May 28, 2014

FY2013 Go-Green Presentation

The University of Alabama

Presented by: Kevan Will & Tom Gugert

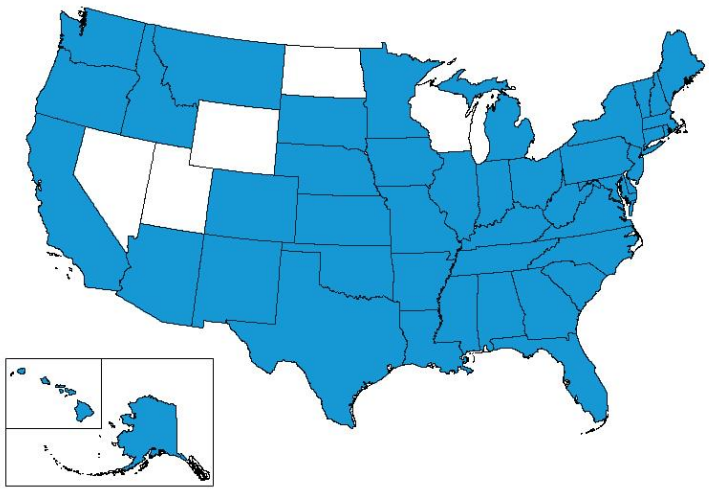
sightlines

Who partners with Sightlines?

Robust membership includes colleges, universities, consortia, and state systems

Serving the Nation's Leading Institutions:

- 19 of the Top 25 Colleges*
- 17 of the Top 25 Universities*
- Flagship Public Universities in 32 States
- 8 of the 12 Ivy Plus Institutions
- 12 of the 14 Big 10 Institutions
- 8 of 13 Selective Liberal Arts Colleges



* U.S. News 2014 Rankings

Sightlines is proud to announce that:

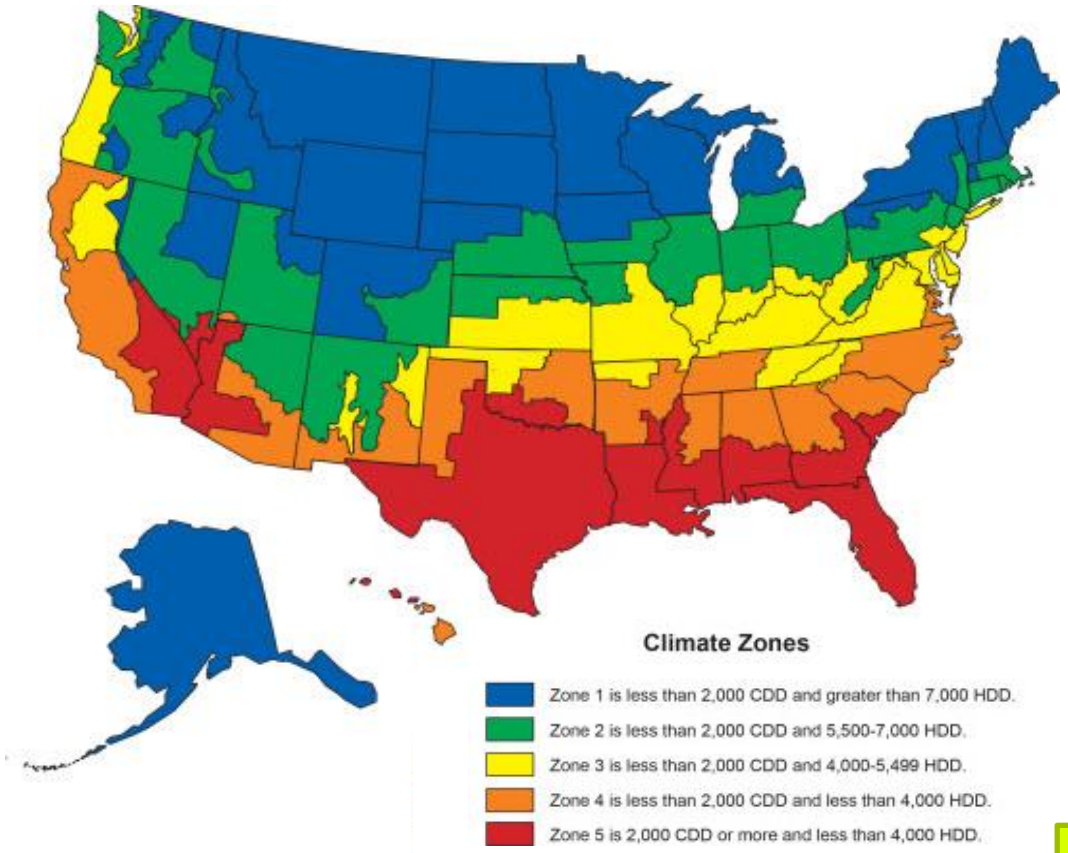
- 450 colleges, universities, and K-12 institutions are Sightlines clients including over 300 ROPA members
- 93% of ROPA members renewed in 2013
- We have clients in 43 states, the District of Columbia, and Canada
- 57 institutions became Sightlines members in 2013

Sightlines advises state systems in:

- Alaska
- California
- Connecticut
- Hawaii
- Maine
- Massachusetts
- Minnesota
- Mississippi
- Missouri
- New Hampshire
- New Jersey
- New York
- Oregon
- Pennsylvania
- Texas

Comparative peers for Alabama

To be used in benchmarking



Institution
Arizona State University
Clemson University
George Mason University
Michigan State University
The University of Dayton
University of Arkansas
University of Tennessee
Virginia Commonwealth University

Go-Green Measurement and Analysis Members

- Sightlines has approximately 50 Go-Green Members
- Approximately two-thirds are private
- Approximately one-third are public
- Approximately two-thirds have signed the ACUPCC
- Approximately forty percent are Charter Signatories

Comparative Considerations

Size, technical complexity, region, geographic location, and setting are all factors included in the selection of peer institutions

Campus profile summary

	Average Building Size
Peer Average	55,260 GSF
Alabama	53,097 GSF

Similar Size Buildings =
Comparable effect on energy use

	Weighted Reno. Age
Peer Average	33 Years
Alabama	19 Years

Younger Age Buildings=
More energy efficient

	FY13 Backlog $/GSF
Peer Average	$77.63 / GSF
Alabama	$39.23 / GSF

Deferred Maintenance=
Lower deferred maintenance indicates fewer energy exposures

Note that, due to addition of new space, energy exposures are likely higher in the oldest campus buildings

	5-Year Avg. Capital $/GSF
Peer Average	$5.08 / GSF
Alabama	$3.74 / GSF

Lower Capital Spending =
Less impact on energy opportunities

Note that Capital $ excludes New Construction and Non-Facilities projects

Key observations at Alabama

Significant growth in campus footprint since 04 increases emissions

- Emissions increase due to more Activity, but are mitigated due to a greater Avoidance from space utilization and decreased Intensity

Regional grid more carbon intense than peers

- Utility emissions are increasing but not at the same rate of growth as gross consumption, due to a cleaner eGrid over time

Refined analysis shows shift in commuting profile

- Residents of nearby off campus apartments now included in commuter population, resulting in more commuters utilizing more carbon-free modes

Sources of campus emissions

Collected carbon emissions at Alabama

Scope 1 – Direct GHGs

- On-Campus Stationary (Natural Gas)
- Vehicle Fleet
- Agriculture/Fertilizer
- Refrigerants

Scope 2 – Upstream GHGs

- Purchased Electricity

Scope 3 – Indirect GHGs

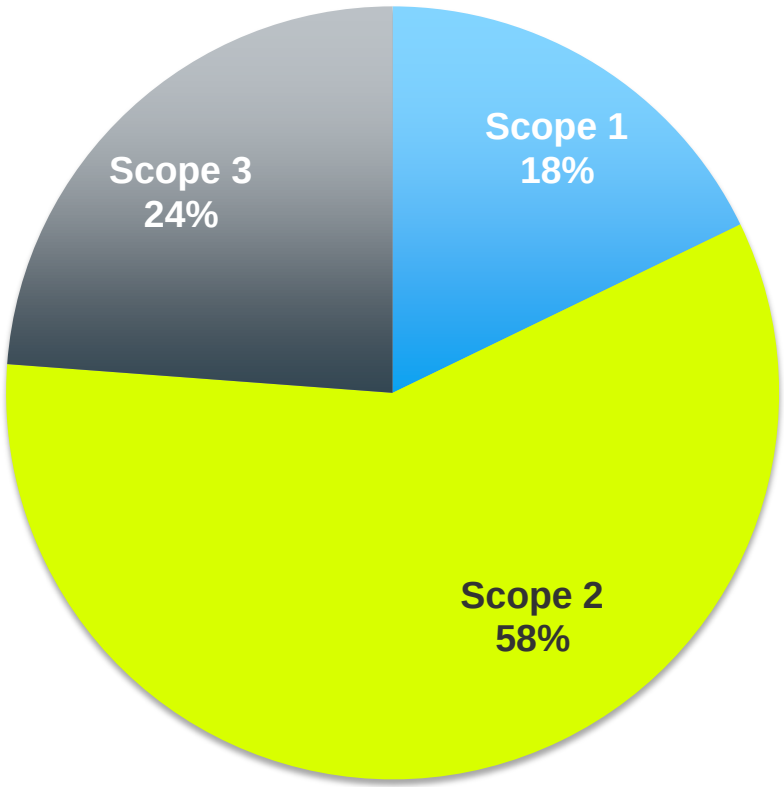
- Faculty/Staff/Student Commuting
- Directly Financed Air Travel, Ground Travel
- Study Abroad Travel
- Solid Waste
- Wastewater
- Paper Purchases
- Transmission & Distribution Losses

Increasingly difficult to control and/or mitigate

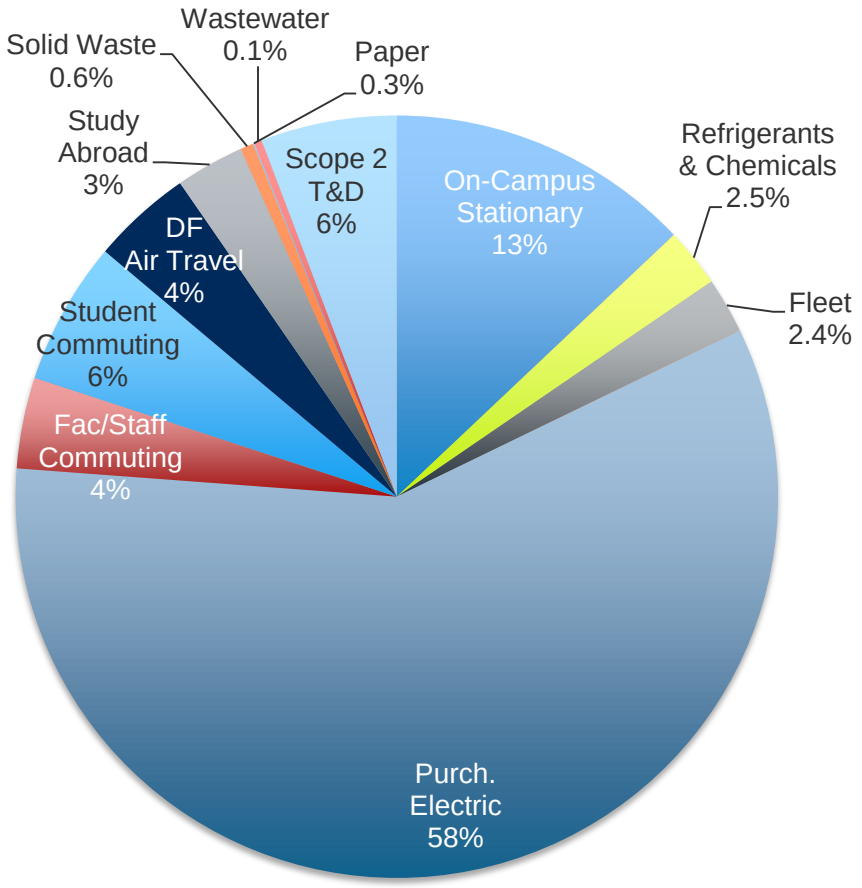
FY2013 carbon emissions summary

Alabama's emissions driven by Scope 2 electricity

Carbon Emissions by Scope



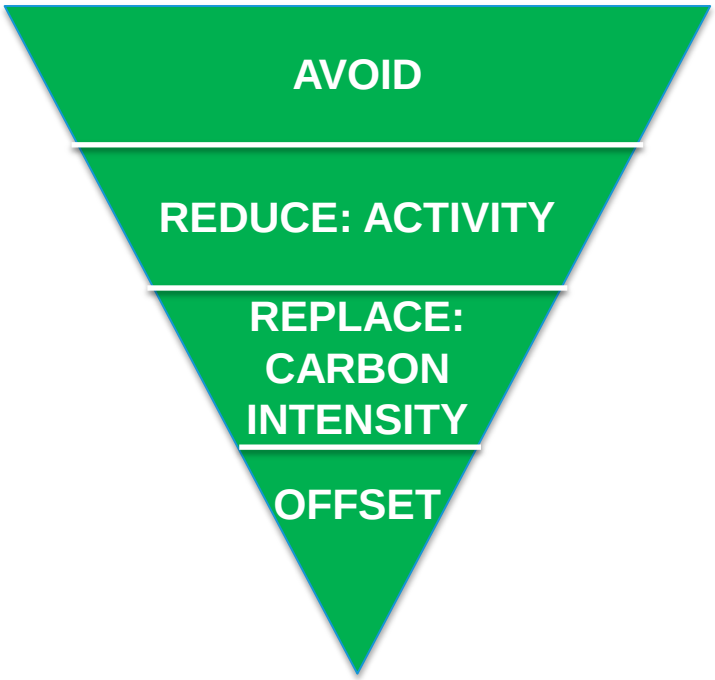
Carbon Emissions by Source



Carbon Mitigation

Measuring the carbon management hierarchy

Tracking progress against neutrality and interim targets



Carbon Mitigation Portfolios:

