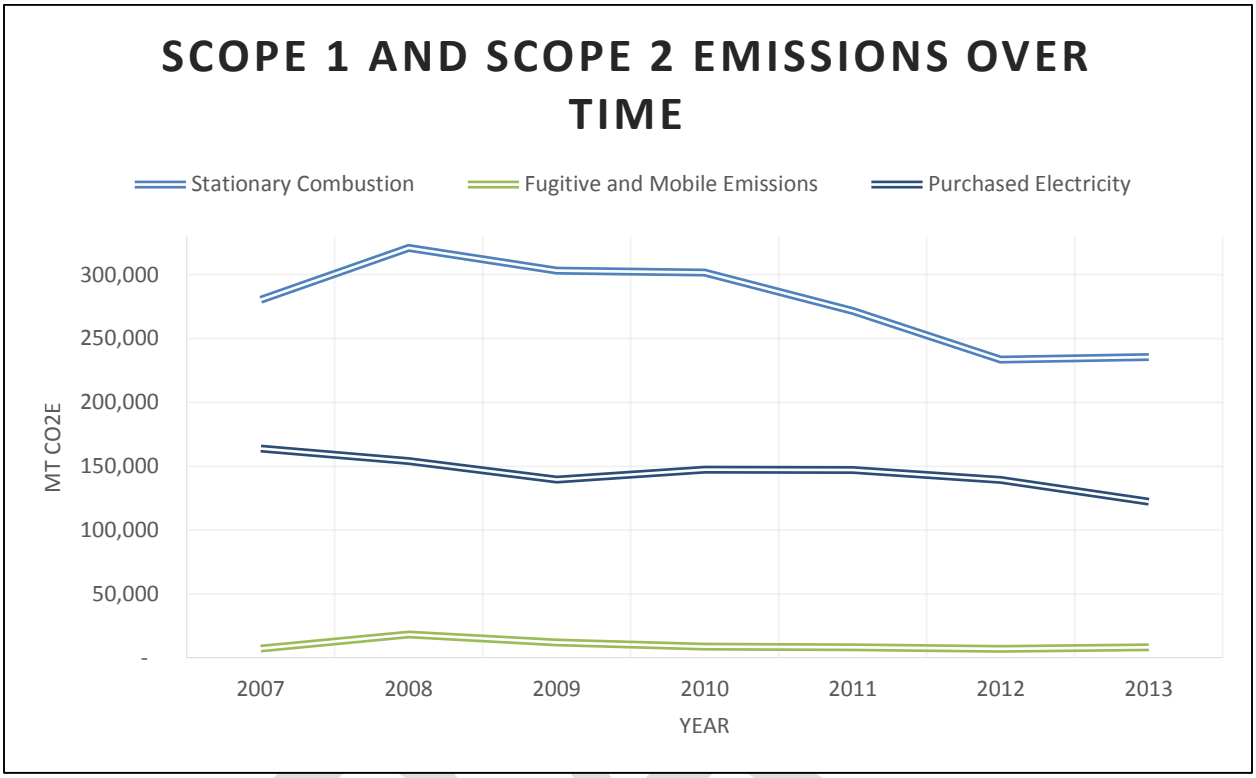
Table 4 shows the key building-related emissions metrics, and how they have changed over time.

Key Metrics	2007	2008	2009	2010	2011	2012	2013	Change Over Time	
Building-Related Emissions	457,817	496,276	505,276	460,203	434,102	395,200	376,893	80,924	18%
Gross Sq. Footage (Million sq. ft.)	16.08	17.76	18.31	18.39	18.78	18.83	19.5	3.45	21%
Total Emissions/1,000 sq. ft.	34.65	34.53	31.15	31.06	29.46	27.39	25.54	9.11	26%
Building Emissions/1,000 sq. ft.	28.48	27.94	27.60	25.02	23.11	20.98	19.30	9.18	32%

Table 4 breaks down the data displayed in *Figure 9*. Again, the data shows a clear trend of decreasing building-related emissions.

Scope 1 & 2 Emissions over Time

Figure 10 shows how Scope 1 and 2 emissions have changed from 2007 to 2013.



Scope 1 and 2 reductions from 2007 to 2013 are noteworthy. The largest source of Carolina's emissions is stationary combustion emissions, 94 percent of which come from the University's fossil-fuel powered Cogeneration Facility. Stationary combustion emissions decreased by 44,871 Mt CO_2e from 2007 to 2013. This is a reduction of 16 percent. UNC's purchased electricity from Duke Energy showed a similar decrease of 41,414 Mt CO_2e, a reduction of 25 percent. Fugitive emissions and mobile emissions increased from 2007 to 2013 by 1,061 Mt CO_2e, or, 15 percent.

