

# American Colleges & Universities Presidents' Carbon Commitment



## Greenhouse Gas Inventory

### Narrative

Fiscal Year 2015-16

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# Overview

This report was prepared by Florida Gulf Coast University (FGCU)'s Environmental Health & Safety (EH&S) Department. It covers Fiscal Year 2015-2016 (July 1, 2015-June 30, 2016) or Academic Year 2015-16 (Summer A, B, & C 2015, Fall 2015, Spring 2016). EH&S cooperated with numerous departments and vendors to gather the needed information. We involved students throughout the process by offering service-learning hours and working with faculty members to integrate aspects of the reporting process into class projects.

The American Colleges & Universities Presidents' Carbon Commitment (ACUPCC) signatories must conduct their greenhouse gas inventories consistent with the World Resource Institute's GHG Protocol<sup>i</sup>. The GHG Protocol outlines standard accounting and reporting principles and provides guidance to ensure consistency and accuracy<sup>ii</sup>. We used the operational-control approach to define our institutional boundary. This boundary includes FGCU's main campus and residential facilities, or properties falling under Florida Gulf Coast University's or the Financing Corporations purview. Emissions from the Buckingham Property that FGCU acquired in 2010 are *de minimus* and not included in this report. There are no academic buildings or offices on the property, and planning for the property's future use is still underway.

GHG reports are organized by direct and indirect scopes to avoid double counting and ensure transparency and completeness. Organizations report on Scope 1, 2, and 3, offsets, and Renewable Energy Credits (RECs) as described below and illustrated in Figure 1.

- **Scope 1** emissions are directly created by stationary sources and vehicles that the organization owns. At FGCU stationary sources include propane used in our Fine Arts Complex and dining halls, gasoline and diesel powering vehicles, refrigerants, and fertilizers.
- **Scope 2** emissions are from purchased sources of energy such as electricity, heat, or steam and are used to power buildings and vehicles. At FGCU, we gather this information through our electric bills.
- **Scope 3** emissions are produced as a consequence of an organization's activities but are created at another facility (e.g. food and product purchases, waste, air travel, and other outsourced activities). The ACUPCC requires signatories to report on Scope 3 emissions from air travel and commuting and recommends tracking other Scope 3 emissions whenever possible. FGCU's Scope 3 inventory includes air miles, commuting, and paper purchases and we are constantly working to increase the depth and breadth of our Scope 3 reporting.
- **Offsets** are often called voluntary emission reductions (VERs). Reporting institutions invest in and take credit for projects (e.g. forestry, methane capture, etc.) that reduce global carbon emissions through sequestration. VERs that are real, verifiable, permanent, and additional (i.e. they would not have happened without the organization's investment). Similar to balancing a budget in financial accounting, offsets contribute to balancing the global carbon budget.
- **RECs**- For every megawatt-hour of renewable energy produced, generators may retain the rights or sell the environmental benefits to other organizations.<sup>iii</sup>

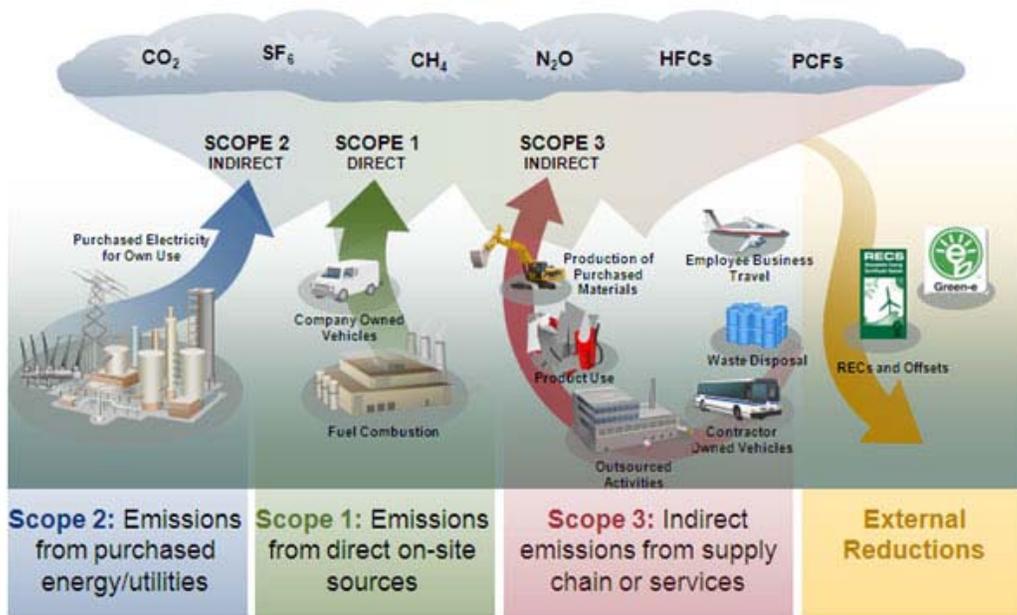


Figure 1

Image from <http://archive.sapsustainabilityreport.com/de/explanatory-notes-de>

We used the University of New Hampshire (UNH)'s 9.0 Campus Carbon Calculator. Florida Gulf Coast University emitted 27,750 Metric Tons of equivalent Carbon Dioxide (eCO<sub>2</sub>MT) for FY 15-16. Figures 2 and 3 illustrate our emissions by scope and source.