1. AVOIDANCE
   - Preventing additional activities before they start – a key indicator of future performance
   - **Example:** Increasing space utilization instead of building or acquiring new space

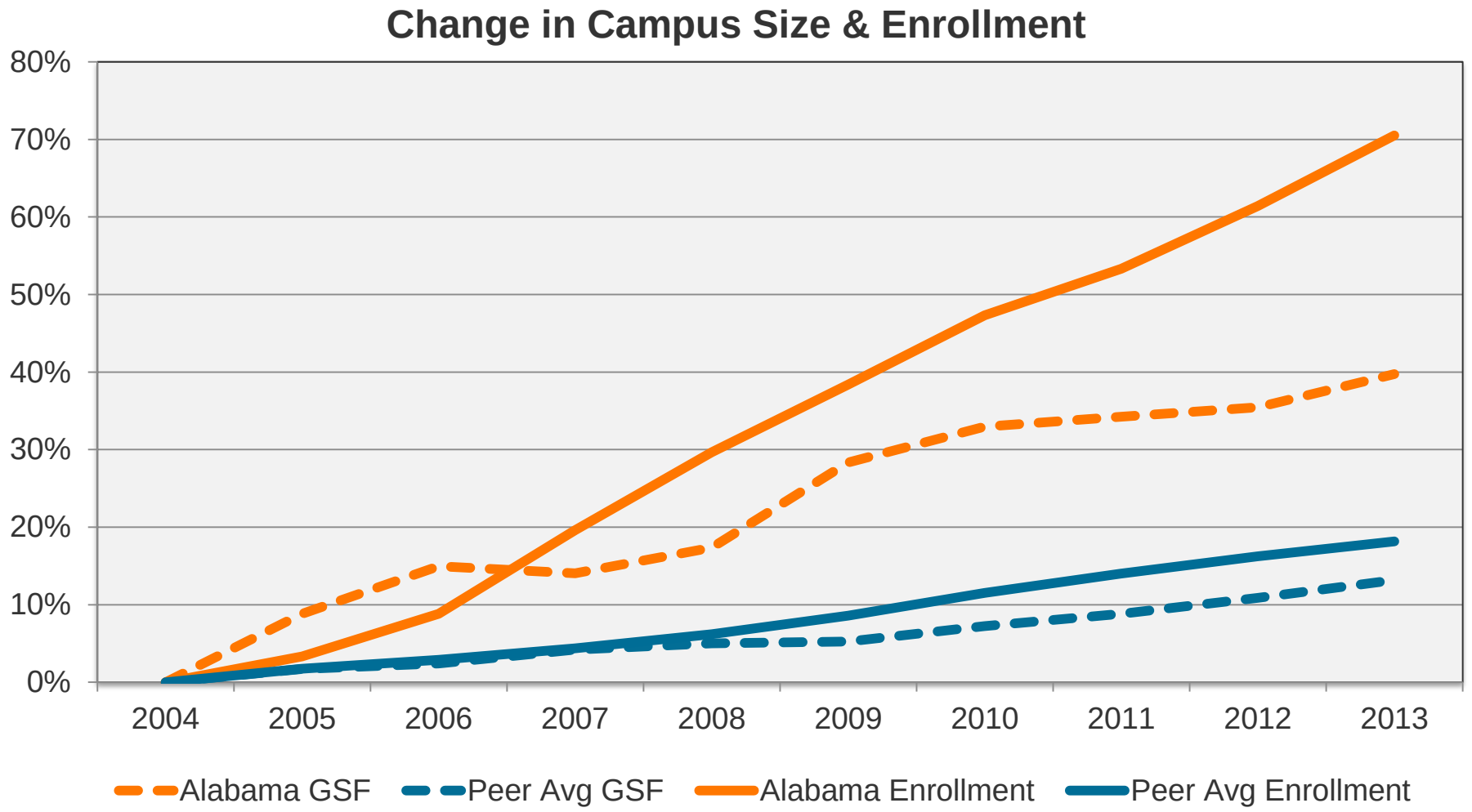
2. REDUCE: ACTIVITY
   - Reducing an existing level of activity
   - **Example:** Fewer BTUs consumed; fewer miles traveled

3. REPLACE: CARBON INTENSITY
   - Lessening the carbon intensity of activities
   - **Example:** Fuel switching (oil > natural gas; introducing attributed renewables); commuting mode mix (drive alone > carpool)

4. OFFSETS
   - Utilizing carbon offsets to neutralize “unavoidable” GHGs
   - **Example:** RECs; sequestration; retail offsets

Physical profile impact on Avoidance

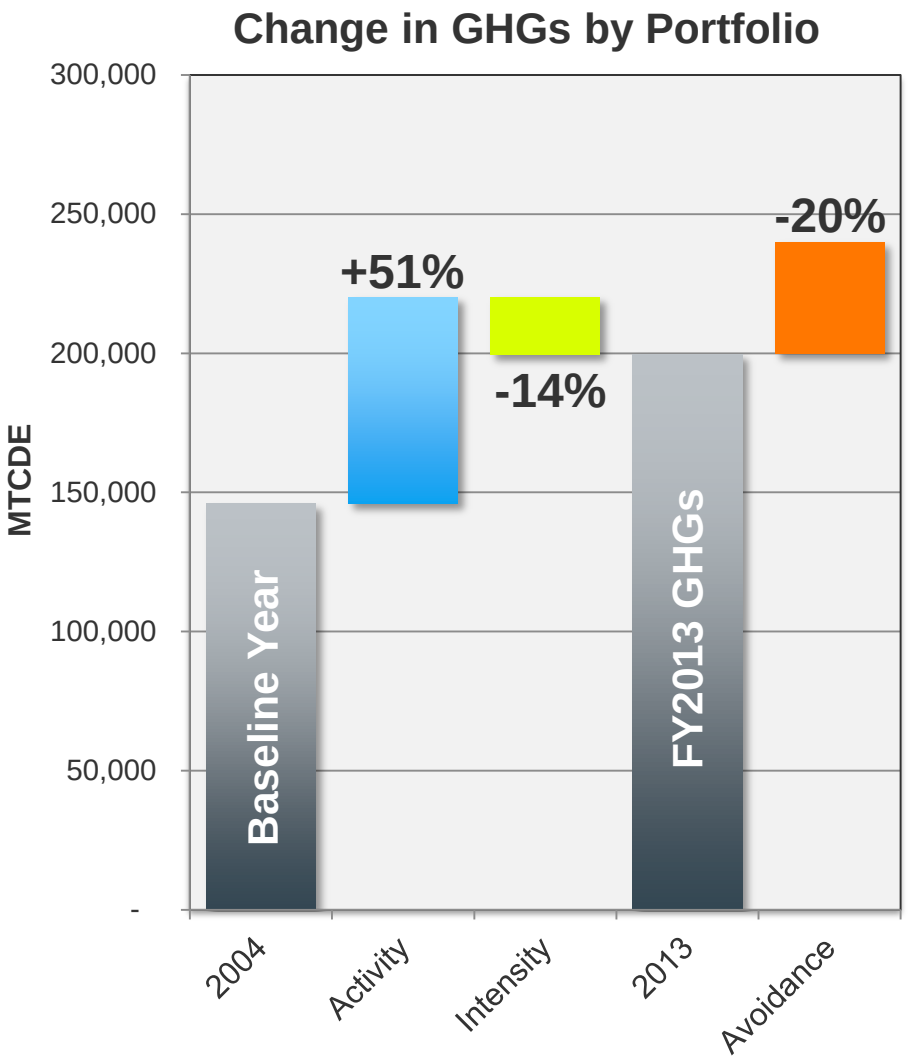
Increasing space utilization avoids potential emissions