Stationary Combustion – Includes the Cogeneration facility, building boilers, black start generators, emergency generators, and Manning Steam Plant.

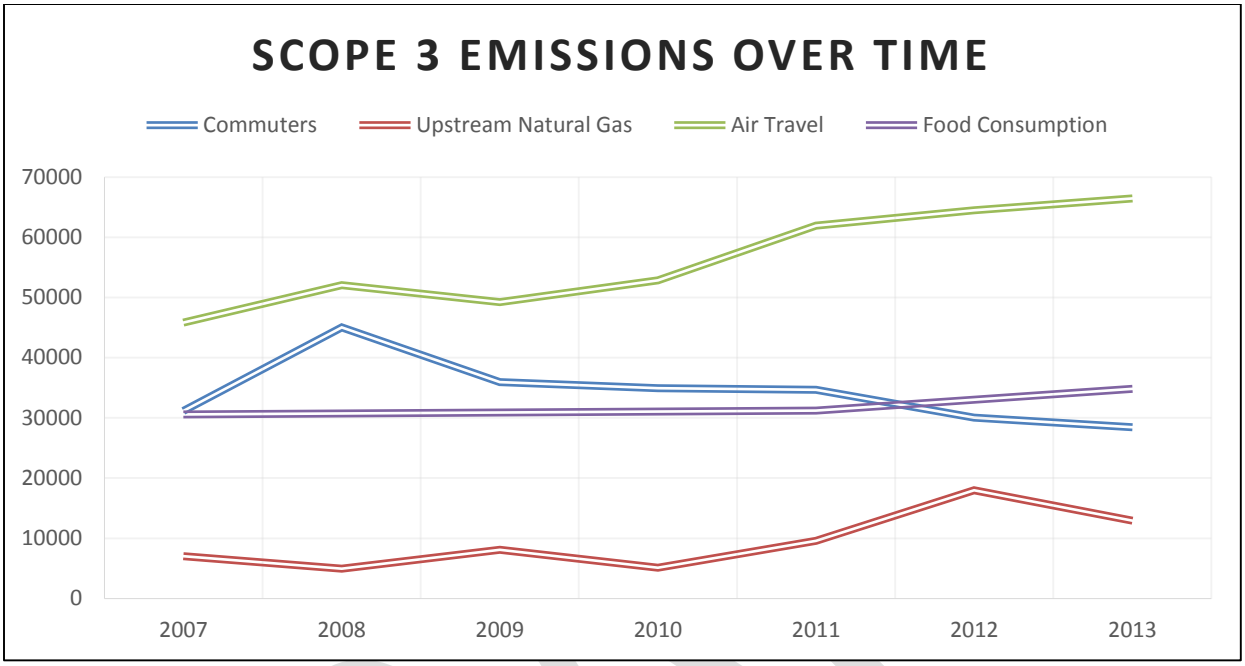
Fugitive Emissions – Includes fugitive emissions related to HVAC, chilled water, laboratory gases, and switchgear.

Mobile Emissions – Includes emissions related to the fuel usage and miles driven of Carolina's vehicle fleet.

Purchased Electricity – Includes emissions associated with Carolina's electricity purchases from Duke Energy Carolinas, less electricity that is used by the UNC Hospital System. It also includes purchases from PSNC Energy.

Scope 3 Emissions over Time

Figure 11 shows how Scope 3 emissions have changed from 2007 to 2013.



In contrast to Scope 1 and 2 emissions, Scope 3 emissions generally increased from 2007 to 2013. Commuter emissions is the only category where emissions decreased, dropping 2,703 Mt CO_2e, a reduction of nine percent. Air travel emissions increased by 20,625 Mt CO_2e, or, 45 percent. Food consumption emissions increased by 4,225 Mt CO_2e, or, 14 percent. Lastly, upstream natural gas emissions increased by 5,883 Mt CO_2e, or, 84 percent.

Commuters – Includes emissions from public and private transportation of faculty, staff, and students.

Upstream Natural Gas – Includes fugitive methane emissions from the natural gas sector operations that are associated with Carolina's natural gas use.