Florida Gulf Coast University Overview of FY 15-16 Annual Emissions						
Year -->	2016	Energy Consumption	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	eCO <sub>2</sub>
		MMBtu	kg	kg	kg	Metric Tons
<b>Scope 1</b>	Propane	12,366.0	175,321.9	26.9	1.6	176.5
	Gasoline & Diesel (fleet, shuttles, travel)	7,319.3	527,657.4	89.8	31.1	539.2
	Refrigerants & Chemicals	-	-	-	-	493.5
	Fertilizer	-	-	-	4,943.5	1,473.2
<b>Scope 2</b>	Purchased Electricity	169,162.4	13,810,309.4	1,151.4	78.2	13,862.4
<b>Scope 3</b>	Faculty / Staff Commuting	18,843.6	1,344,552.3	292.0	97.6	1,380.9
	Student Commuting	90,324.2	6,444,930.4	1,399.6	468.0	6,619.4
	Directly Financed Air Travel	16,268.4	3,172,831.7	31.5	36.2	3,184.4
	Study Abroad Air Travel	3,659.6	713,729.0	7.1	8.1	716.3
	Paper	-	-	-	-	68.3
	Electricity Transportation & Distribution Losses	11,374.8	928,633.9	77.4	5.3	932.1
	<b>Offsets and Carbon Sequestration &amp; Storage</b>	Additional				
	Non-Additional					-
<b>Totals</b>	<b>Scope 1</b>	19,685.3	702,979.3	116.8	4,976.1	2,682.3
	<b>Scope 2</b>	169,162.4	13,810,309.4	1,151.4	78.2	13,862.4
	<b>Scope 3</b>	140,470.6	12,604,677.2	1,807.5	615.1	12,901.5
	All Scopes	329,318.3	27,117,965.9	3,075.7	5,669.5	29,446.2
	All Offsets					(1,696.0)
	<b>Net Emissions:</b>					<b>27,750.2</b>