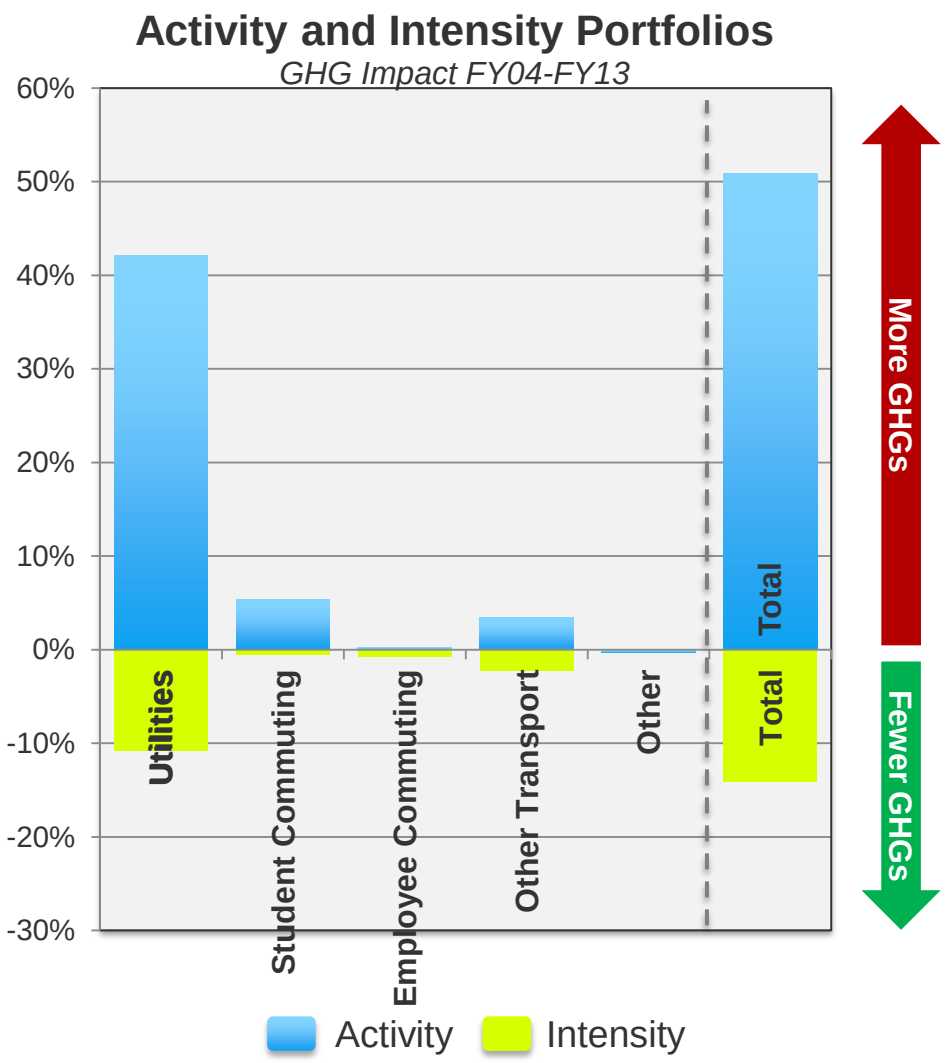


GSF excludes parking garages

Activity and Intensity by source

Emissions have increased by 37% while campus GSF has grown 40%





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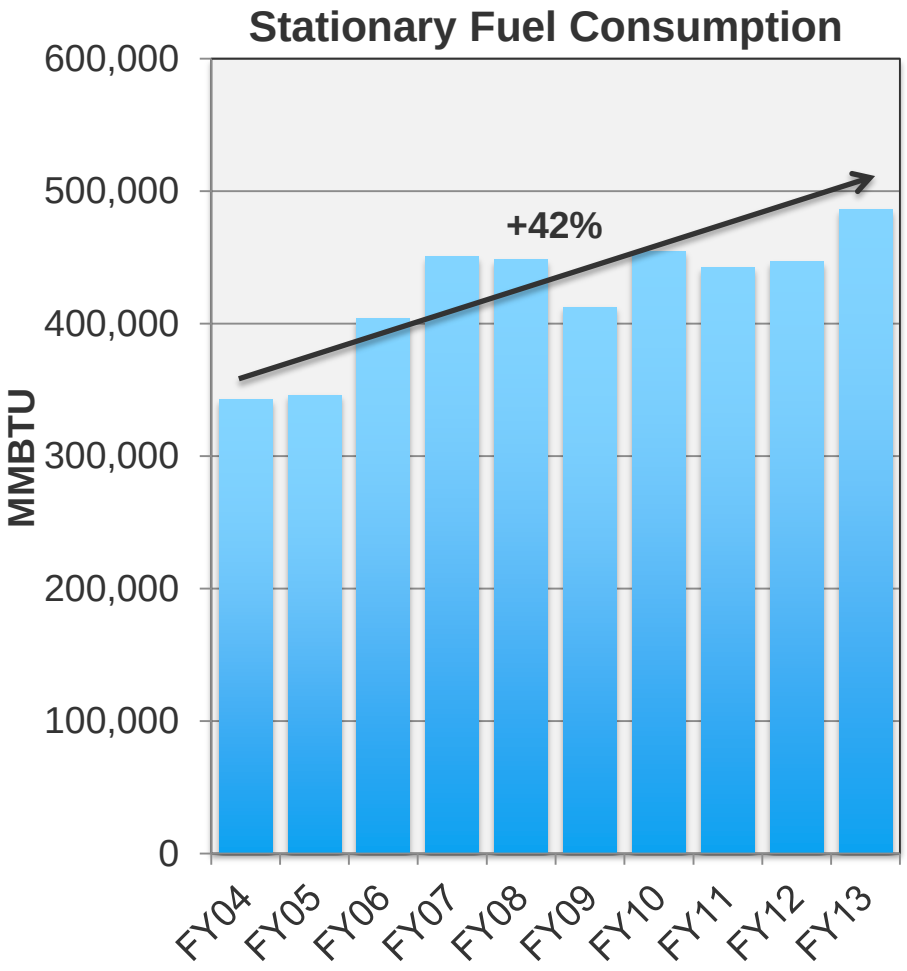
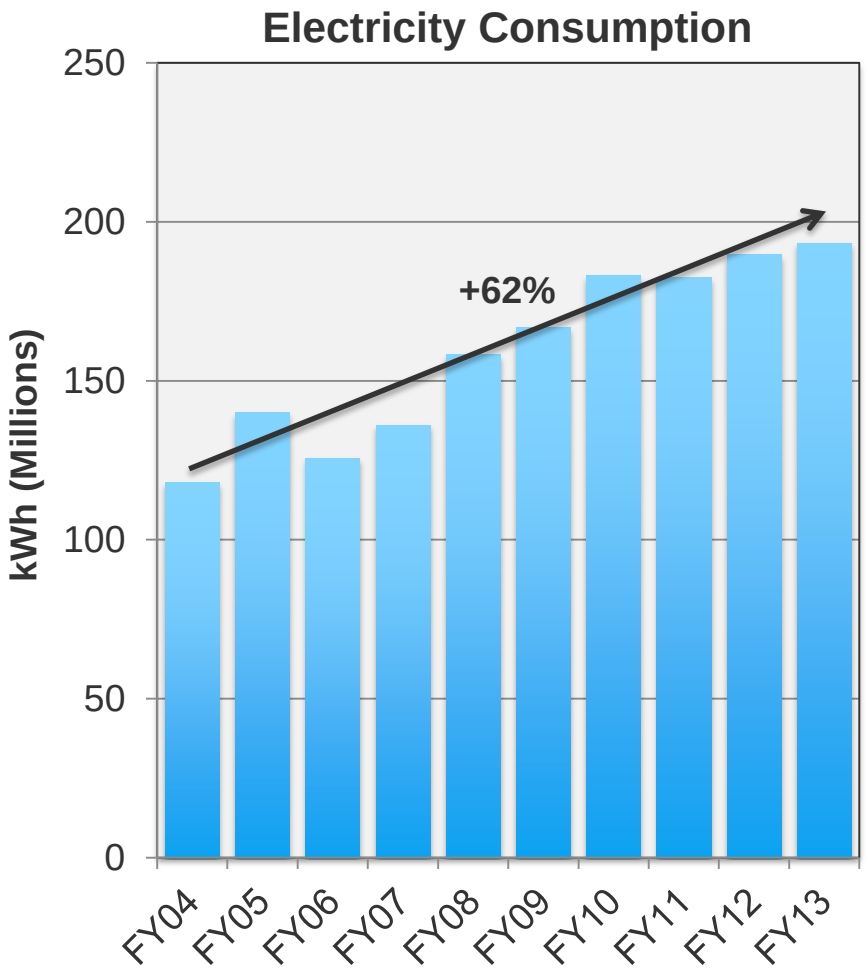
Increased Activity in stationary and electric

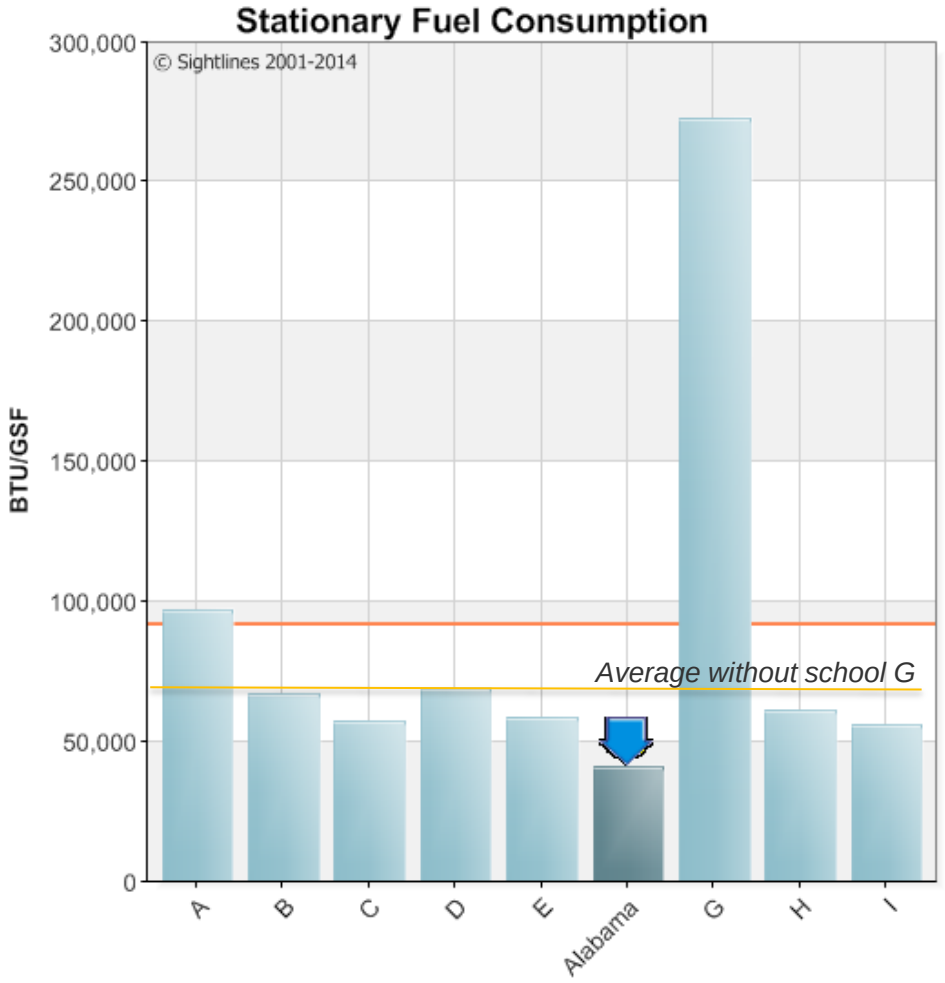
As enrollment and total GSF increase, consumption increases