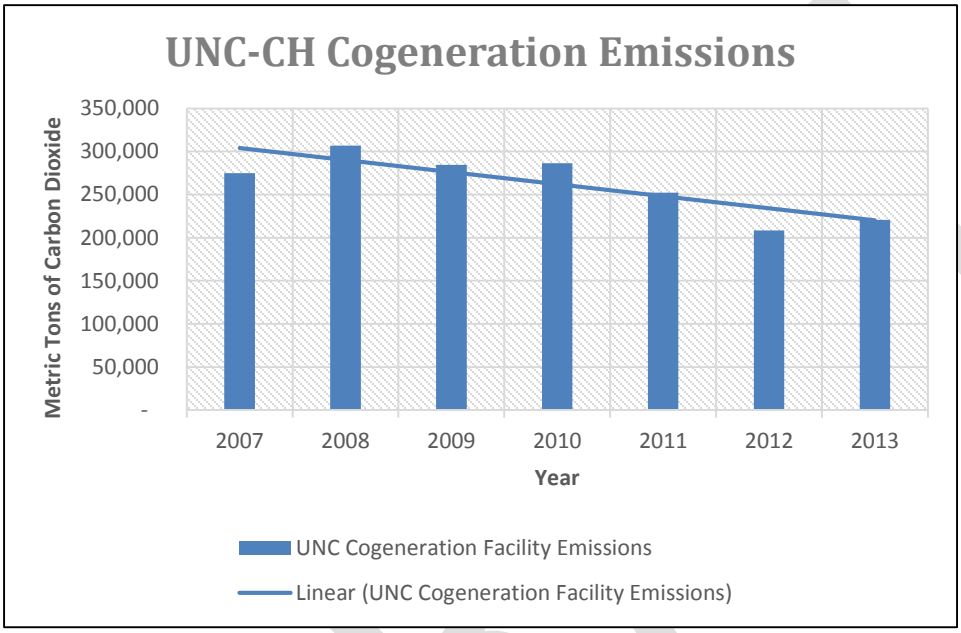
Air Travel – Includes all emissions from Area Health Education Centers Program, Central Airfare Billing, Study Abroad, and Athletics.

Food Consumption – Includes all emissions associated with Carolina Dining Service's operations.

Stationary Combustion on Campus

Emissions from the Cogeneration Facility, which constitute 91 percent of Carolina's Scope 1 emissions and 44 percent of total emissions, have decreased by 19.6 percent from 2007 to 2013. Despite this long-term trend, the Cogeneration Facility's emissions increased 5.87 percent from 2012 to 2013. As natural gas has become cheaper due to advancements in hydraulic fracturing and horizontal drilling, it has become a more economically viable fuel source. Burning it coincidentally emits less carbon dioxide than coal.

In 2013, UNC's fuel-mix was 77.4 percent coal and 22.6 percent natural gas on a heat input basis.



About 117 pounds of CO_2 are produced per million Btu (MMBTU) equivalents of natural gas. About 200 pounds of CO_2/MMBTU are produced by coal.

Figure 12 shows how UNC-CH's emissions from its Cogeneration Facility have changed over time.

*UNC-CH's Cogeneration Facility on Cameron Avenue is not an Electric Generating Utility (EGU)

Energy Conservation Measures

UNC-CH's Energy Conservation Measurement (ECM) Program has been a significant driver behind campus GHG reductions. The program is an in-house continuous commissioning effort that has most recently focused on correcting deficiencies and monitoring performance in campus buildings. Since 2002, the program has directly led to reductions of approximately 230,000 MT CO_2e. Additionally, the program savings are nearly $28 million.

Because of the program, UNC's annual energy consumption has been reduced by 31 percent since 2002. This achievement exceeds NC State-mandated targets of 30 percent. Furthermore, since 2002, the ECM Program has resulted in $223 million in energy cost avoidance.

Duke Energy Carolinas

All of UNC-CH's electricity purchases are from Duke Energy Carolinas (DEC). After the UNC Hospital System's electricity emissions are deducted, UNC-CH's emissions from purchased electricity (which is also all of the University's Scope 2 emissions) constitute 24.5 percent of total campus emissions. Emissions from UNC-CH's Scope 2 emissions have decreased by eight percent from 2007 to 2013. DEC's carbon intensity has seen notable reductions in recent years, and is projected to continue to decline through 2030. DEC has the flexibility of tapping into a variety of energy sources to meet demand. DEC's reliance on fuel sources other than coal allows it to effectively reduce its emissions over time.

Energy Source	Percentage of Energy From Each Source
Coal	32.00%
Nuclear	48.00%
Hydro	1.98%
Gas	17.98%
Oil	0.04%
Solar	0.01%
Biomass	0.00003%

Table 5 shows Duke Energy Carolinas' energy sources and the percentage of energy derived from each source.

Year	Duke Energy Carolinas' CO2 Carbon Intensity
2007	1.05 lbs/kWh
2008	1.07 lbs/kWh
2009	0.89 lbs/kWh
2010	0.93 lbs/kWh
2011	0.92 lbs/kWh
2012	0.83 lbs/kWh
2013	0.79 lbs/kWh

Table 6 shows Duke Energy Carolinas' CO_2 carbon intensity from 2007 to 2013.

