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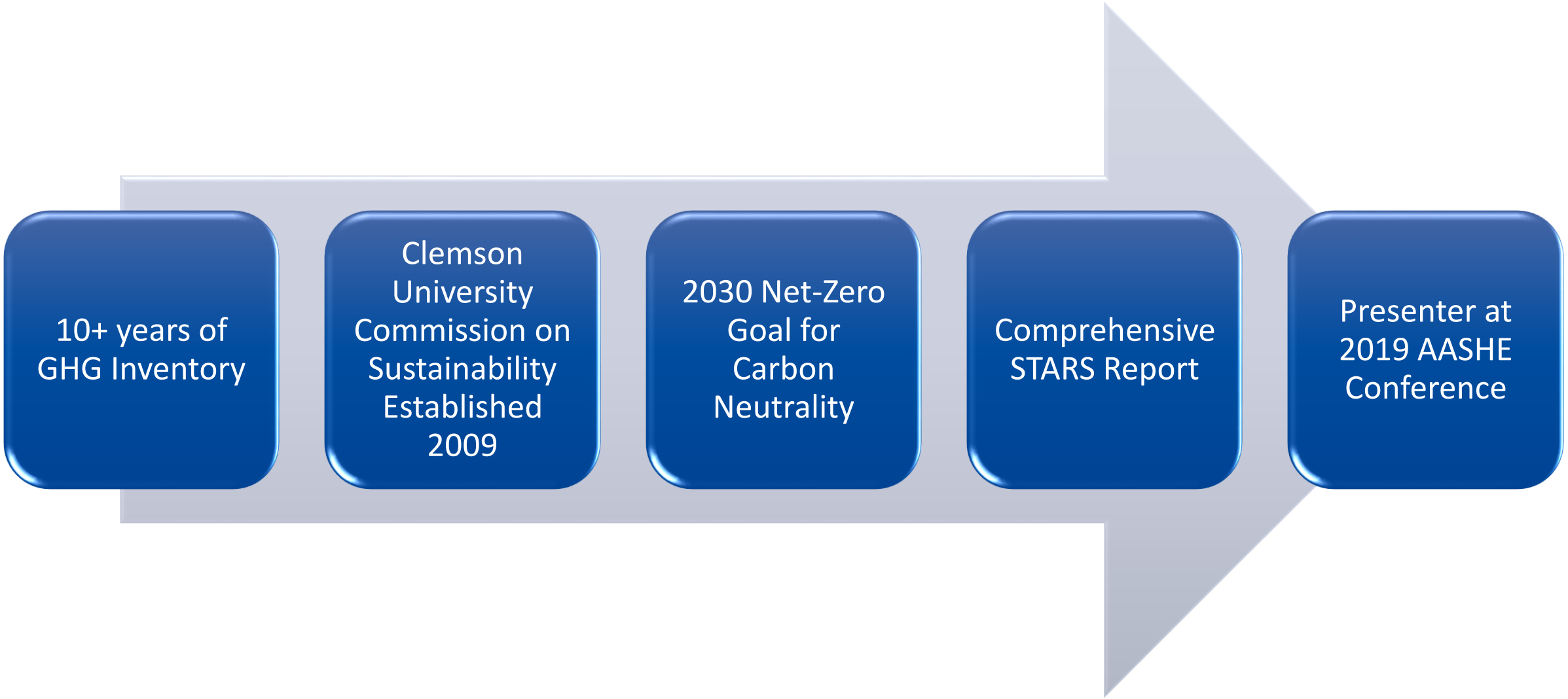
Clemson University