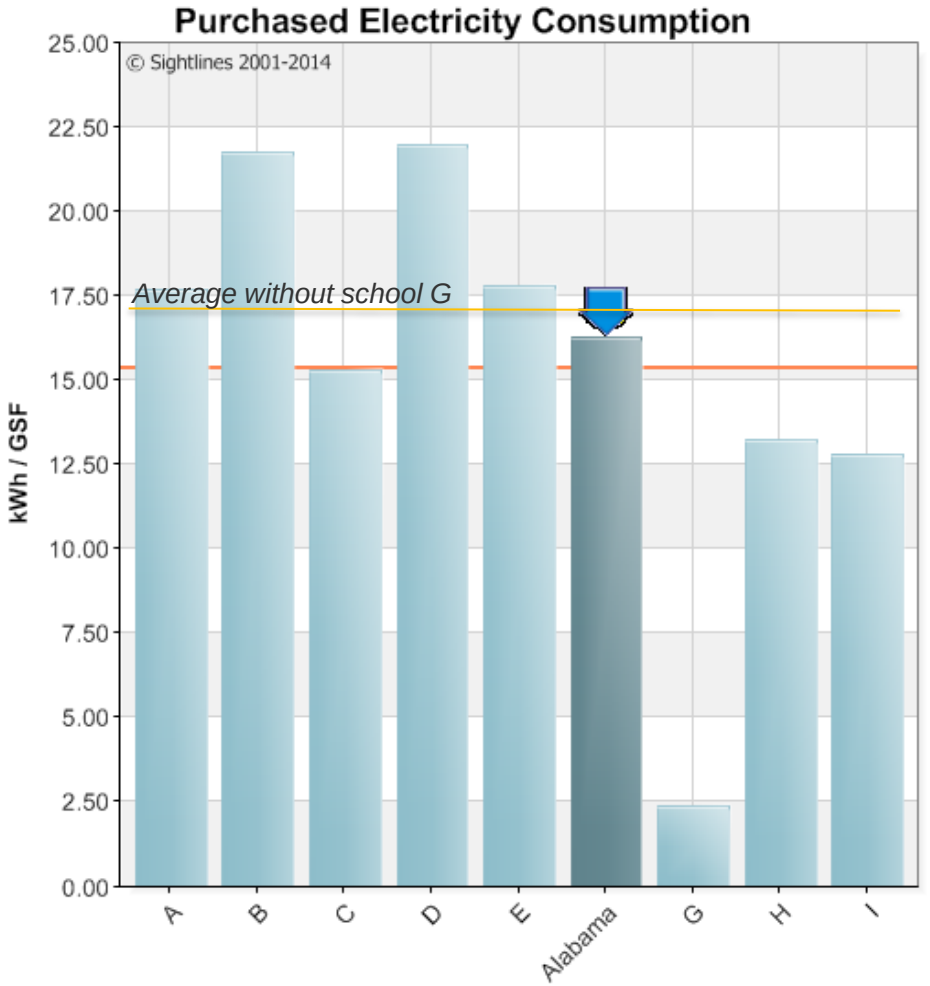




Comparing Alabama's consumption to peers

Lowest stationary fuel consumption, electric similar to the peer average



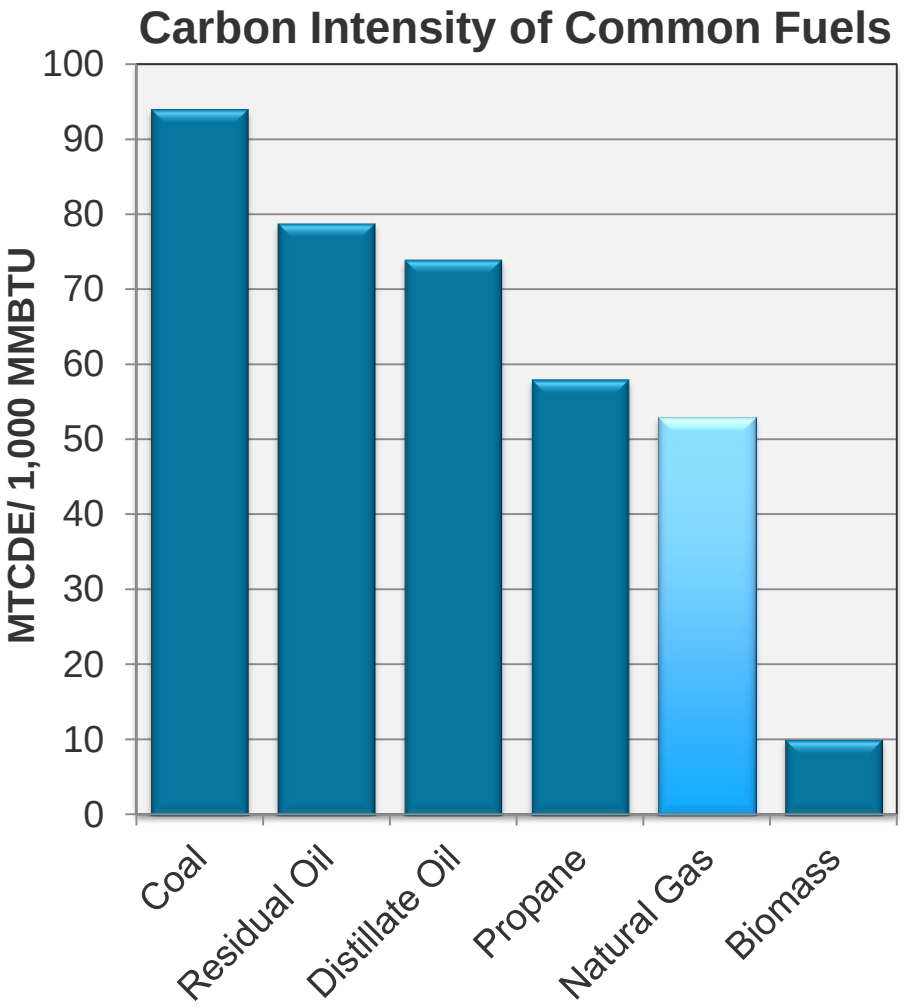


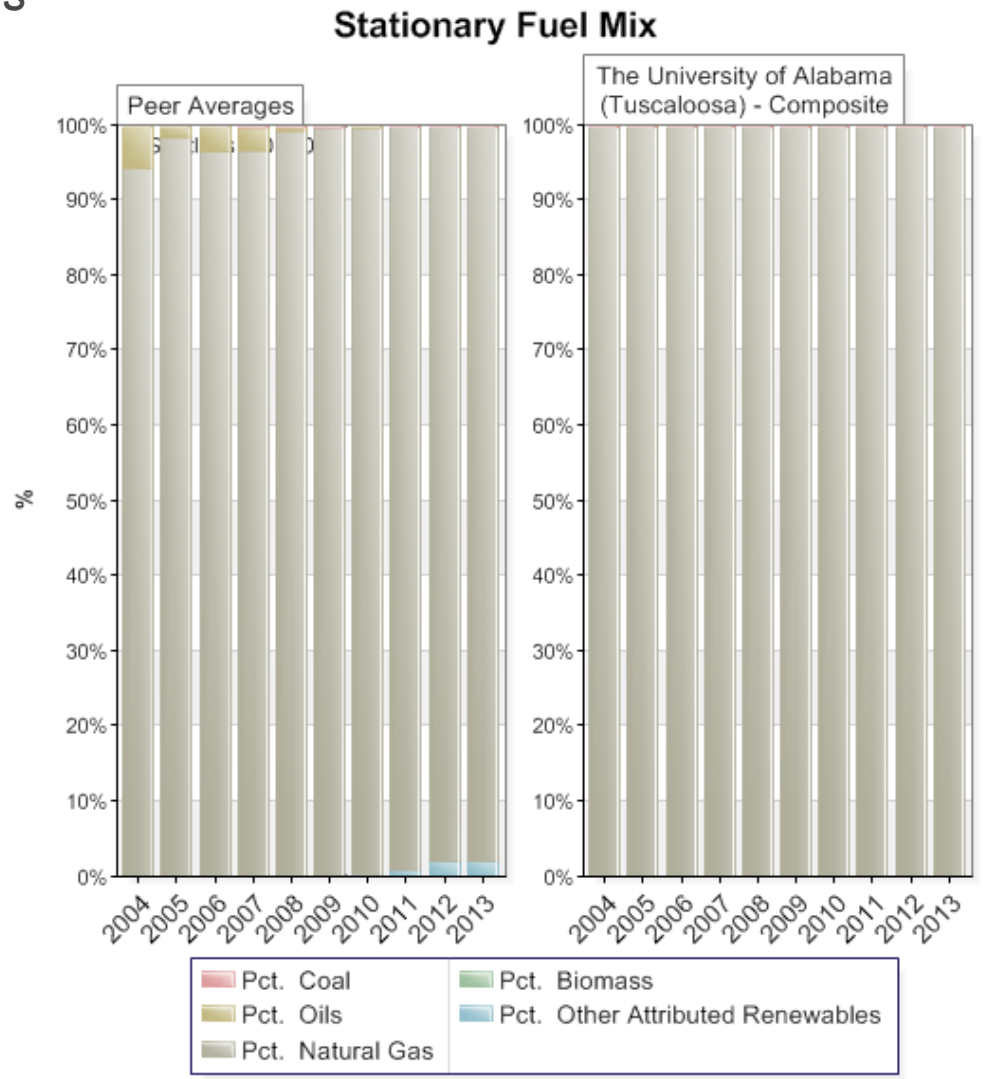
Average

Arrayed by increasing technical complexity

Carbon intensity of commonly used fuels

Alabama's fuel mix similarly green to peers



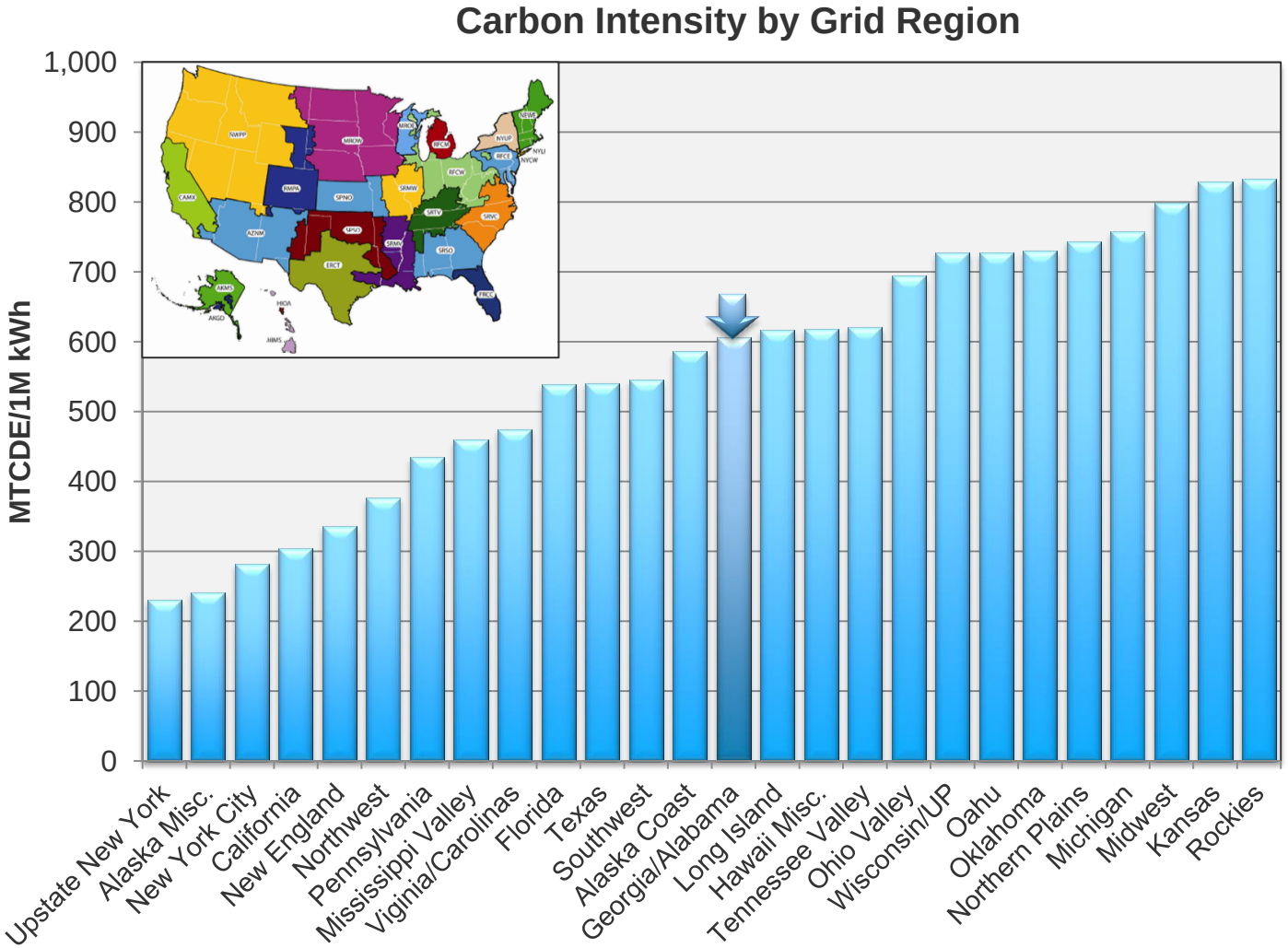


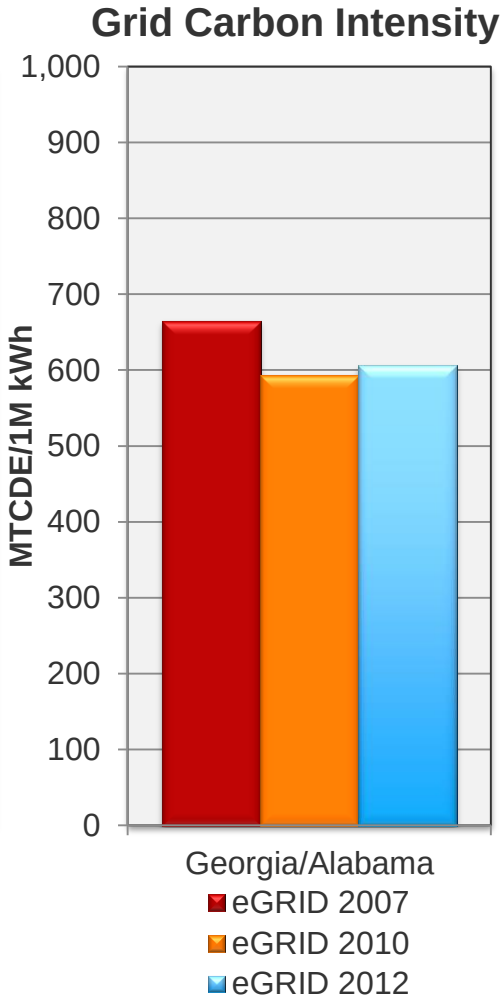
Scope 1

sightlines

Regional grid has a slightly higher carbon intensity

Comparing Alabama's grid to other US regions





Scope 2

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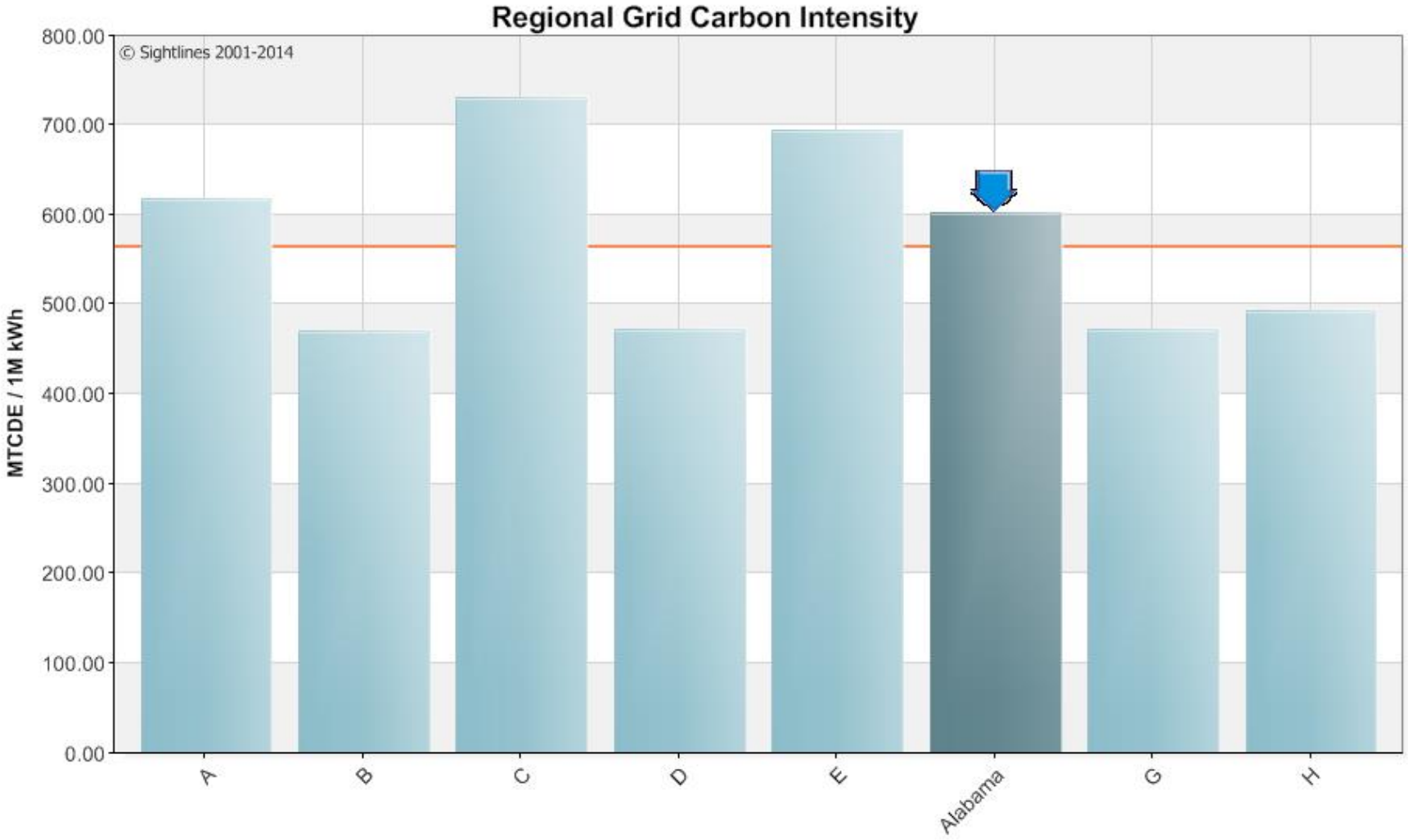
Higher than average electric grid