Carolina's Scope One emissions are equivalent to…

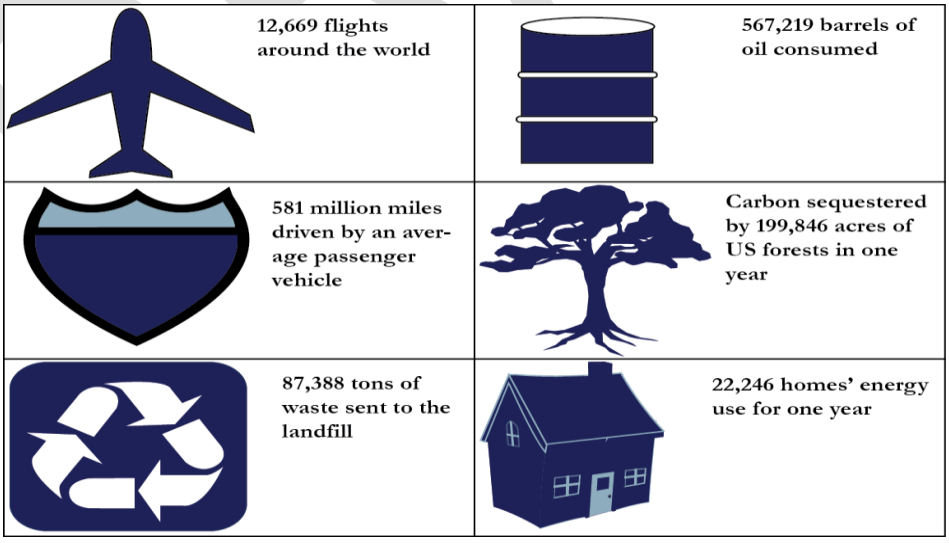


Figure 13 shows equivalent measurements of Carolina's Scope 1 emissions, the emissions that we create and have direct control over.

Measuring Up To Other Campuses

Duke University has a goal to be carbon neutral by 2024. Duke has achieved a 21 percent net reduction in greenhouse gas emissions since 2007, its baseline year. Duke purchases all of its electricity from Duke Energy. Duke has two on-campus steam plants that switched from using coal to only natural gas in 2011.

North Carolina State University has a goal to be carbon neutral by 2050. State has reduced their emissions by 13.5 percent since 2008. Its largest reductions have come from the categories of electricity, refrigerants, and commuting.

Wake Forest University does not currently have a goal to be carbon neutral. However, Wake Forest does have notable sustainability goas, including efforts to make new and existing buildings increasingly efficient.

Appalachian State University has a goal to be carbon neutral by 2050. Currently, ASU's GHG emissions have increased by eight percent since 2009, its baseline year.

University of North Carolina at Charlotte has a goal to be carbon neutral by 2050. From 2009 to 2012, UNCC reduced its GHG emissions by seven percent.

University of North Carolina at Greensboro has a goal to be carbon neutral by 2050. From 2009 to 2012, UNCG reduced their GHG emissions by 25 percent.

UNC-CH has a goal to be carbon neutral by 2050. From 2007 to 2013, UNC-CH reduced its GHG emissions by 10 percent

Landfill Gas

Energy Services' landfill gas (LFG) project captures methane from an Orange County landfill. The methane is then either destroyed by a flare or piped to an electric generating engine on the Carolina North campus. The engine creates electricity that is sold to Duke Energy. The flare began burning methane in FY11-12, while the generator came online in FY12-13.

The project, in destroying methane, a greenhouse gas, creates carbon offset credits. One credit is equal to one MT CO_2e. Credits, after verification, can be bought, sold, and traded on both voluntary and compliance carbon markets. Another common option for organizations attempting to achieve carbon reduction goals is, rather than selling the credits on a market, to retire the credits and debit them against that organization's emissions, thus reducing the organization's net balance of emissions.

Energy Services has destroyed 97,873 MT CO_2e to date using its landfill gas flare

UNC-CH's LFG offsets are registered with the Climate Action Reserve (the Reserve). The Reserve is a highly respected registry and is one of only three offset registries allowed to operate in California's cap-and-trade market. Currently, UNC-CH has verified and deposited 19,614 carbon credits, has 34,590 credits verified and pending deposit, and expects 43,669 additional credits to be verified in the near future from methane flared in FY2013-14. This is a total of 97,873 MT CO_2e reductions. Keep in mind that, although these credits have been created, they are still in play in the market because UNC-CH has yet to sell them or retire them.