Figure 2

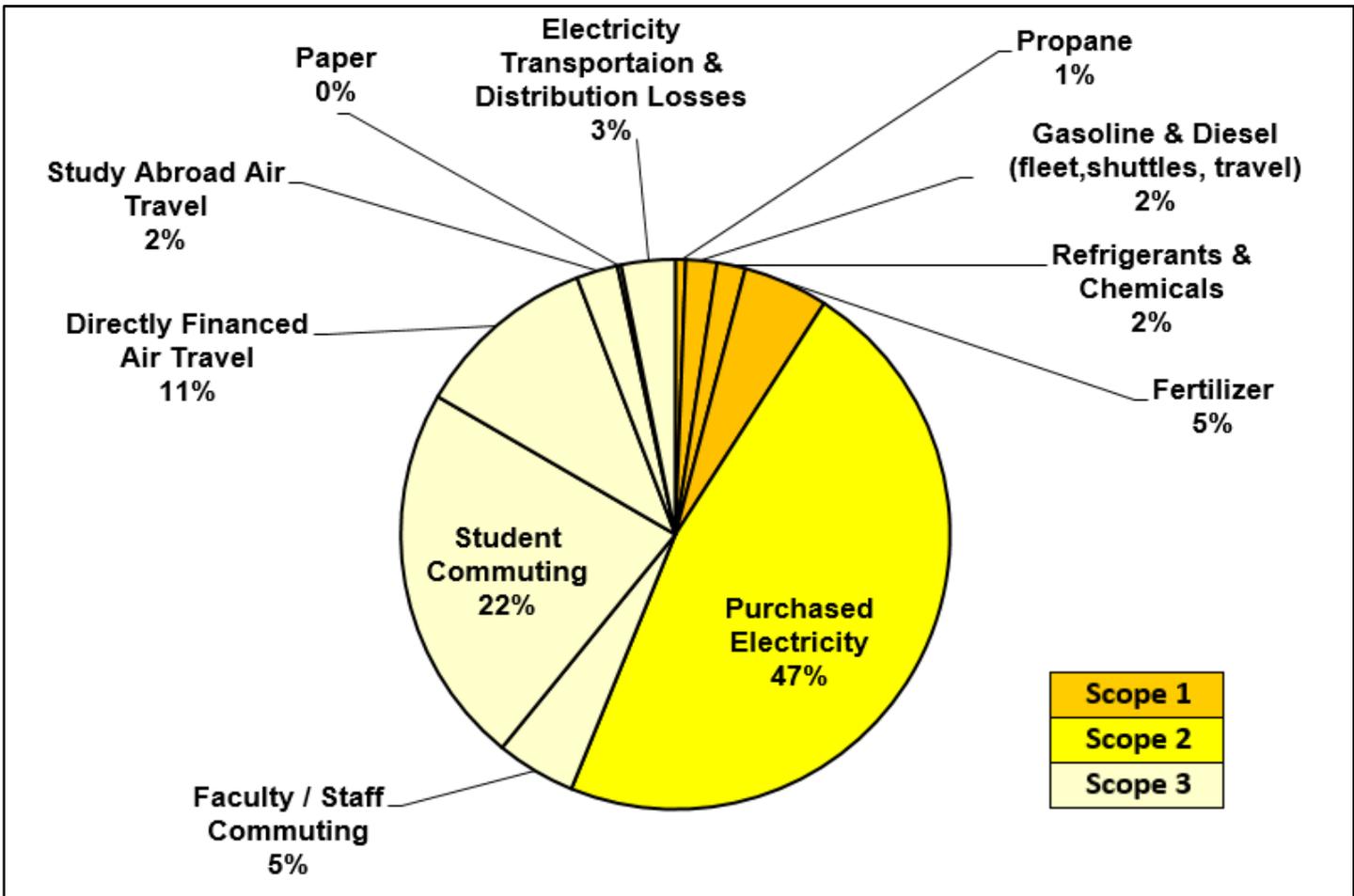


Figure 3

## Summary of Emissions by Scope

### Scope 1

#### Attributable Solar

Florida Gulf Coast University's 15-acre Solar Field produced 2,791,496 kWh for which we retained the renewable attributes. Without Solar Field, FGCU would have emitted an additional 811 eCO<sub>2</sub>MT. That amount of electricity savings is equivalent to the amount needed to power 120 average U.S. homes for a year.<sup>iv</sup>

#### Propane- 1% of total emissions

FGCU used a total of 33,803 gallons of propane, 95% of which was used in the dining halls. The remaining 5% was used for housing, main campus, and the Fine Arts Complex.

#### Gasoline & Diesel (fleet, shuttles, travel)- 2% of total emissions

The Physical Plant provided records of the amount used from their on-site fueling station. We also pulled a budget expense report for all departments university-wide to account for off-site fueling. We combined the amount of gasoline

and diesel that powered FGCU's vehicles with contracted Dolphin shuttles and the Coastal Village shuttle. Typically, contracted services are accounted for in Scope 3. However, attributing passenger miles to shuttles as the UNH Campus Carbon Calculator requires is not feasible. It was more accurate to obtain the amount of gasoline and diesel that powered our shuttles and include it with our vehicle fleet's gasoline and diesel emissions.

### Refrigerants and Chemicals- 2% of total emissions

The Physical Plant provided our department with the log of refrigerants used campus-wide for our Chiller Plant, refrigerators, freezers, and modular air conditioning systems.

### Fertilizer- 5% of total emissions

Florida Gulf Coast University is landscaped with native species, which minimizes the need for fertilizers. FGCU only applies fertilizers in select areas where it is absolutely necessary. These areas include our Recreation and Athletic Fields and the Library Lawn.

## Scope 2

### Purchased Electricity- 47% of total emissions

Purchased electricity accounts for almost half of our institutional footprint. Florida Power & Light was able to provide us with our custom fuel mix (shown in Figure 4), and we entered that into the Campus Carbon Calculator as opposed to using the regional average.<sup>v</sup>

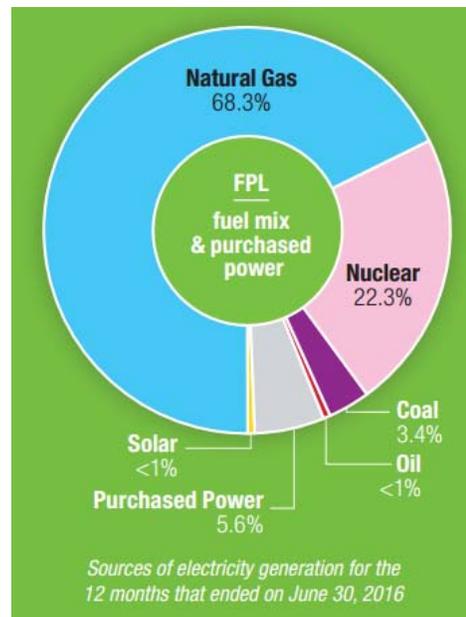


Figure 4

## Scope 3

### Employee & Student Commuting- 27% of total emissions

We calculated commuting miles for employees by using parking pass and zip code data from Fiscal Year 2015-16. We calculated commuting miles for students by using parking pass, zip code, and registration data from Academic Year 2015-16.