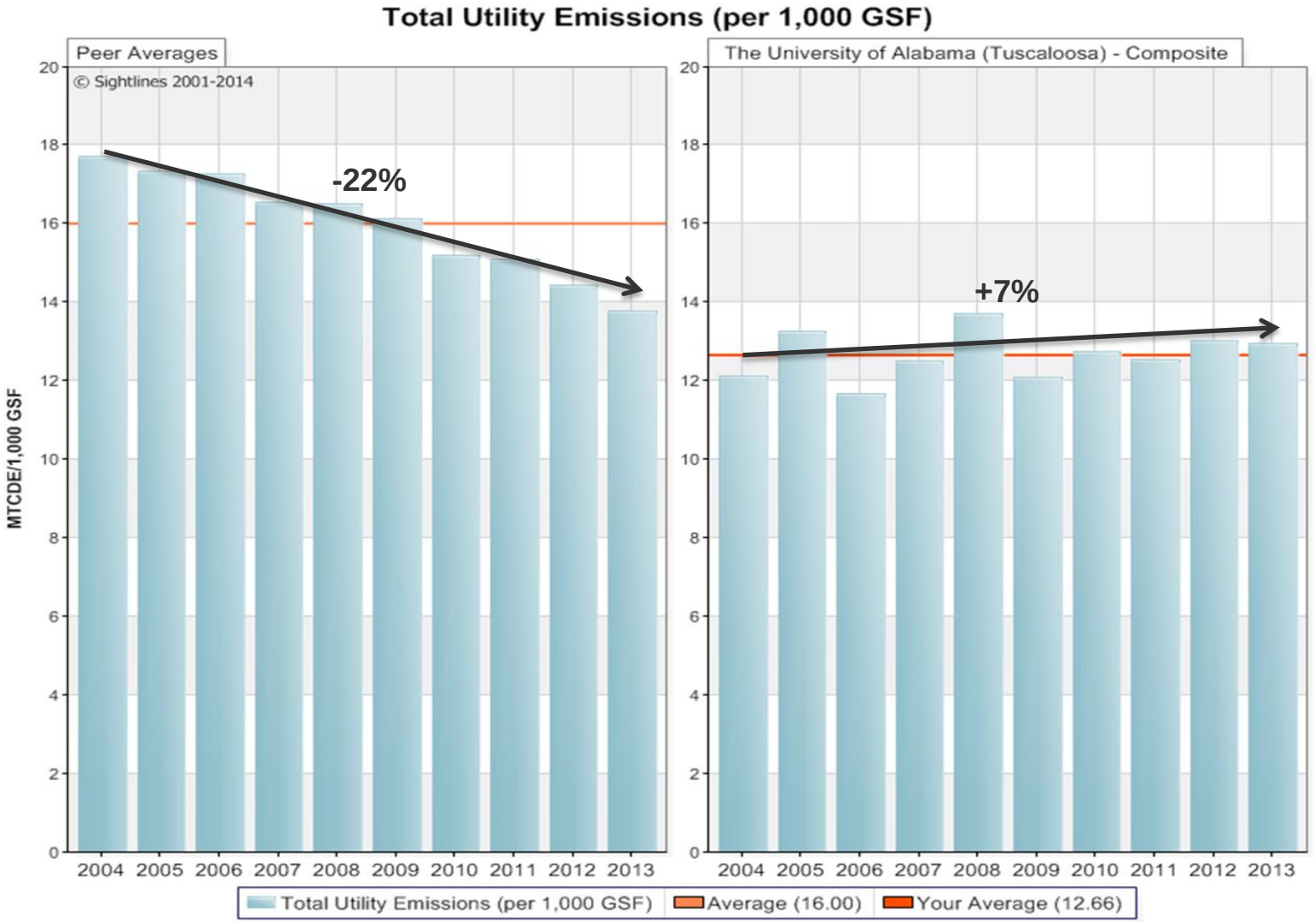
Alabama has a more carbon intense eGrid, raising electric GHGs



Arrayed by increasing technical complexity

Utility emissions increasing since FY04

Peers able to lower normalized utility emissions over the past 10 years



Activity & Intensity: Commuting

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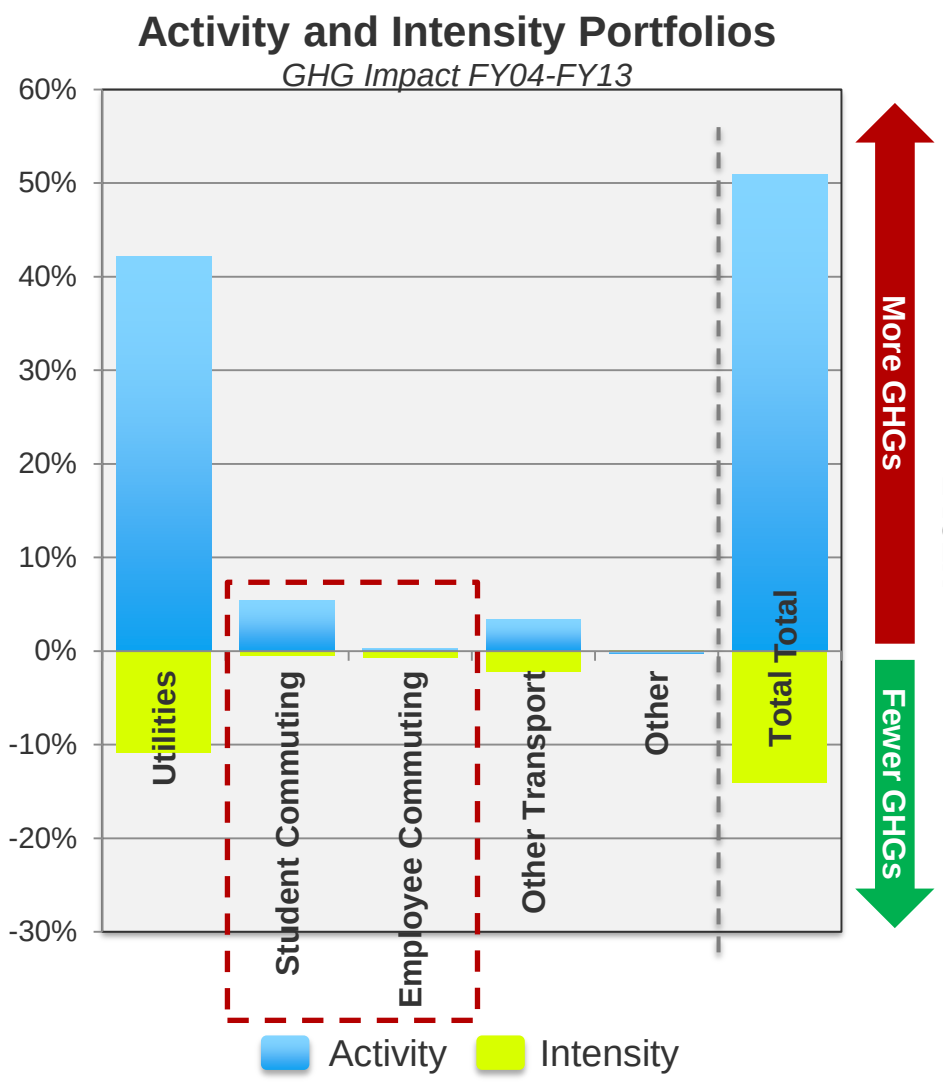
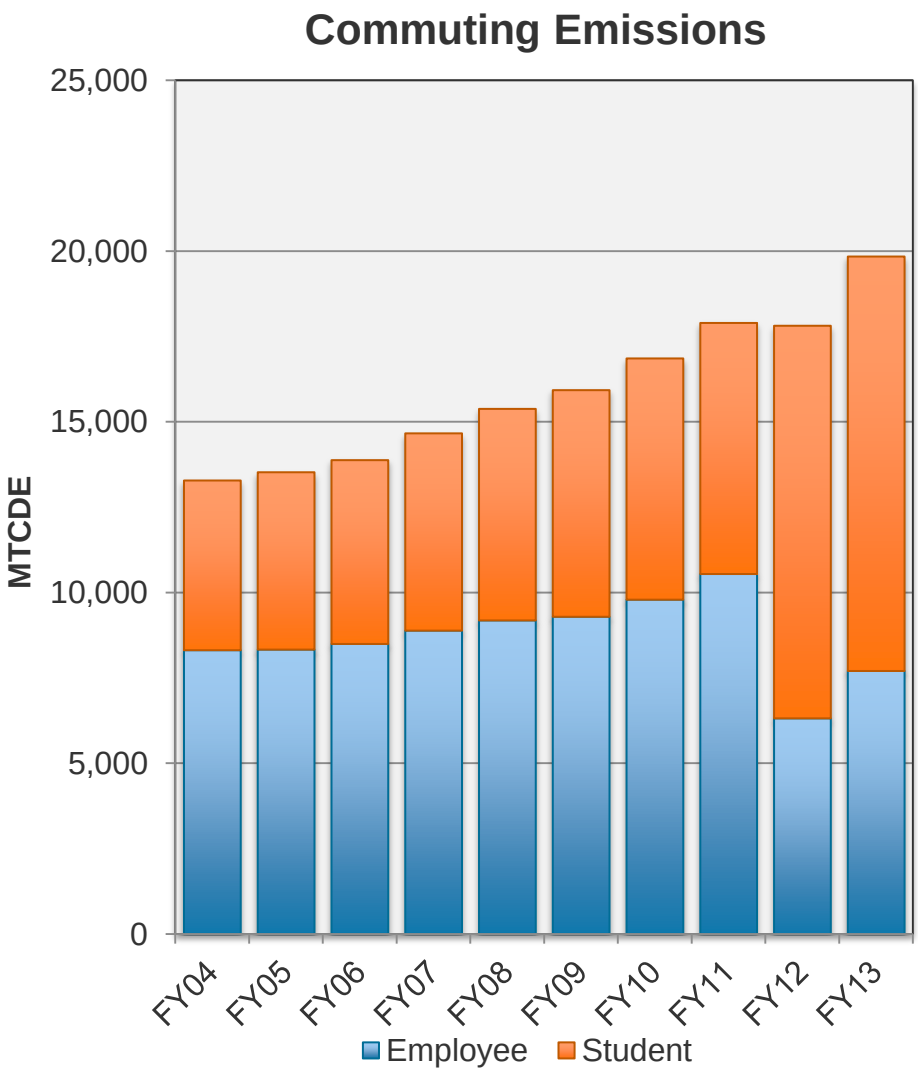
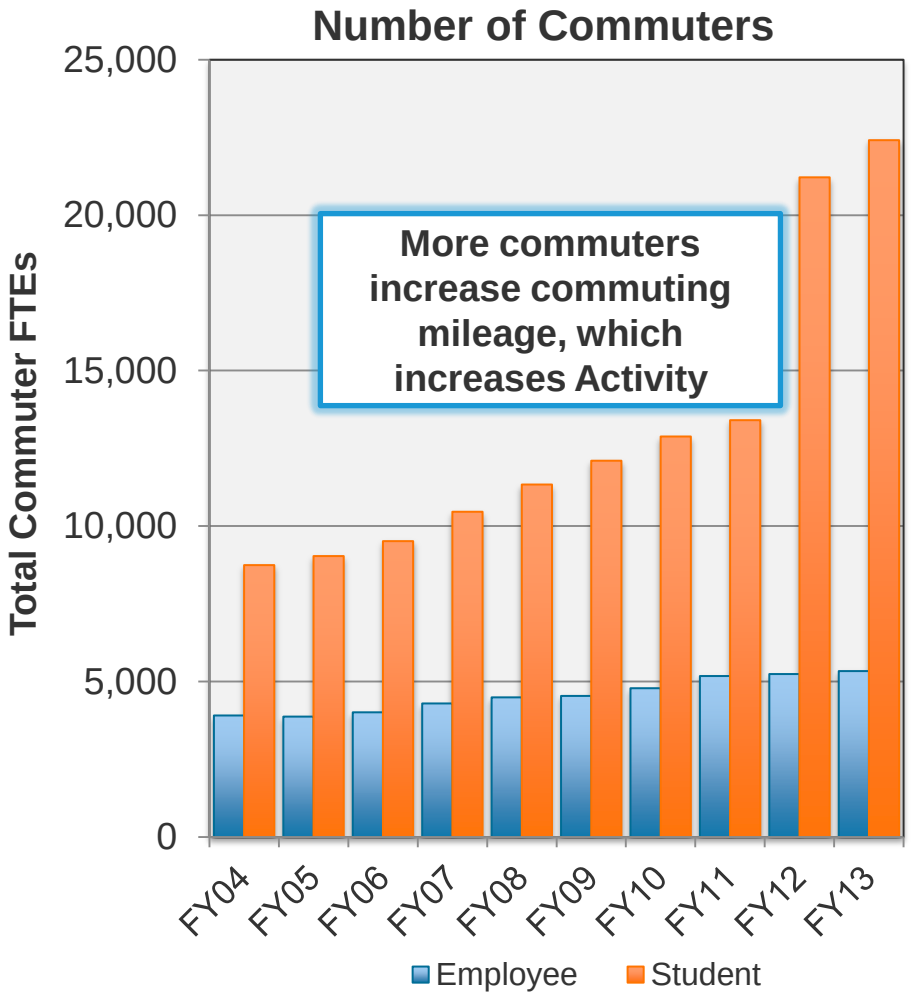