UNC-CH has several options for what to do with these carbon offset credits:

Bank the credits for future use. The LFG project was created under the auspices of an impending federal cap-and-trade program (Waxman-Markey Bill, 2009). The cap-and-trade program never came to fruition, so UNC-CH began banking the credits, which is a common practice. One option is to use the carbon offsets to meet its future carbon reduction goals. Another would be to continue banking the credits to meet potential future compliance requirements.

Sell the credits on a compliance market. Compliance markets are typically more robust than voluntary markets, therefore offset prices are generally higher on these markets. However, California's market currently does not allow offsets from LFG projects. Regional Greenhouse Gas Initiative (RGGI), the only other American compliance market, requires that all offset projects be located in a RGGI state and furthermore only allows 3.3% of compliance obligations to be met by offsets.

Sell the credits on the voluntary market. The voluntary market, because it is not compliance-driven, reflects inherently lower prices. Prices generally fluctuate broadly based on location and project type. Carbon credits transactions dropped 26 percent from 2012 to 2013. The average voluntary offset credit was \$4.90/MT CO_2e. This market contraction is due to the expansion of compliance markets.

As climate commitments deepen, and compliance markets continually expand, it is a wise decision to continue to bank carbon credits created by the LFG project.

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Appendix A

	SCOPE 1&2 BREAKDOWN	2007	2008	2009	2010	2011	2012	2013
Stationary Combustion	Blackstart	549	48	36	486	56	29	31
	Building Boilers	5,145	6,182	6,117	6,212	6,280	5,602	6,452
	Cogeneration	274,661	306,801	284,564	286,274	252,115	208,577	220,810
	Emergency Generators	37	119	150	160	127	127	34
	Manning	-	3,615	12,324	8,651	12,997	19,156	8,195
Refrigerant	HVAC	1,329	1,658	1,833	2,280	1,843	1,084	1,277
	Chilled Water	2,953	14,021	1,896	2,473	1,706	1,619	2,658
	Lab Gas	337	394	445	378	352	123	249
	Switchgear	724	4,395	5,326	1,086	1,897	1,518	1,903
Mobile	Vehicle Fleet	1,887	2,226	2,392	2,404	2,515	2,545	2,204
	Scope 1	**287,622**	**339,458**	**315,085**	**310,404**	**279,888**	**240,379**	**243,812**
Purchased	Purchased (Duke, Progress)	195,190	186,235	171,220	181,790	181,620	171,516	150,086
	Less Energy Sales	(31,402)	(32,049)	(31,697)	(34,372)	(34,670)	(32,722)	(27,964)
Total	**Scope 2**	**163,788**	**154,186**	**139,523**	**147,418**	**146,950**	**138,793**	**122,122**
	Scope 1&2	**451,410**	**493,644**	**454,608**	**457,822**	**426,837**	**379,173**	**365,934**
NG	Upstream NG Emissions	7,026	4,928	8,114	5,105	9,563	17,980	12,909

Appendix B

	Metrics	2007	2008	2009	2010	2011	2012	2013	Changes from 2007 to 2013		
	GHG Emissions (MtCO2e)	557,076	613,146	570,275	571,321	553,389	515,848	498,838	↓	58,238	10.45%
	Scope 1&2 Emissions (MtCO2e)	451,410	493,644	454,608	457,822	426,837	379,173	366,187	↓	85,222	18.88%
Per Capita	FTE Students	25,895	26,356	26,707	27,006	26,837	27,069	26,989	↑	1,094	4.22%
	Emissions per FTE	21.5	23.3	21.4	21.2	20.6	19.1	18.5	↓	3.03	14.08%
	Campus Population	39,669	40,649	41,119	41,442	41,046	41,178	41,110	↑	1,441	3.63%
	Emissions per Capita	14.04	15.08	13.87	13.79	13.48	12.53	12.1	↓	1.91	13.59%
	Scope 1&2 Emissions per capita	11.38	12.14	11.06	11.05	10.40	9.21	8.9	↓	2.47	21.72%
Building Related	Building Related Emissions	457,817	496,276	505,276	460,203	434,102	395,200	376,893	↓	80,924	17.68%
	Gross Sq. Footage (Million Sq. Ft.)	16.08	17.76	18.31	18.39	18.78	18.83	19.5	↑	3.45	21.48%
	Total Emissions/1,000 sq. ft.	34.65	34.53	31.15	31.06	29.46	27.39	25.54	↓	9.11	26.29%
	Building Emissions/1000 sq ft	28.49	27.94	25.14	25.02	23.10	20.98	19.30	↓	9.20	32.27%