Florida Gulf Coast University is located in Lee County, Florida, a suburban community wherein single occupancy vehicle travel is the most widely used form of transportation. Only one public bus route services our campus and the amount of FGCU riders are minimal. Wheeli, a student-to-student carpooling network, also operates on our campus. This is the first year that Wheeli has been a transportation option for students, and it has been difficult to attract the critical mass of users needed in order for the system to function. As such, there are very few successful rideshare matches and we cannot track the amount of people carpooling to campus at this time. Realistically, nearly all campus community members with parking passes travel to campus by car alone.

Employees Car Miles

We combined the parking pass and zip code data sent by Parking Services with employee classification data from Human Resources (HR) into a single spreadsheet and used Google Maps to approximate the average distance to campus from each zip code. HR provided start dates for new employees and end dates for employees severing ties with the university and this information helped us adjust the amount of assumed trips to campus as illustrated in the table below. We estimated the amount of trips that employees took to campus based on their employee classification and months worked as follows:

Employee Classification	Abbreviation	Assumed trips per month	Assumed Annual Trips to Campus	Basis of Assumption
Administrative & Professional	A/P	18.6	223	<ul style="list-style-type: none"> <li>Works 5 days a week 12 months a year</li> <li>13 holidays</li> <li>accrue 6.77 hours of annual leave biweekly</li> <li>accrue 4 hours of sick leave biweekly</li> <li><b>Assuming the average A/P employee travels to campus 5 days a week, 44.5 weeks of the year</b></li> </ul>
Administrative & Professional Part Time	A/P P/T	11.2	134	<ul style="list-style-type: none"> <li>Varies by job function</li> <li>13 holidays</li> <li>accrue 6.77 hours of annual leave biweekly</li> <li>accrue 4 hours of sick leave biweekly</li> <li><b>Assuming the average A/P P/T employee travels to campus 3 days a week, 44.5 weeks a year</b></li> </ul>
Adjunct	Adjunct	6.7	80	<ul style="list-style-type: none"> <li>Travel to campus to teach based on course load.</li> <li>Adjuncts are ineligible for benefits such as paid holidays, annual leave, sick leave, and administrative leave.</li> <li>Assuming average adjunct load is 2-3 courses per semester</li> <li>In general adjuncts do not teach summer courses very often</li> <li><b>Assuming the average Adjunct travels to campus 2.5 times a week for 32 weeks</b></li> </ul>
Executive Service	Exec Serv	18.6	223	<ul style="list-style-type: none"> <li><b>Same as A/P</b></li> </ul>
Faculty 9 month	Fac 9 mo	13.3	160	<ul style="list-style-type: none"> <li><b>Assuming the average Fac 9 mo works 5 times a week during the Fall and Spring terms (32 weeks a year)</b></li> </ul>
Faculty 10-12 month	Fac 10-12	18.6	223	<ul style="list-style-type: none"> <li><b>Same as A/P</b></li> </ul>
Faculty Administrators - 12 month	FacAdm12	18.6	223	<ul style="list-style-type: none"> <li><b>Same as A/P</b></li> </ul>
Faculty Administrator	FacAdm9	13.3	160	<ul style="list-style-type: none"> <li><b>Assuming the average FacAdm9 works 5 times a week during the Fall and Spring terms (32 weeks a year)</b></li> </ul>

<b>Other Personnel Services Hourly</b>	OPS Hrly	12.4	149	<ul style="list-style-type: none"> <li>• OPS hourly workers are hired for a temporary period to accomplish a short term or intermittent tasks.</li> <li>• OPS employees are ineligible for benefits such as paid holidays, annual leave, sick leave, and administrative leave.</li> <li>• The majority of workers fall under the ACA eligible benefits amount of working 29 hours a week or less</li> <li>• OPS employees are scheduled to work on the 13 campus holidays</li> <li>• <b>Assuming the average OPS Hrly worker 3 days week for 49.5 weeks a year</b></li> </ul>
<b>Other Personnel Services Part time</b>	OPS PT	12.4	149	<ul style="list-style-type: none"> <li>• Same as OPS Hrly</li> </ul>
<b>Other Personnel Services Salary</b>	OPS Sal	12.4	149	<ul style="list-style-type: none"> <li>• Same as OPS Hrly</li> </ul>
<b>Support Personnel /Exempt Full time</b>	SP/E FT	19	228	<ul style="list-style-type: none"> <li>• Works 5 days a week 12 months a year</li> <li>• 13 holidays</li> <li>• accrue 4 hours of annual leave hours biweekly</li> <li>• accrue 4 hours of sick leave biweekly</li> <li>• <b>Assuming the average SP/E FT employee travels to campus 5 days a week 45.5 weeks of the year</b></li> </ul>
<b>Support Personnel /Non Exempt Full time</b>	SP/NE FT	19	228	<ul style="list-style-type: none"> <li>• Works 5 days a week 12 months a year</li> <li>• 13 holidays</li> <li>• accrue 4 hours of annual leave hours biweekly</li> <li>• accrue 4 hours of sick leave biweekly</li> <li>• <b>Assuming the average SP/E FT employee travels to campus 5 days a week 45.5 weeks of the year</b></li> </ul>
<b>Support Personnel /Non Exempt Part time</b>	SP/NE PT	11.4	137	<ul style="list-style-type: none"> <li>• Varies by job function</li> <li>• 13 holidays</li> <li>• (accrue 4 hours of annual leave hours biweekly</li> <li>• accrue 4 hours of sick leave biweekly</li> <li>• <b>Assuming the average SP/NE PT employee travels to campus 3 days a week, 45.5 weeks a year</b></li> </ul>
<b>Student</b>	Student	0	0	<ul style="list-style-type: none"> <li>• There were only two people with this classification</li> <li>• <b>Assuming that they were working on days when they travel to campus for class and were accounted for in the Student Car Miles section of this report</b></li> </ul>