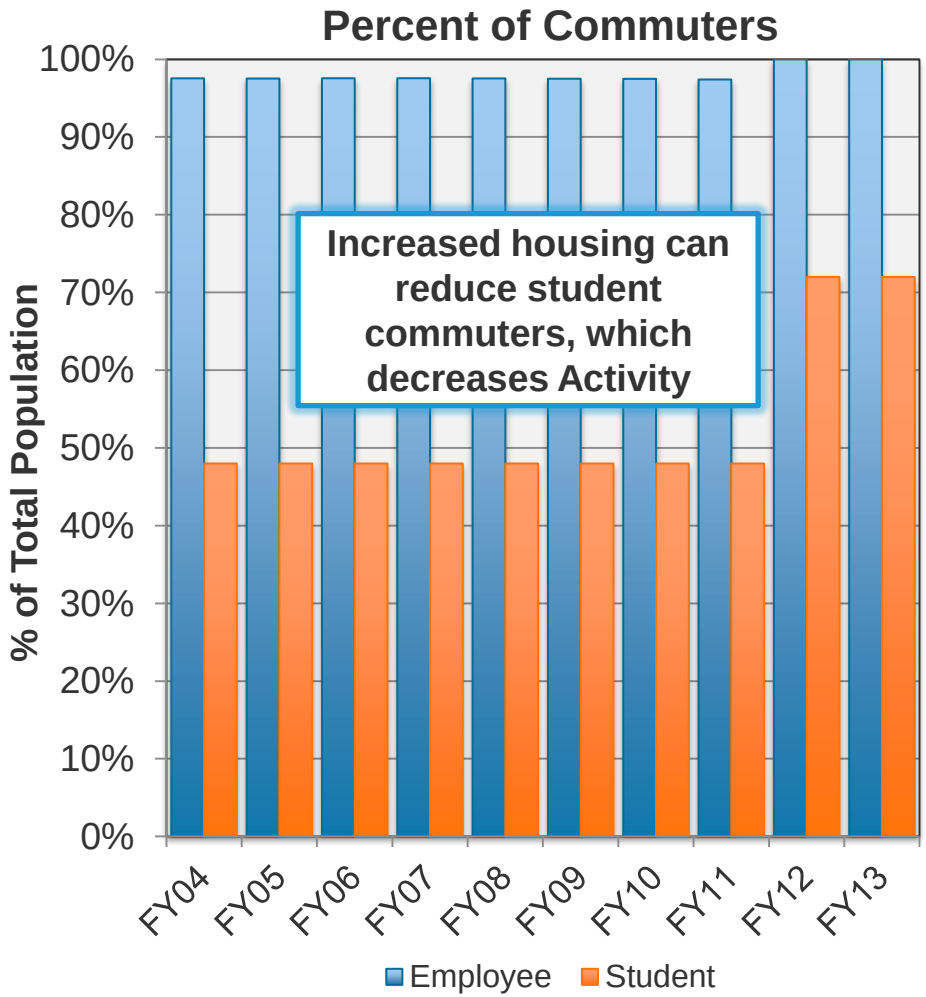


Change in method shifts commuter population

Now including students in nearby apartments as carbon free commuters

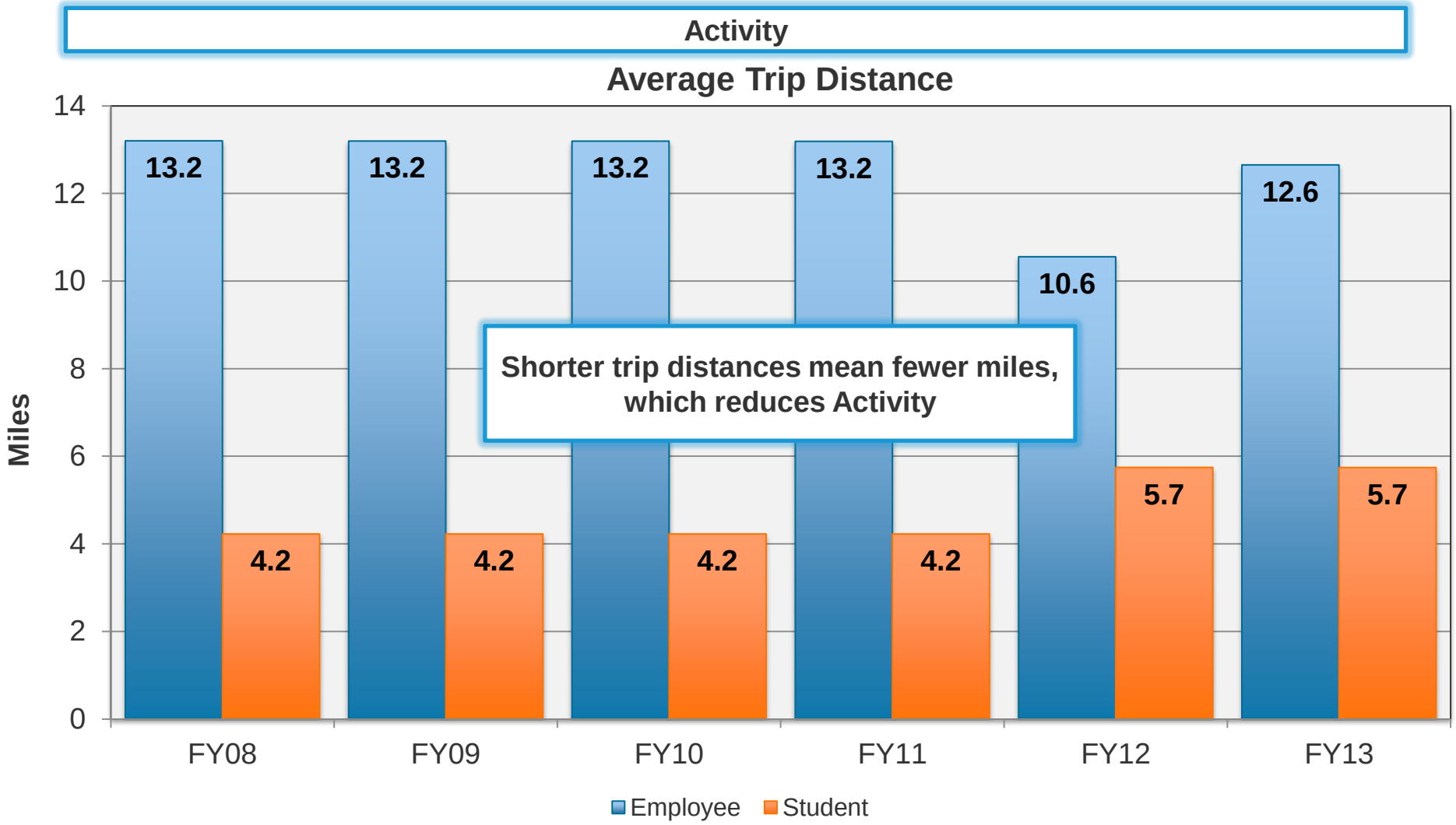
Activity





Overall similar trip distances over time

Student commuters travel half the distance of employee commuters



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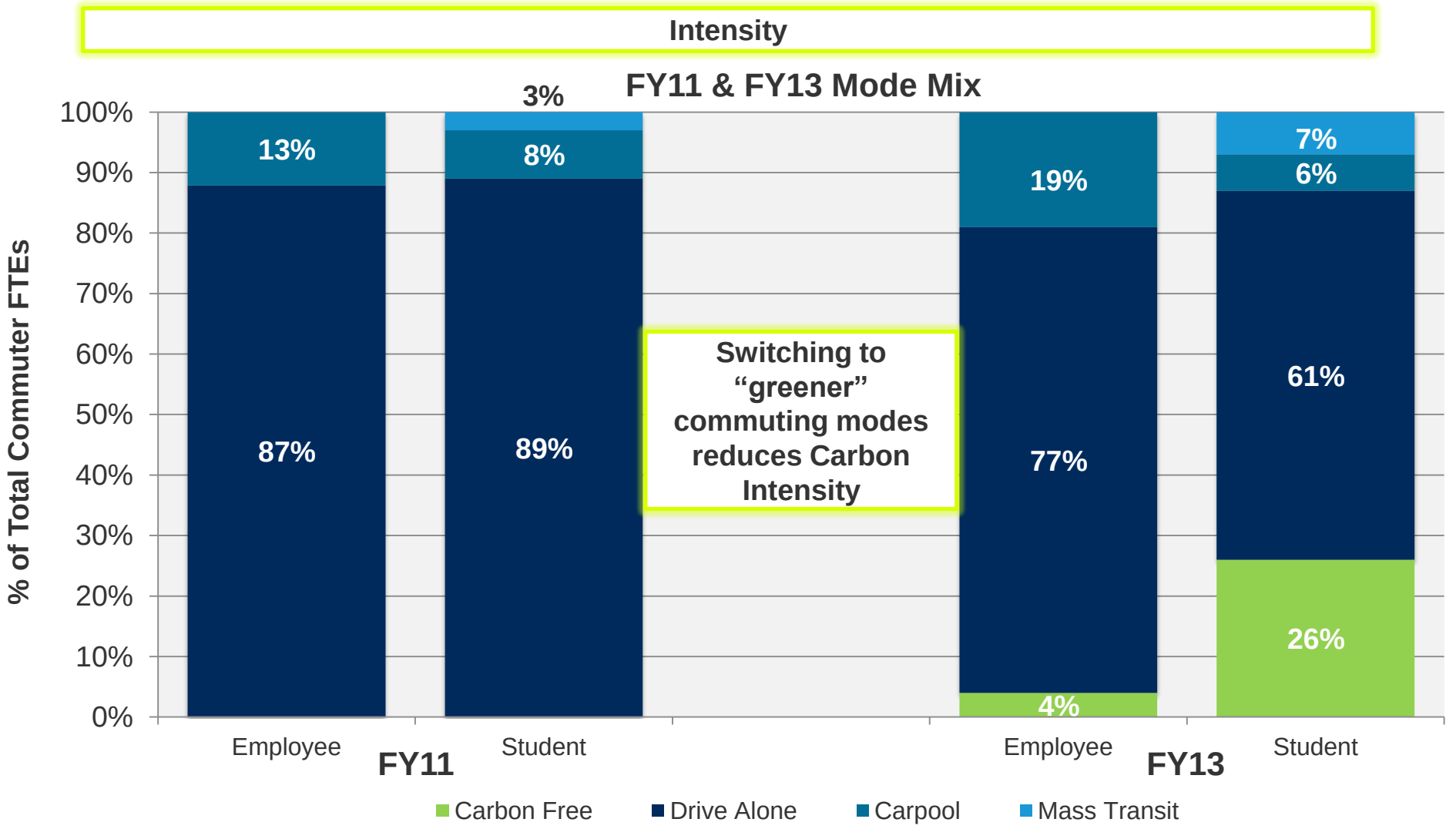
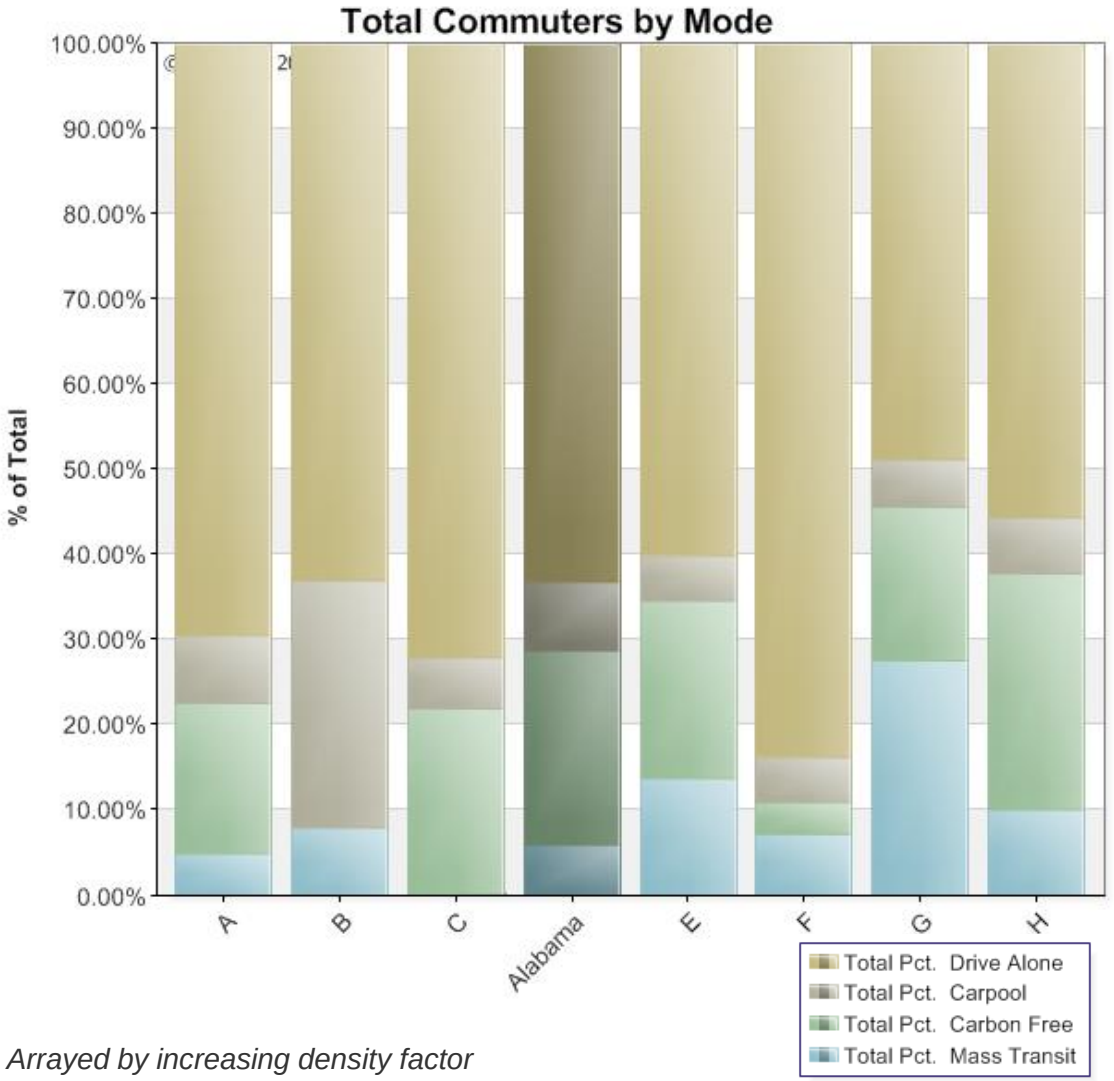
Shift in mode mix from last survey in FY11