FY2019 Sustainability Solutions Final

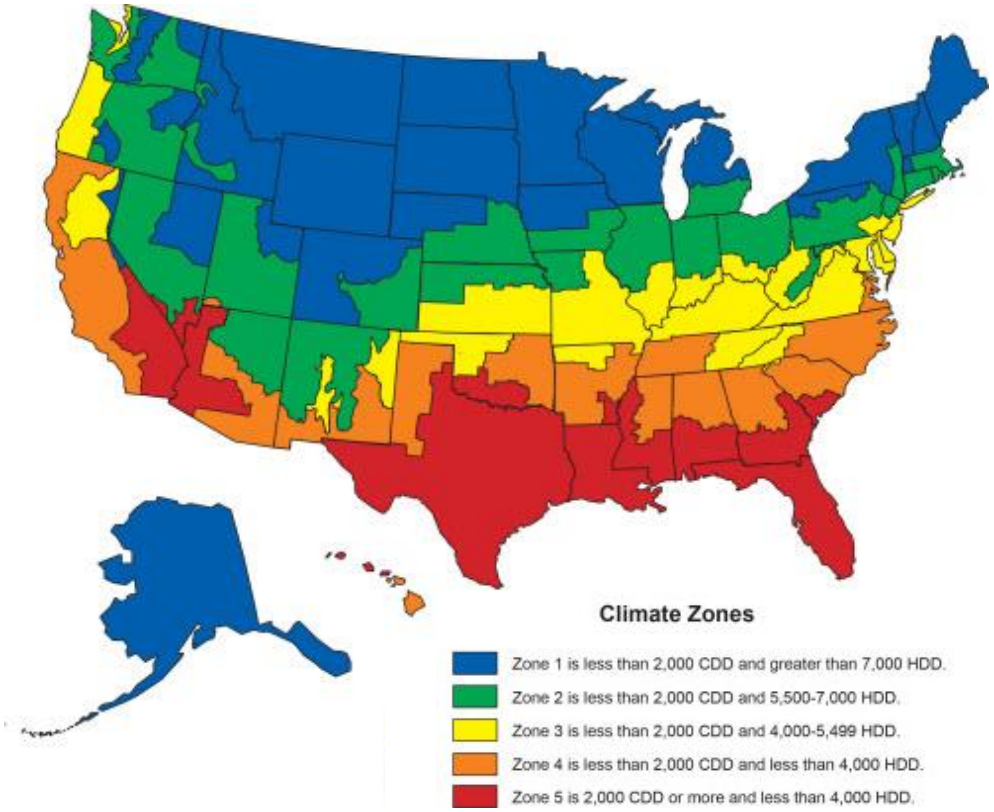
December 2019

University of Toledo
University of Vermont
University of Washington
University of West Florida
University of Wisconsin - Madison
Vanderbilt University
Virginia Commonwealth University
Wake Forest University
Washburn University
Washington State University
Washington State University - Tri-Cities Campus
Washington State University - Vancouver
Washington University in St. Louis
Wayne State University
Wellesley College
Wesleyan University
West Chester University
West Virginia Health Science Center
West Virginia University
Western Oregon University
Westfield State University
Widener University
Williams College
Worcester Polytechnic Institute
Worcester State University

Clemson Commitment to Sustainability Efforts



Comparative Peers for Clemson University



Sustainability Solution Measurement and Analysis Members

- Sightlines has ~ 50 Sustainability Members
- Approximately 2/3 are private
- Approximately 1/3 are public
- Approximately 2/3 have signed a Climate Leadership Commitment
- Approximately 40% are Climate Leadership Charter Signatories

Sustainability Peer Institutions
American University
George Mason University*
Nova Southeastern University
Texas A&M University*
The University of Alabama (Tuscaloosa)
The University of Tennessee – Knoxville*
University of Arkansas*
University of Vermont
Virginia Commonwealth University

