



NORTH CAROLINA STATE UNIVERSITY

# GREENHOUSE GAS INVENTORY

## 2010 EXECUTIVE SUMMARY

*Document Prepared By:  
Facilities Operations*





# EXECUTIVE SUMMARY



## BACKGROUND

Many students, faculty and staff at NC State University are minimizing the university's impact on the environment and on greenhouse gas emissions. In recognizing this contribution the Chancellor signed the American College and University Presidents' Climate Commitment (ACUPCC) in 2008. This commitment requires that the university develop a Climate Action Plan (CAP) as well as conduct a greenhouse gas (GHG) inventory every other year. The inaugural GHG inventory was completed in 2008 and NC State's Climate Action Plan was developed in 2010, which detailed the university's strategies to work toward climate neutrality by 2050. This report serves as the second GHG inventory for NC State and the first opportunity to begin tracking progress toward the goal of neutrality.

## BOUNDARIES

NC State is comprised of three main campuses and more than 100 satellite offices, which amounts to more than 15 million square feet of building space and a population of more than 39,900. The three campuses included in the inventory are Main, Centennial

and Centennial Biomedical as well as satellite offices for which NC State manages the utility accounts. Satellite offices not included in this report have their utility accounts managed by another unit or are a joint endeavor between NC State and North Carolina Agricultural and Technical State University.

## SCOPES & TIME FRAME

Greenhouse gases are described in scopes. Scope I is from direct emissions from the institution. Scope II emissions are from purchased utilities, and Scope III emissions are indirect emissions from the institution. Scopes I and II emissions are based on the calendar year (CY) 2010 for the possible implementation of federal or state requirements. Scope III emissions are based on fiscal year (FY) 2009 – 2010, since most university departments track their records on the fiscal calendar.

## METHODOLOGY

The calculations are based on the Climate Registry, Clean Air Cool Planet's Campus Carbon Calculator version 6 and Atmosfair.

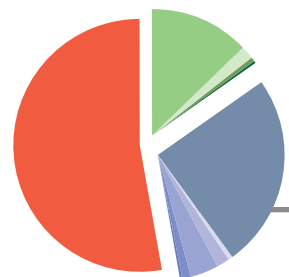
## RESULTS & COMPARISONS

Figures 1 and 2 on the following pages illustrate the 2010 GHG emissions for NC State. Figures 3 and 4 illustrate the reduction in GHG emissions. There has been a 7% overall reduction, with electricity, refrigerants and air travel having the largest decrease in total emissions. Overall, the emissions reduced from 270,069 metric tons of carbon dioxide equivalent (MTCDE) in 2008 to 251,364 MTCDE in 2010. The majority of GHG emissions from the university are from electrical consumption, natural gas usage and commuting. Scope I emissions account for 32% and Scope II comprise nearly 53% of the total emissions.

## GROWTH

Currently the campus enrollment is projected to grow from 34,376 in 2010 to 37,000 by 2020. This increase in student population is estimated to increase NC State's GHG emissions by approximately 13% at today's current trends. Figure 5 illustrates the university's growth over time in two scenarios; one being Business As Usual (BAU) less the reductions from the recommendations in 2010 Climate Action Plan. As indicated by this figure the university is making significant progress in reducing its GHGs from the implementation of various projects detailed in the CAP and the efforts of the university community.

NC State realized a  
7% overall reduction  
in greenhouse gas  
emissions from  
2008 to 2010.