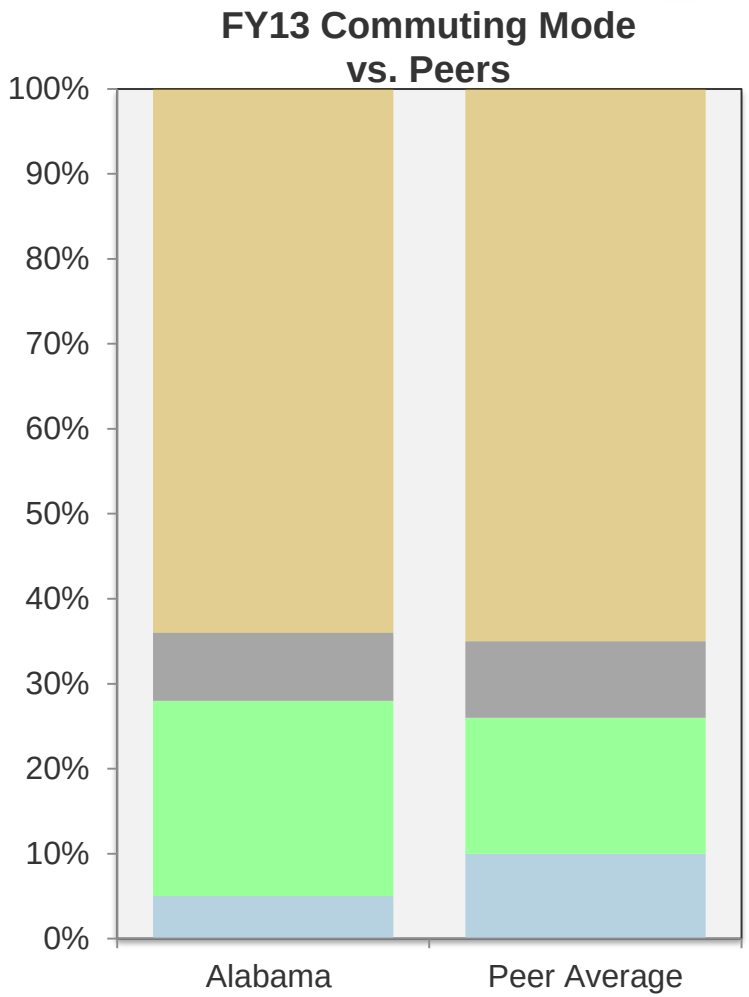
FY13 sees carbon-free commuting, less drive alone