Comparative Considerations
Size, Scale of Operations, Climate Zone

**Peers with co-gen*

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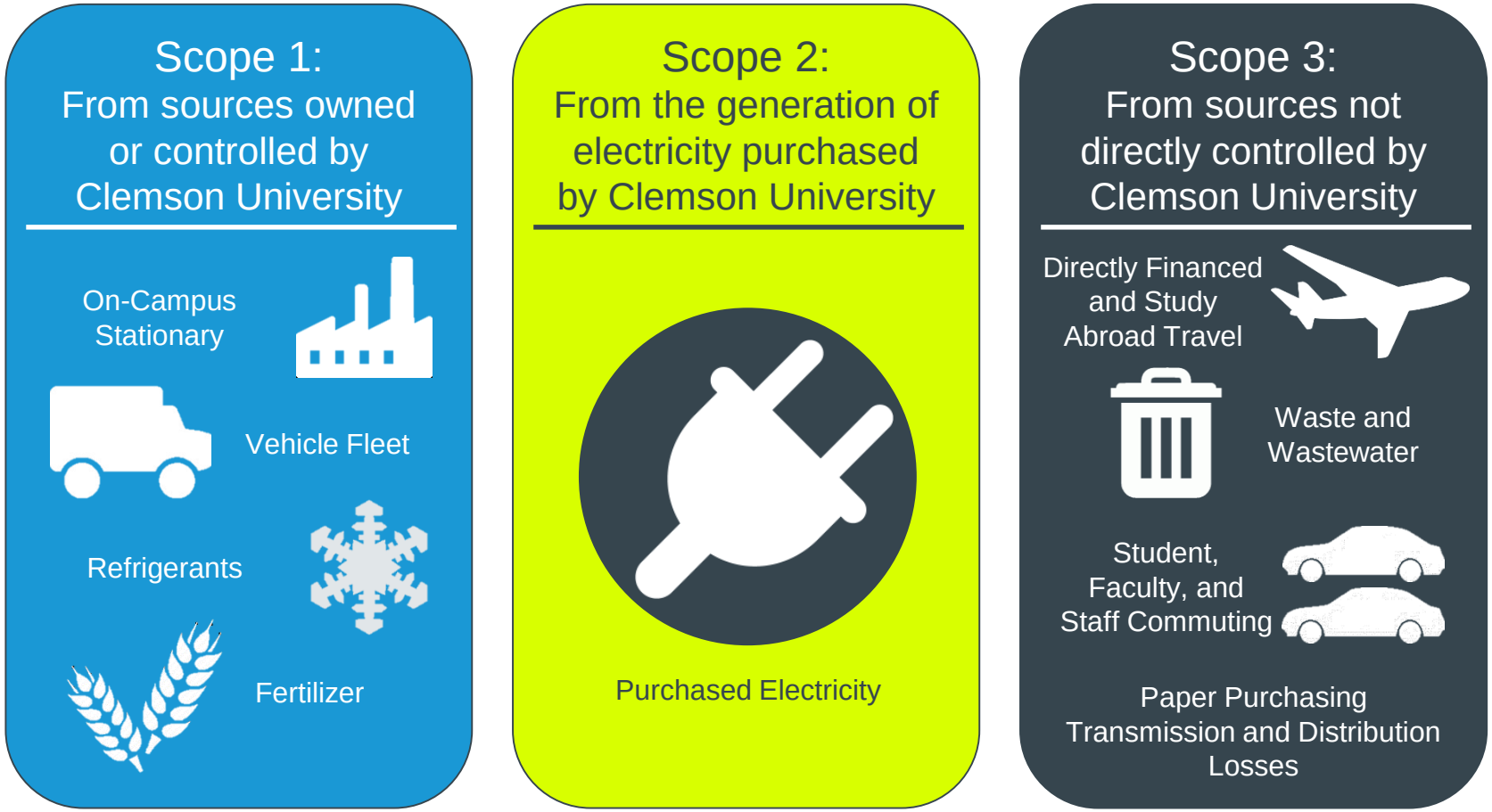
Sources of Campus Emissions