Some employees did not have local zip codes on file with HR. We assumed that these employees traveled 16 miles to get to campus because this was the average amount of miles traveled by all other employees. We entered the sum total of the employee commuter miles traveled into the University of New Hampshire’s Campus Carbon Calculator (version 9.0)’s “Input\_Commuter” tab under “Faculty” as if it were one person collectively traveling all of those miles.

### Student Car Miles

Environmental Health & Safety worked with Business Technology Services (BTS) and Parking Services to create a report from our Cognos and BOSSCARS databases. The report pulled all commuter students’ zip codes with parking passes issued between June 1, 2014 and May 31, 2016. (Since student passes are valid for two years, this range of dates ensured that we accounted for all students with valid passes during our reporting period). BTS created a hierarchy of zip codes by type so we would be more likely to capture students’ local zip codes as opposed to their parent or guardian’s zip codes.

Along with the zip codes, BTS pulled registration information so we could determine how many trips each student took to campus. We excluded classes taken virtually or off campus and final exams. When students dropped a course less than halfway through the semester, we did not count any trips associated with that course that semester. To balance this, we counted trips for students that dropped a course after the midpoint of the semester as if they attended the entire semester.

Many students provide the university with a parent or guardian's address instead of their local address. We assumed that students without local addresses traveled 21-22 miles to campus, the average distance traveled by students with local addresses on file. We entered the sum total of the student commuter miles traveled into the University of New Hampshire's Campus Carbon Calculator (version 7.0)'s "Input\_Commuter" tab, as if it were one person collectively traveling all of those miles.

### **Directly Financed Air Travel- 11% of total emissions**

We used <http://www.milecalc.com/mileage-calculator/>, which uses great-circle distance, to calculate all of the air miles for this report. We gathered air mile data through Procurement, the Office of Student Involvement, and University Advancement as described below.

#### Procurement

Procurement Services sent us Fiscal Year 2015-16 Travel Authorization Request (TAR) data that they track in Excel. Air Travel was sorted and separated from ground travel and all canceled TARs were removed.

At present, Procurement only tracks the destination city in the TARs spreadsheet. Other flight itinerary details, such as the city of origin and transfer, are not available in a traceable digital format. As such, we made following assumptions and took the following actions to estimate our air miles:

- Fort Myers International Airport (RSW), which is located six miles from our institution, was the origin of all flights unless otherwise stated.
- All sites from which RSW services direct flights were direct flights.
- For all destination cities that RSW does not service directly, we used the city or cities through which those flights would have most likely been routed according to Google Flight searches.
- We assumed that travelers flew into the capital cities in instances that international destinations only listed a country's name.

Many departments such as Admissions (for recruitment) and Athletics (for recruitment and team travel) file "Blanket TARs" which cover multiples trips. The EH&S department worked with Admissions and a handful of other offices to pull hard copies of receipt records to find the itinerary of each trip covered by the blanket TAR. Athletics provided detailed flight miles for each trip compiled by their travel agent.

#### Office of Student Involvement

Registered Student Organizations (RSOs) must document their travel through an online portal managed by the Office of Student Involvement (OSI). The OSI sent us detailed flight itineraries for all students traveling with their RSO during our reporting period.

#### University Advancement

University Advancement tracked air travel funded and provided us with detailed itineraries for each trip.

### **Study Abroad Air Travel- 2% of total emissions**

FGCU students may study abroad through the International Services Office or the Lutgert College of Business. We gathered the needed data from these departments as described below.

#### International Services Office

The International Services Office sent us the flight itineraries and quantity of travelers for all of the faculty-led study abroad programs for Academic Year 2015-16. Their office does not have flight records for non-FGCU provider programs and we made the same assumptions as described above for Directly Financed Travel.