40% of Alabama commuters utilize greener options

Mode mix is similar to most peer institutions



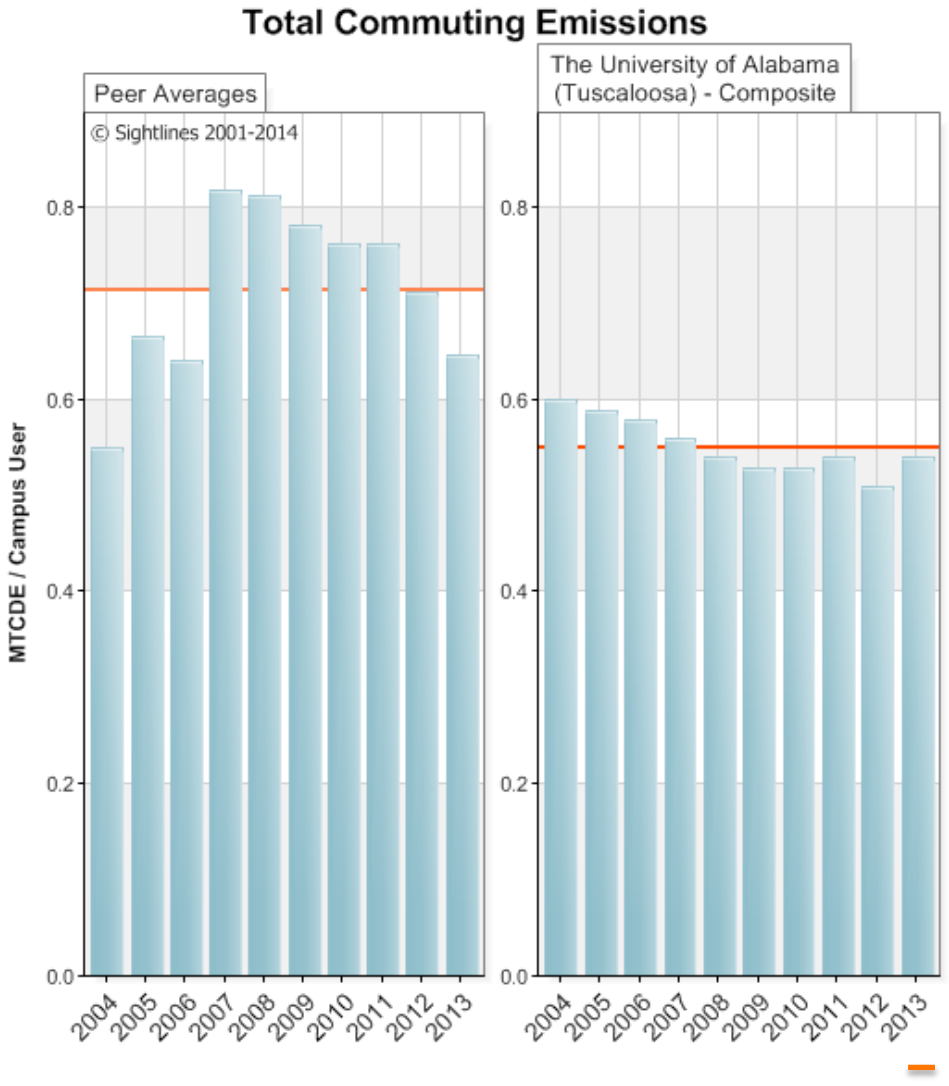


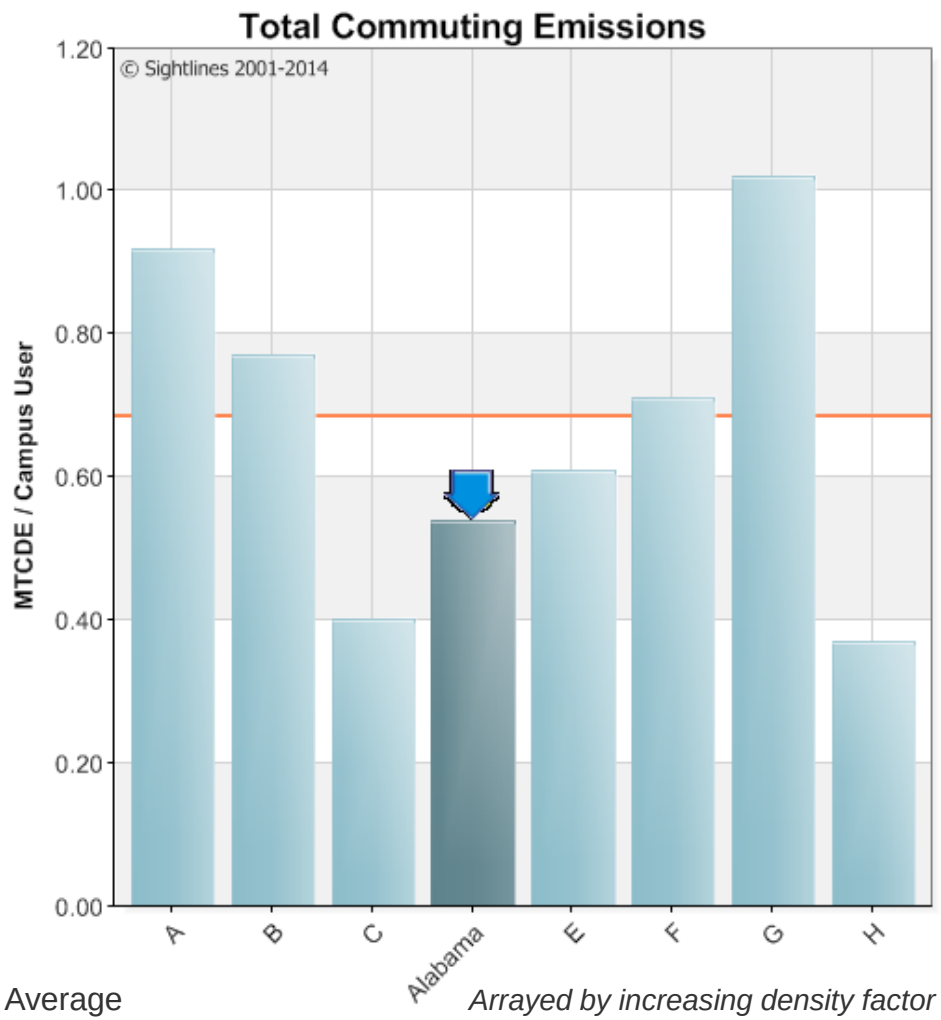
Arrayed by increasing density factor

sightlines

Commuting emissions below most peers

Decreasing emissions due to more carbon-free modes

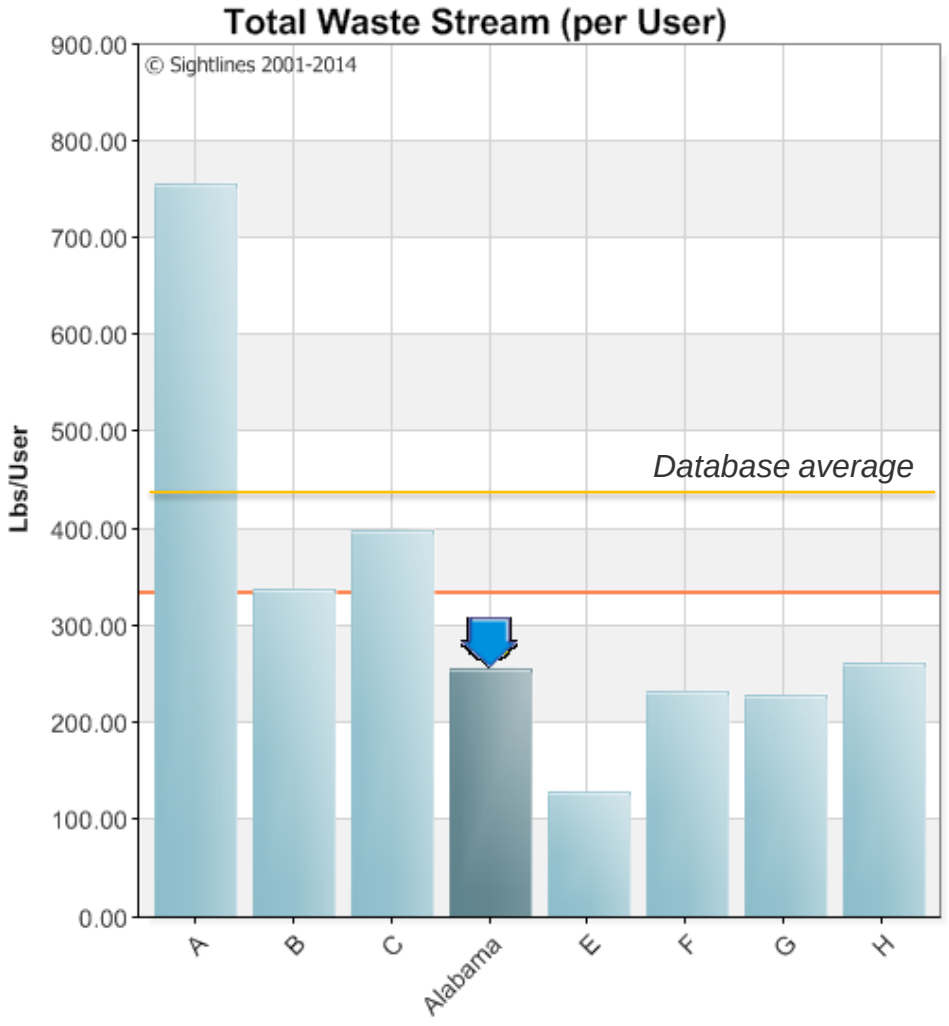


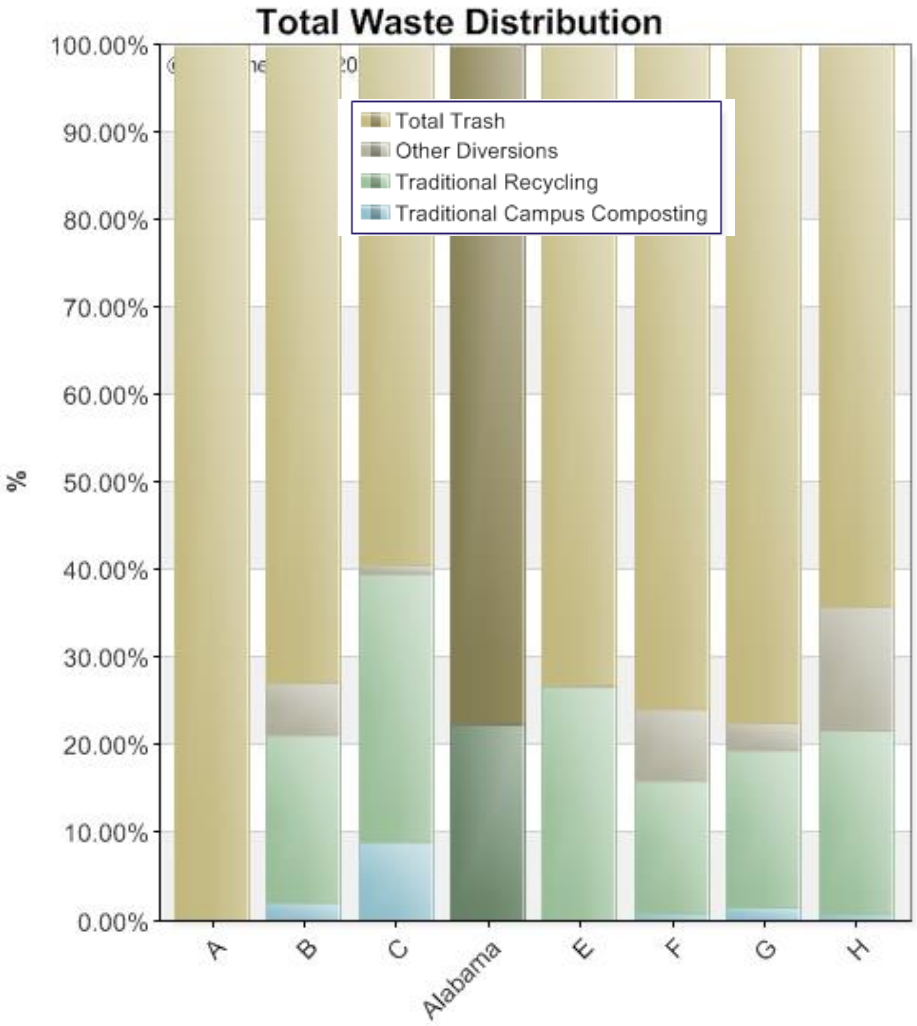


Arrayed by increasing density factor

Waste stream vs. peers and database

Over 20% of waste is diverted through recycling





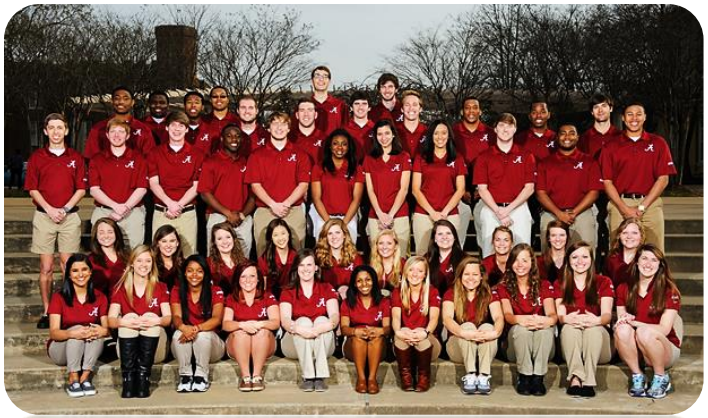
Two different ways to benchmark

GHG Emissions per 1,000 GSF

Stresses intensity of operations and commuting.

$$\frac{\text{Gross GHG Emissions}}{\text{Total GSF in Footprint}} \times 1{,}000$$

GHG Emissions per Student

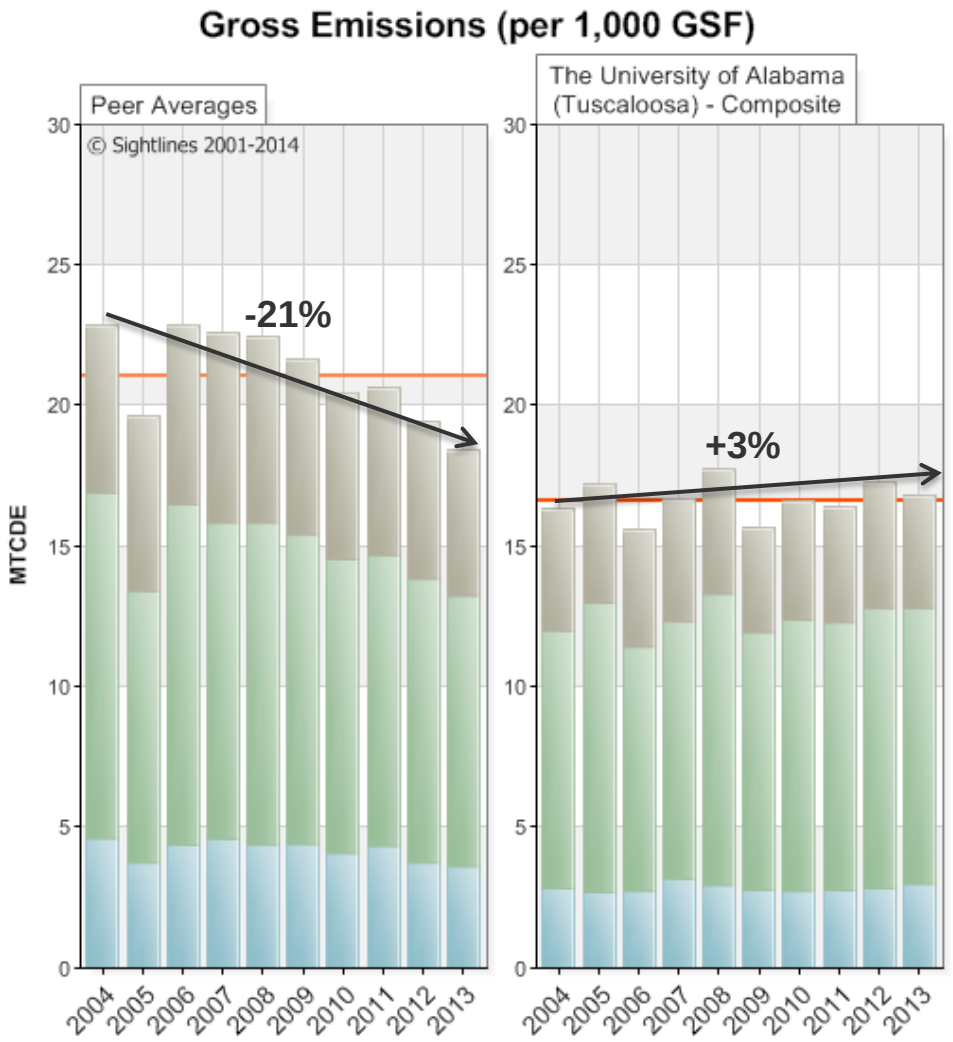


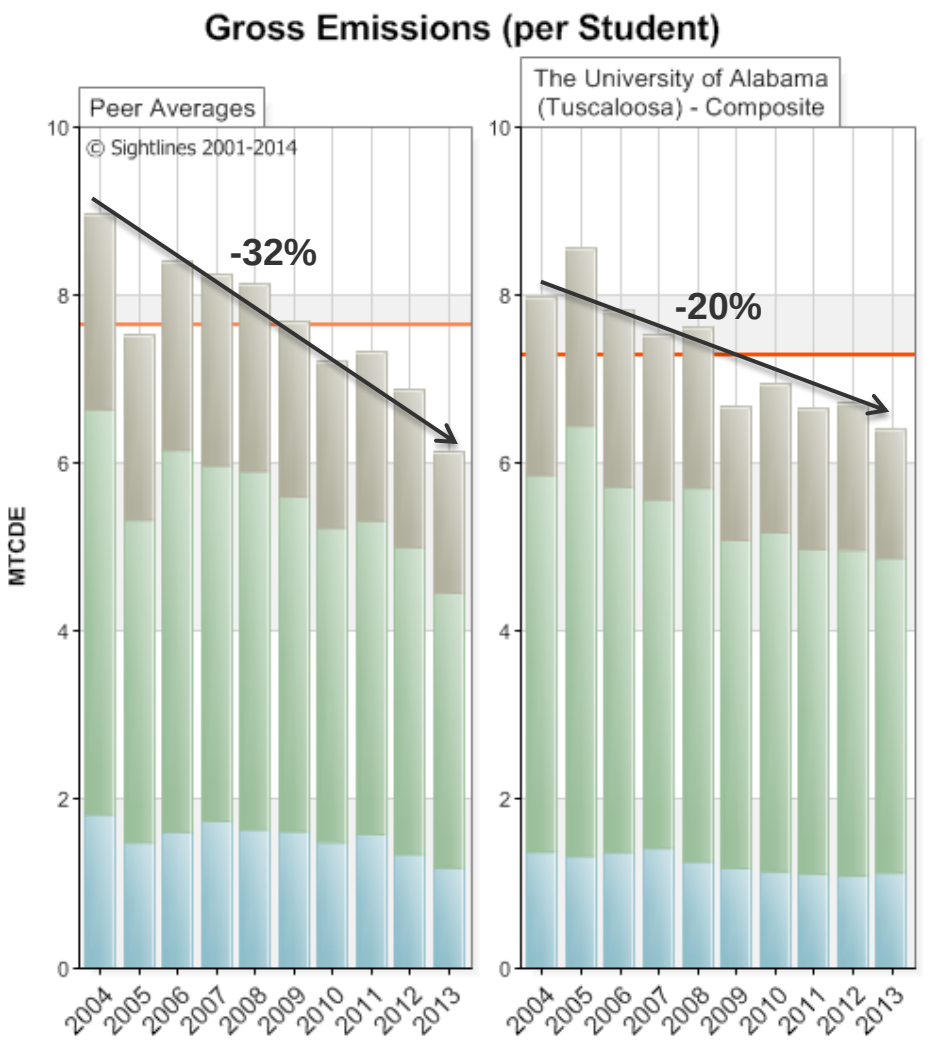
Stresses efficient use of space.

$$\frac{\text{Gross GHG Emissions}}{\text{Total Student FTE}}$$

Complex new space increases emissions per GSF

Increased density/ space utilization results in less GHGs/student





Scope 3
Scope 2
Scope 1

Concluding Comments

Concluding Comments for Alabama

Carbon Mitigation Portfolios:

1. AVOIDANCE
   - Continued campus expansion and fit out will limit future GHG reduction opportunities

2. REDUCE: ACTIVITY
   - Despite low unit cost, electricity reductions should be prioritized to limit Scope 2 emissions
   - Normalized end use (Scope 3) related emissions are declining since FY04 –an impressive feat given the 70% increase in campus population

3. REPLACE: CARBON INTENSITY
   - Regional grid carbon intensity is high, but decreasing – resulting in a smaller increase in campus GHGs since FY04
   - Less mass transit utilization in Tuscaloosa – may be an opportunity to further reduce carbon intensity of campus commuting or advocate for carbon free and carpool incentive programs

4. OFFSETS
   - If carbon neutrality or major reductions are desired, will require consideration of market mechanisms