Collected carbon emissions at Clemson University



Increasingly Difficult to Track, Control and/or Mitigate

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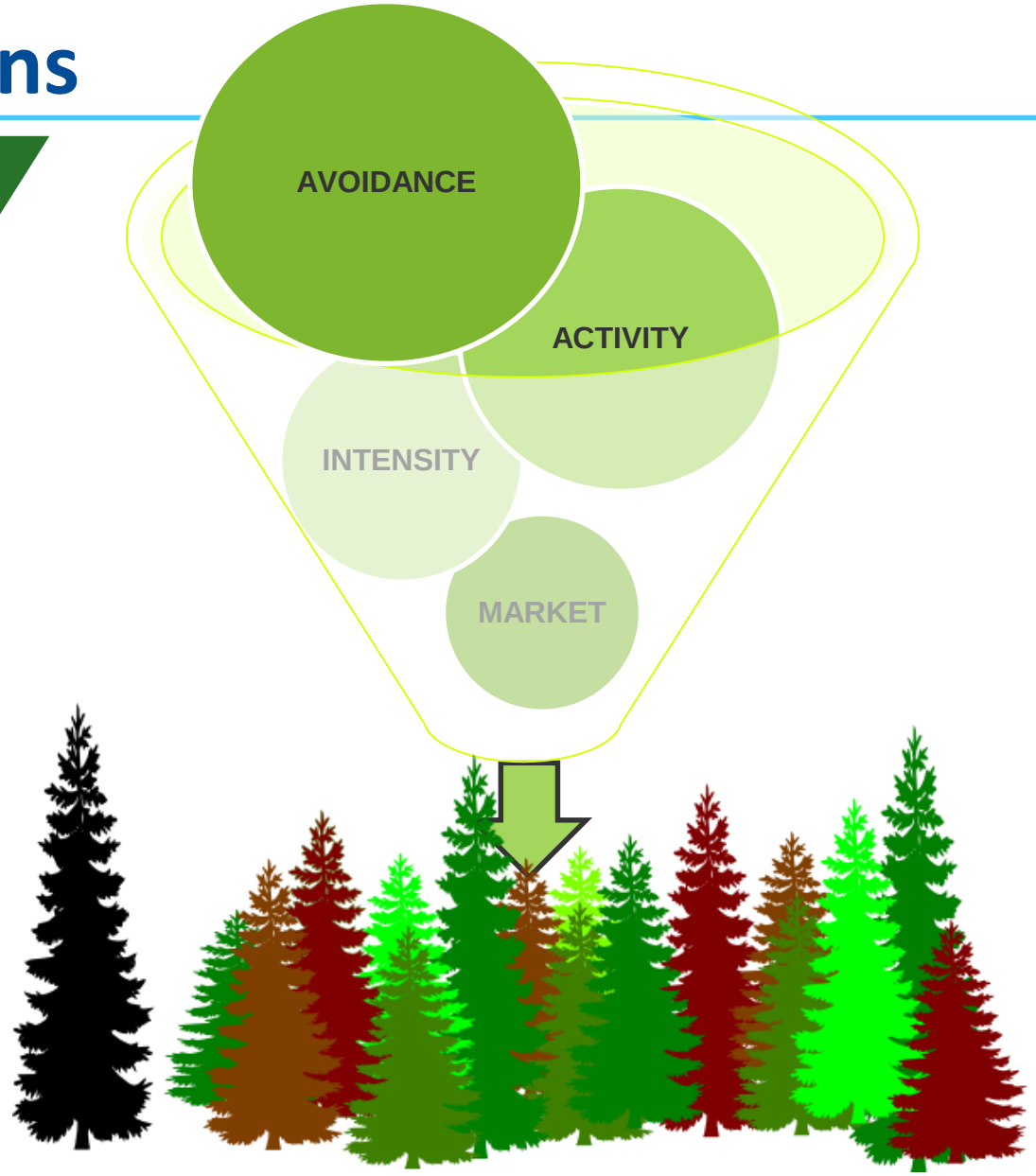
Strategies for Reducing Emissions

AVOIDANCE:
Prevent activities before they start
Example: Increase space utilization instead of building or acquiring new space

ACTIVITY:
Reduce the existing level of an activity
Example: Consume fewer BTUS' of energy/travel fewer miles