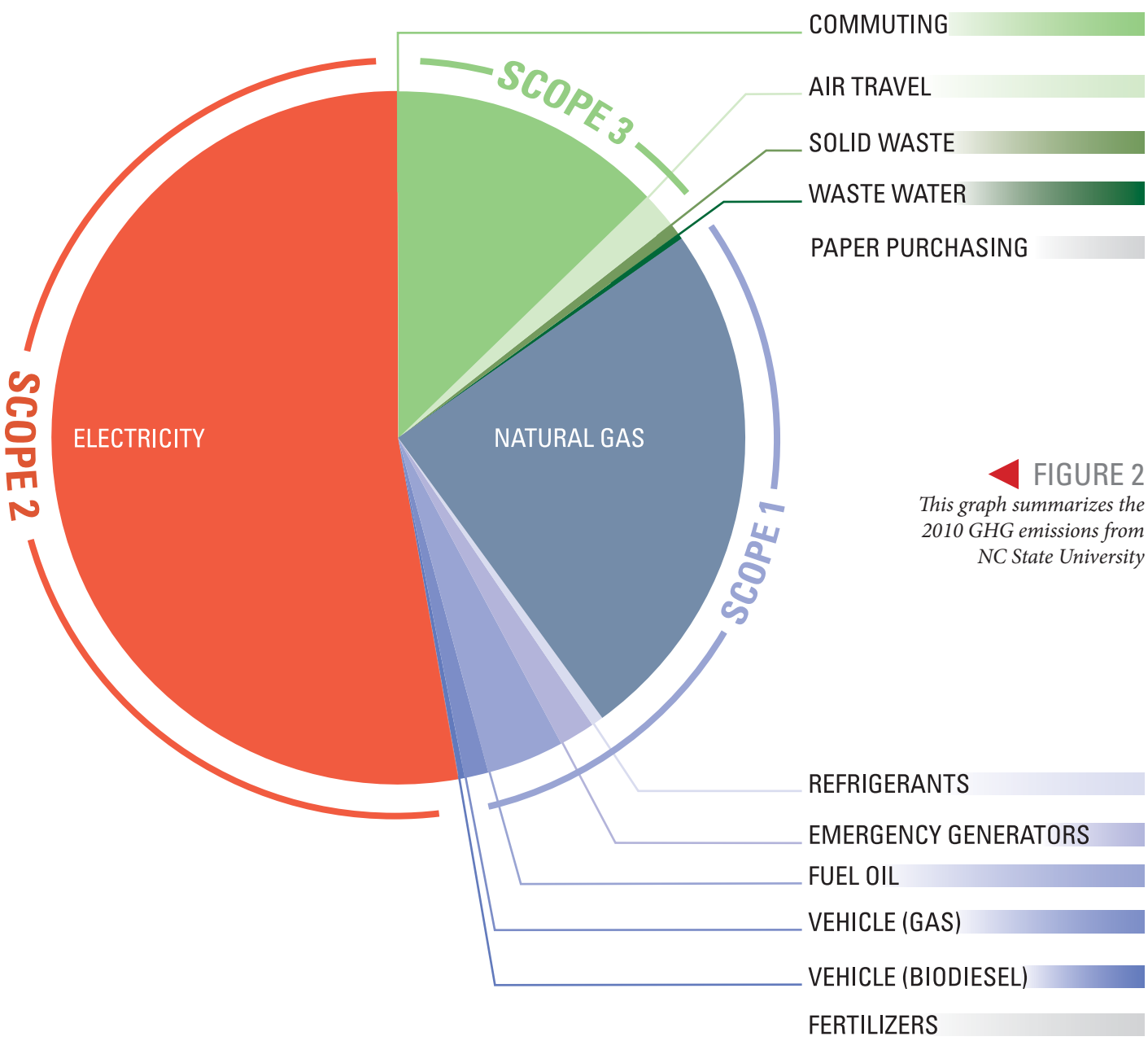


# 2010 GHG INVENTORY SUMMARY

	SOURCE	EMISSIONS (MTCDE)	EMISSIONS (%)
SCOPE 1	NATURAL GAS	62,596	24.90%
	REFRIGERANTS	1,165	0.46%
	EMERGENCY GENERATORS	4,152	1.65%
	FUEL OIL	9,721	3.87%
	VEHICLE (GAS)	2,227	0.89%
	VEHICLE (BIODIESEL)	640	0.25%
	FERTILIZERS	27	0.01%
SCOPE 2	ELECTRICITY	133,314	53.04%
SCOPE 3	COMMUTING	32,274	12.84%
	AIR TRAVEL	4,266	1.70%
	SOLID WASTE	1,315	0.52%
	WASTE WATER	106	0.04%
	PAPER PURCHASING	2	0.001%
OFFSETS	COMPOSTING	(442)	-0.18%
TOTAL		251,364	100.00%