[Lutgert College of Business](#)

The Lutgert College of Business sent us the details for all students that participated in exchange programs through their college for Academic Year 2014-15. In instances where students did not submit detailed flight itineraries, we assumed that flights departed from RSW and transferred through major typical airports.

**Paper- 0% of total emissions**

Office Depot provided us with a report of all paper purchases during our reporting period. The details are below.

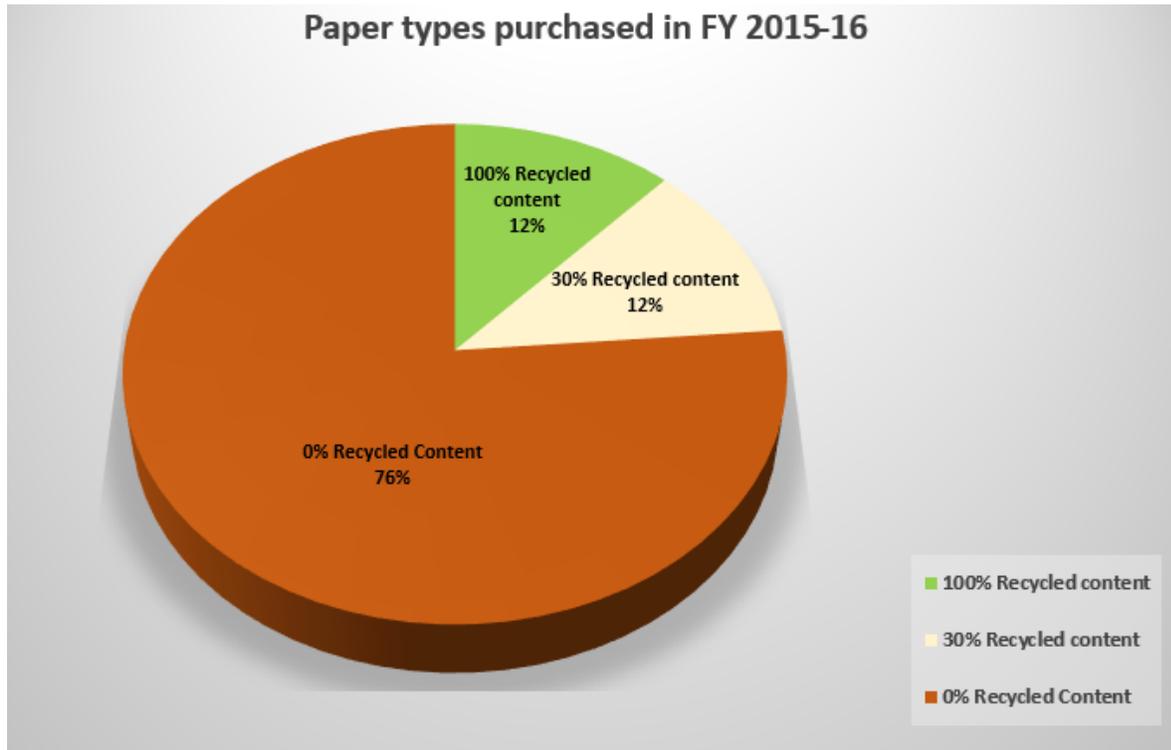


Figure 5

**Electricity Transportation and Distribution Losses- 3% of total emissions**

UNH's Campus Carbon Calculator automatically calculates the amount of energy lost while transporting purchased electricity to campus and this comprises 3% of our total carbon footprint.

## Carbon Sequestration & Storage

[Tree Campus USA and i-Tree Canopy Mapping](#)

Over half of FGCU's 800 acres are undeveloped. As the development of this part of Lee County accelerates, preserving and enhancing our campus' tree canopy becomes increasingly important. Equally important, is the task of understanding the natural capital and economic value of our campus trees.

FGCU's Physical Plant has been working with faculty and students to gather the data needed to understand the inherent value of our campus vegetation. The Physical Plant collaborates with faculty members who integrate service-learning components into their courses as well as individual student leaders and paid interns to map our campus canopy. Tools such as [Project BudBurst](#) and [i-Tree Canopy](#) enable us to quantify the annual carbon sequestration and other valuable

attributes of our preserved and replanted areas. Figure 6 shows 3000 out of over 19,000 data points used to conduct our tree canopy analysis.



**Figure 6**

The tools that the Physical Plant uses are sophisticated enough to differentiate between the amount of carbon sequestered annually versus the CO<sub>2</sub> stored in trees. We entered the amount sequestered during our reporting period in the Forest Preservation column of the UNH Campus Carbon Calculator.

Newly planted areas are made possible thanks to our Tree Campus USA efforts. Each year, the Tree Campus USA Committee hosts three large-scale planting events that engage over 100 service-learning students. These events include Make A Difference Day in the Fall, Campus Beautification Day/Florida Arbor Day Celebration early in the Spring, and Eagles' Earth Day of Action at the end of the Spring semester. These service-learning and research initiatives have proven successful; the carbon sequestered by our forest preservation efforts is equivalent to adding two new solar fields to FGCU's campus.