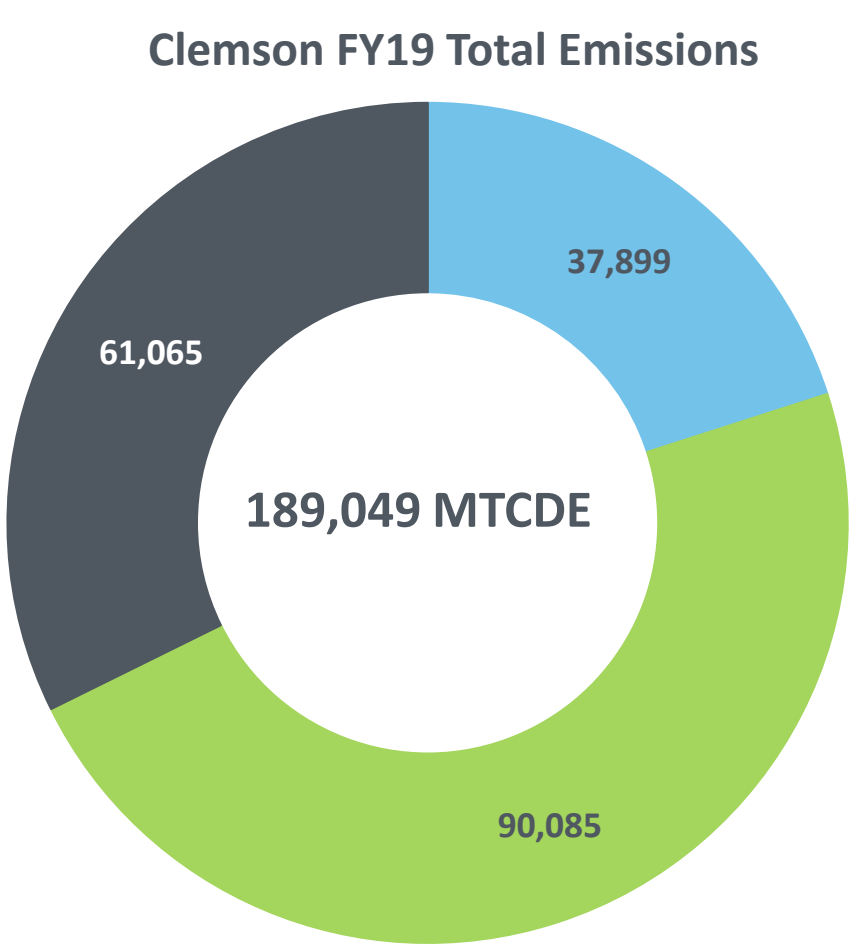
INTENSITY:
Lessening the carbon intensity of activities
Example: Fuel switching (coal to biomass)

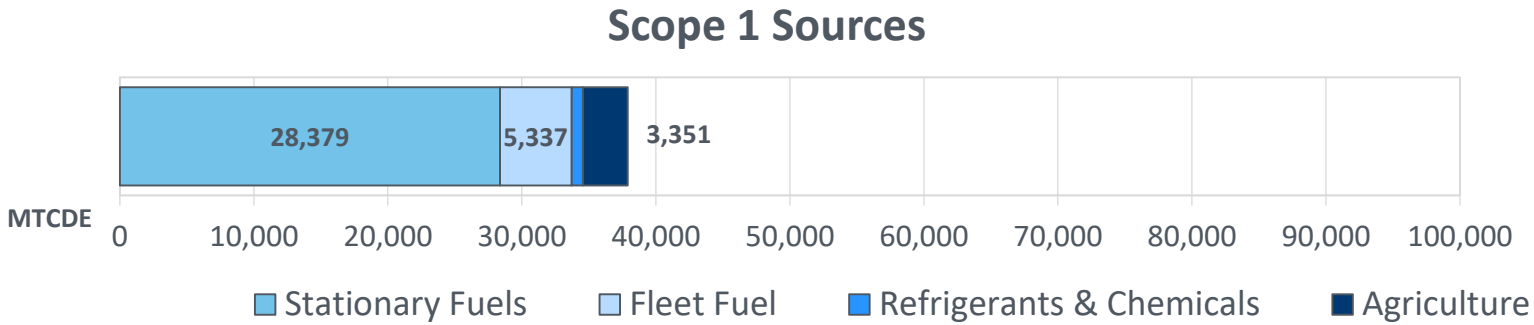
MARKET:
Utilizing Market mechanisms to neutralize unavoidable GHGs