**FIGURE 1**  
This table details the 2010 GHG emissions from NC State University

# 2010 GHG EMISSIONS



**FIGURE 2**  
This graph summarizes the 2010 GHG emissions from NC State University

2008 & 2010 GHG EMISSIONS

FIGURE 3  
This graph summarizes  
GHG emissions for  
2008 and 2010

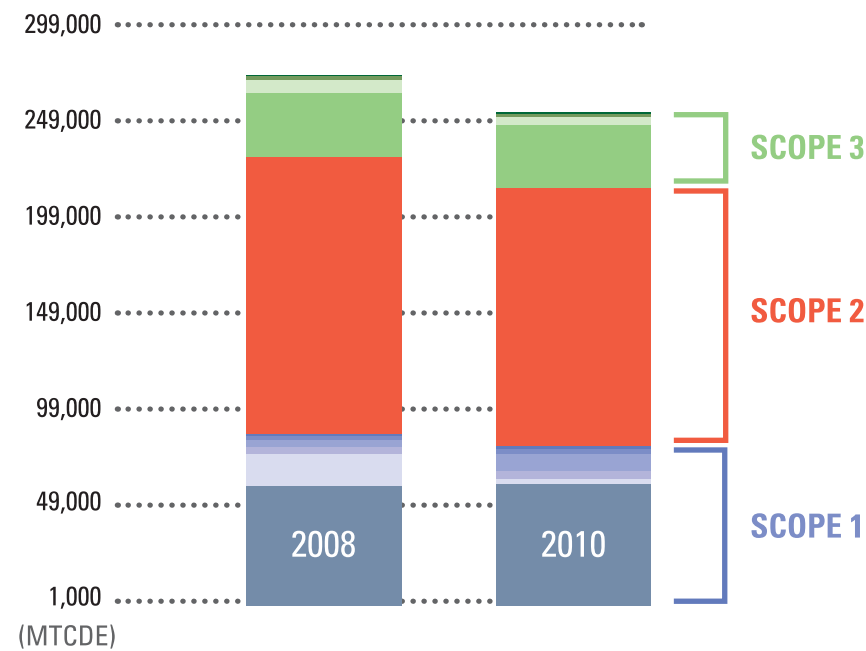


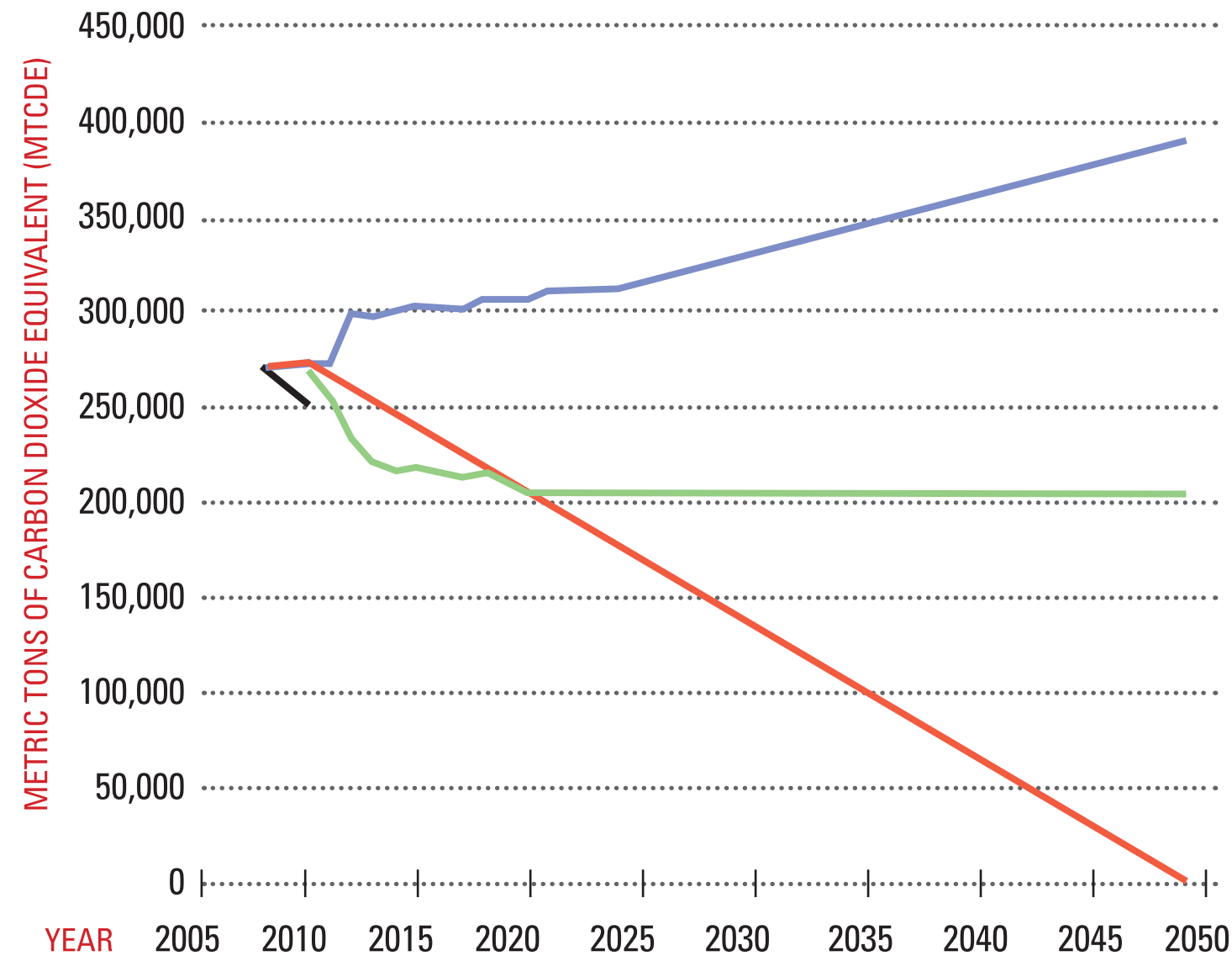
FIGURE 4  
This chart details the  
reduction of GHG  
emissions from  
2008 to 2010

	SOURCE	2008 (MTCDE)	2010 (MTCDE)	ANNUAL DIFF. (%)
SCOPE 1	NATURAL GAS	60,956	62,596	3%
	REFRIGERANTS	15,500	1,165	-92%
	EMERGENCY GENERATORS	3,631	4,152	14%
	FUEL OIL	3,533	9,721	17%
	VEHICLE (GAS)	2,249	2,227	-1%
	VEHICLE (BIODIESEL)	580	640	10%
SCOPE 2	FERTILIZERS	11	27	143%
	ELECTRICITY	143,494	133,314	-7%
	COMMUTING	32,060	32,274	1%
SCOPE 3	AIR TRAVEL	7,330	4,266	-42%
	SOLID WASTE	1,194	1,315	10%
	WASTE WATER	95	106	11%
OFFSETS	PAPER PURCHASING	1	2	24%
	COMPOSTING	(568)	(442)	-22%
TOTAL		270,069	251,364	-6.9%

GHG SCENARIOS WITH CURRENT EMISSIONS

- BUSINESS AS USUAL (BAU)  
NO CHANGE IN PRACTICES BY  
UNIVERSITY OR UTILITY
- NEUTRALITY BY 2050
- BAU LESS PORTFOLIO
- ACTUAL

FIGURE 5  
This graph shows GHG  
emissions for three  
scenarios in addition  
to the actual reduction  
since 2008.



# ACKNOWLEDGEMENTS

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## CONDUCTED & WRITTEN BY

Jeff Hightower - Director of Utility Infrastructure Planning, Facilities Operations  
Braden Ramage and Katelyn Costa - Student Interns, Facilities Operations

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## PHOTOGRAPHY BY

Prachi Gauriar, James Gries, Roger Winstead, Kenna McHugh and Creative Services

## GRAPHS BY

Braden Ramage and Katelyn Costa - Student Interns, Facilities Operations  
Taliessin Schuszler - Student Intern, Sustainability Office

## GRAPHIC DESIGN BY

Taliessin Schuszler

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