## Progress toward Carbon Neutrality to Date

Florida Gulf Coast University (FGCU) signed the American Colleges & Universities Presidents' Carbon Commitment (ACUPCC) in 2007. In doing so, we pledged to develop a comprehensive plan to achieve carbon neutrality as soon as possible. Second Nature, the ACUPCC's direct support organization, defines carbon neutrality as, "having no net greenhouse gas (GHG) emissions, to be achieved by eliminating net GHG emissions, or by minimizing GHG emissions as much as possible, and using carbon offsets or other measures to mitigate the remaining emissions."<sup>vi</sup>

Upon signing the Commitment, FGCU set a climate neutrality date of 2050 and agreed to immediately take the following tangible actions:

- Establish a policy that all new campus construction will be built to the U.S. Green Building Council's LEED Silver standard or higher

- Adopt an energy-efficient appliance purchasing policy
- Encourage use of and provide access to public transportation for all faculty, staff, students and visitors at our institution

The tangible actions established by FGCU upon signing the agreement were our first step to taking more carbon out of the earth’s atmosphere than we put into it on an annual basis.

We established 2010 as our baseline year and set interim goals to decrease our net emissions by 5% by 2015 and 10% by 2020. Since then, our overall net change in emissions has increased by 3%, missing our 2015 interim goal and not making adequate progress toward our 2020 goal. The following graph illustrates net change in net emissions by scope.

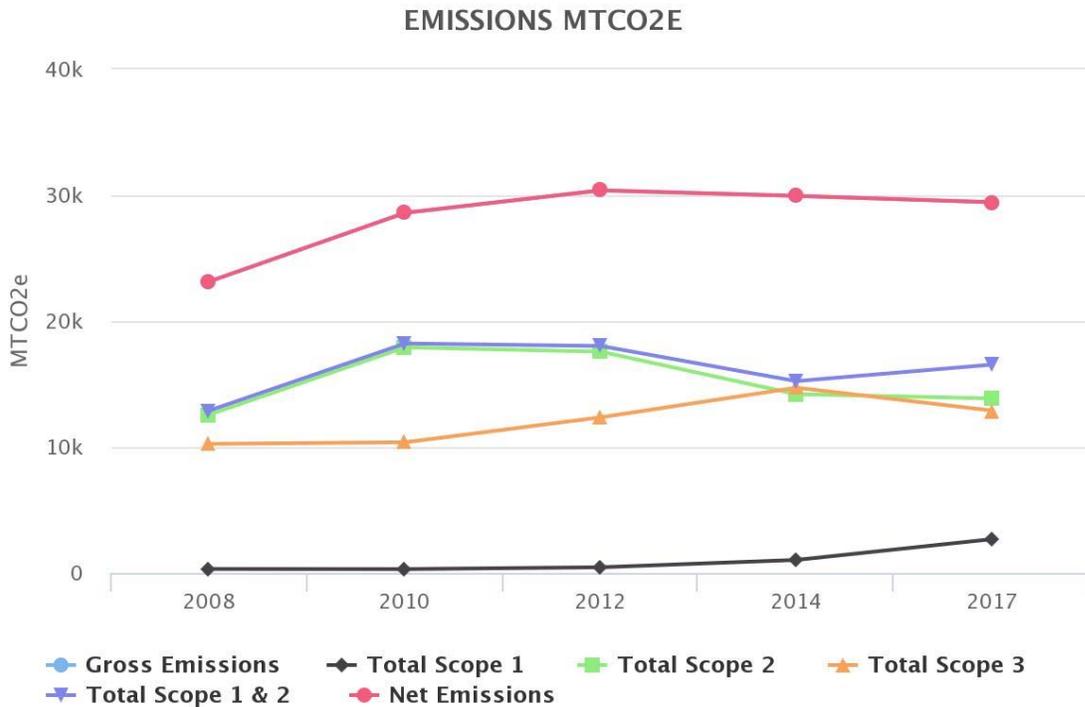


Figure 7

Despite not meeting our 2015 target and falling behind on our 2020 goal, FGCU can be proud of how efficiently we have grown. Our net greenhouse gas emissions per 1,000 square feet of building space has decreased 27% since 2010 and our net emissions per fulltime enrollment (FTE) has decreased by 22%. Figures 8 and 9 illustrate this progress.