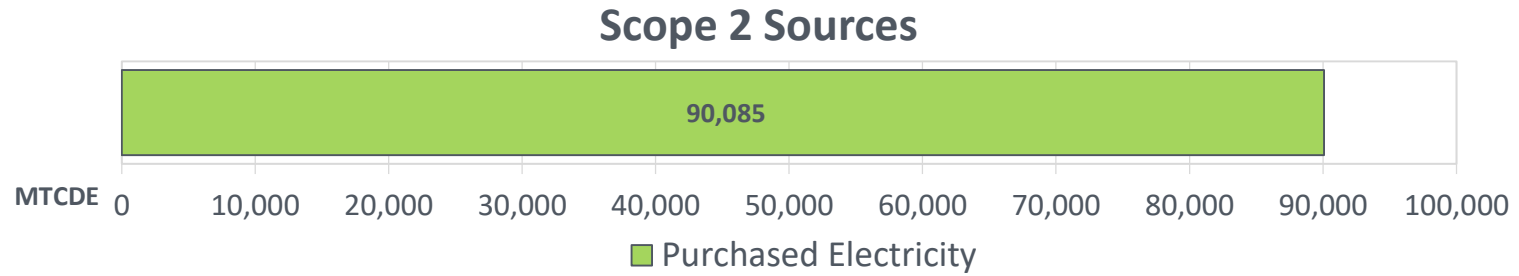


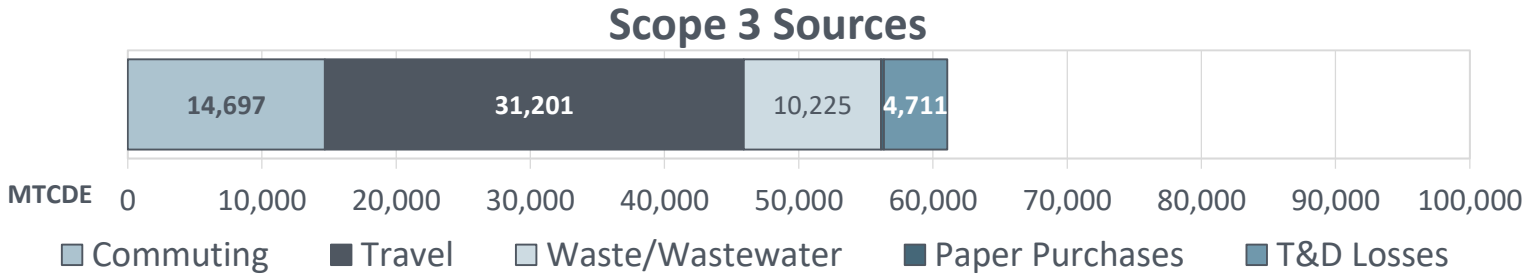
FY19 Gross Emissions Profile at Clemson

Scope 2: Purchased Electricity produces 48% of total emissions on campus









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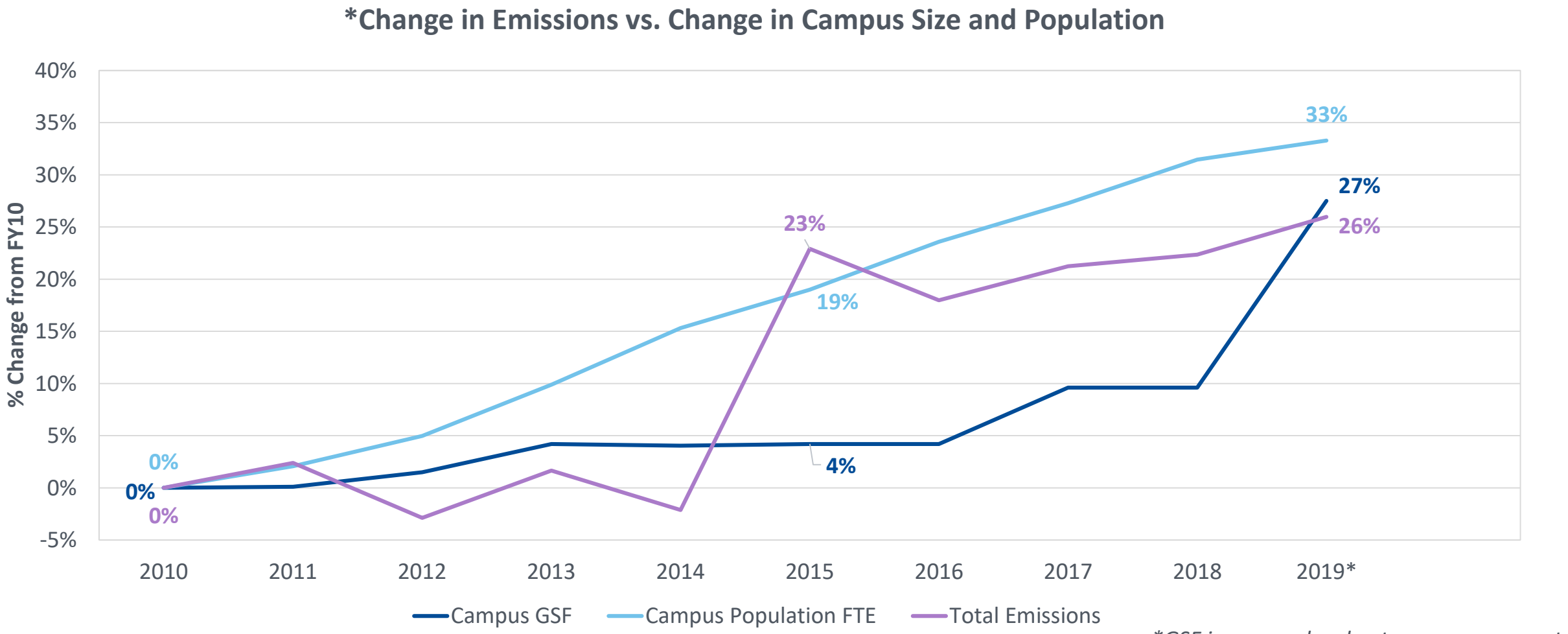
Impact of Space and Population on Campus Emissions