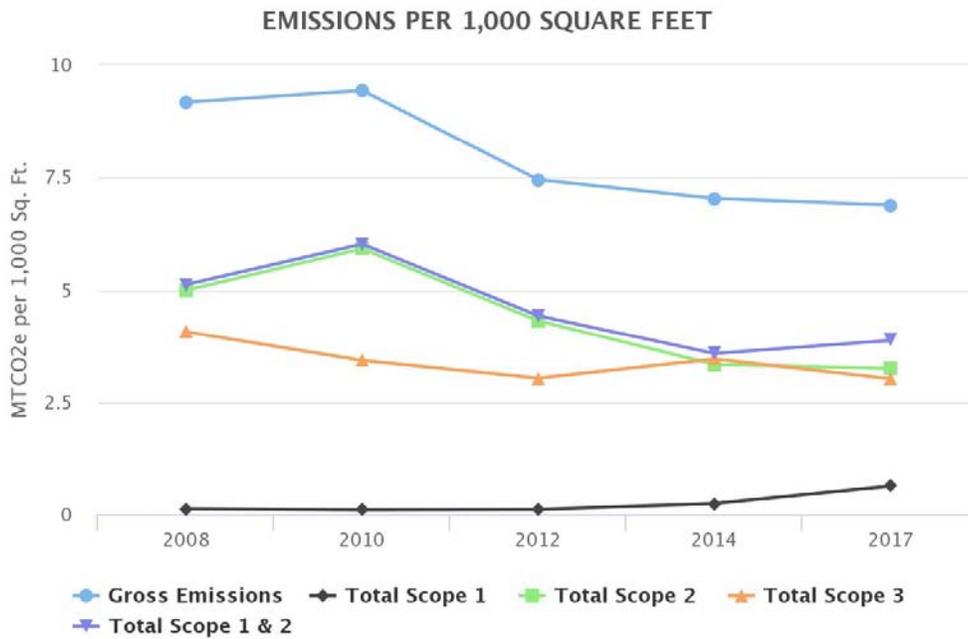


Figure 8

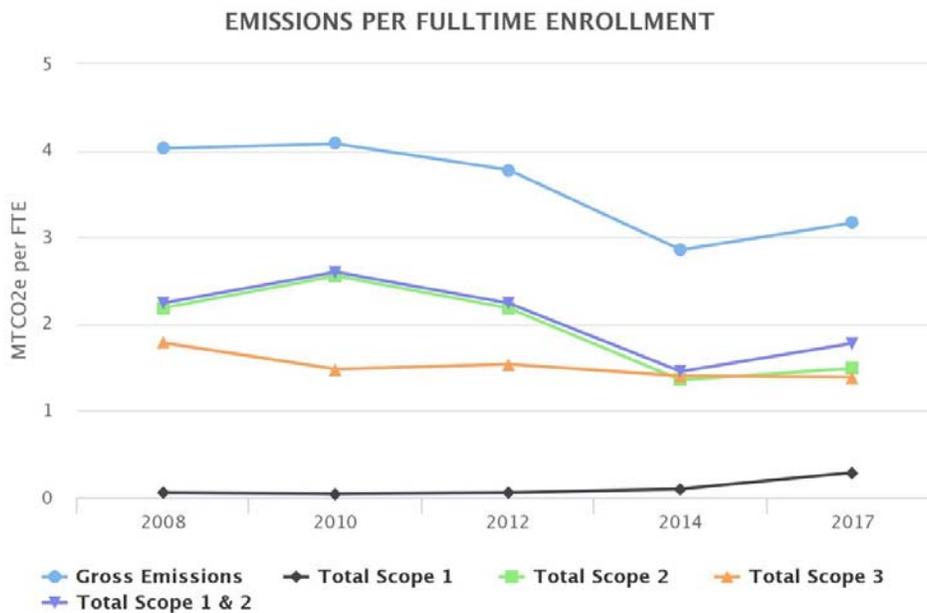


Figure 9

<sup>i</sup> American Colleges & Universities Presidents' Climate Commitment (2012). "Implementation Guide Version 2.1"

[http://www.presidentsclimatecommitment.org/files/documents/ACUPCCIImplementationGuide\\_V2.1.pdf](http://www.presidentsclimatecommitment.org/files/documents/ACUPCCIImplementationGuide_V2.1.pdf)

<sup>ii</sup> World Resource Institute and World Business Council for Sustainable Development (2004). "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard Revised Edition" ISBN 1-56973-568-9 <http://www.ghgprotocol.org/files/ghgp/public/ghg-protocol-revised.pdf>

<sup>iii</sup> Environmental Protection Agency (2015). "Renewable Energy Certificates (RECs)" <http://www.epa.gov/greenpower/gpmarket/rec.htm>

<sup>iv</sup> Estimate provided via the Environmental Protection Agencies Greenhouse Gas Equivalency Calculator available at <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

<sup>v</sup> Florida Power and Light 2016 Fuel Mix retrieved from <https://www.fpl.com/news/2016/energy-notes-0916.pdf>

<sup>vi</sup> Definition available at <http://secondnature.org/climate-guidance/frequently-asked-questions/>