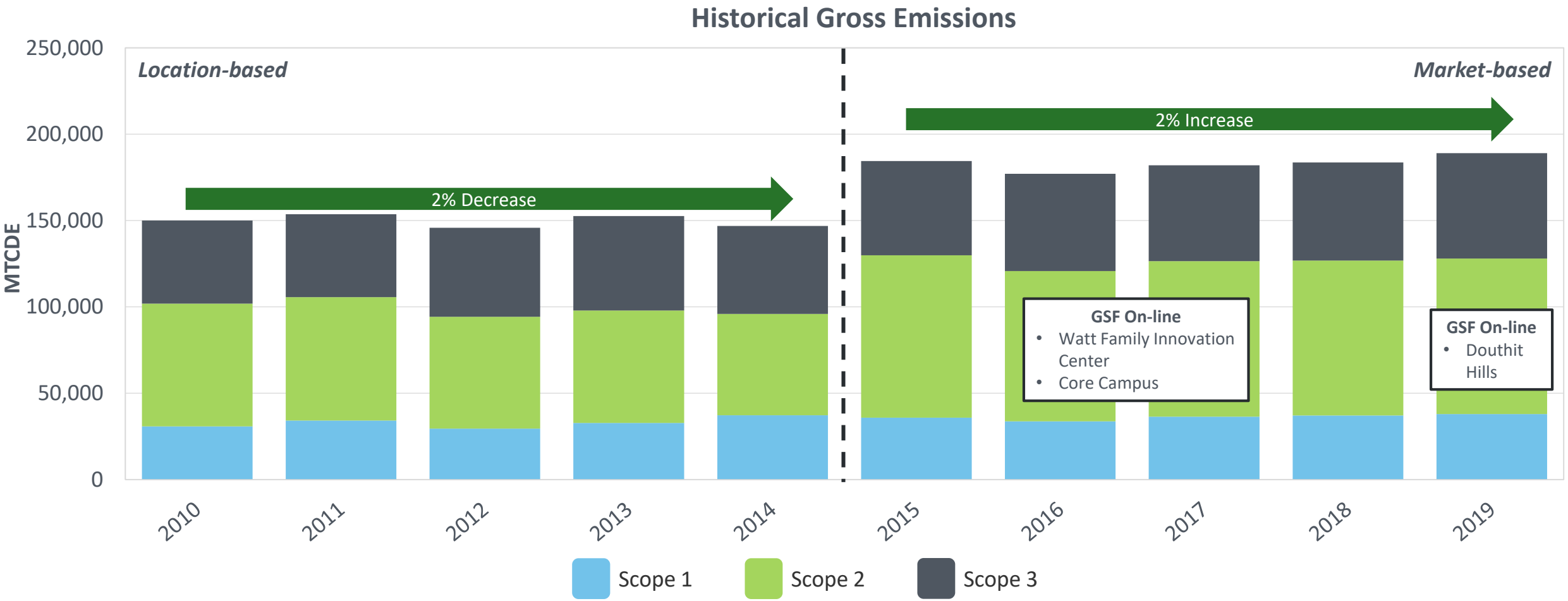
Greenhouse gas emissions increased as campus grew in space and in population since FY2010



*GSF increase also due to remeasurement

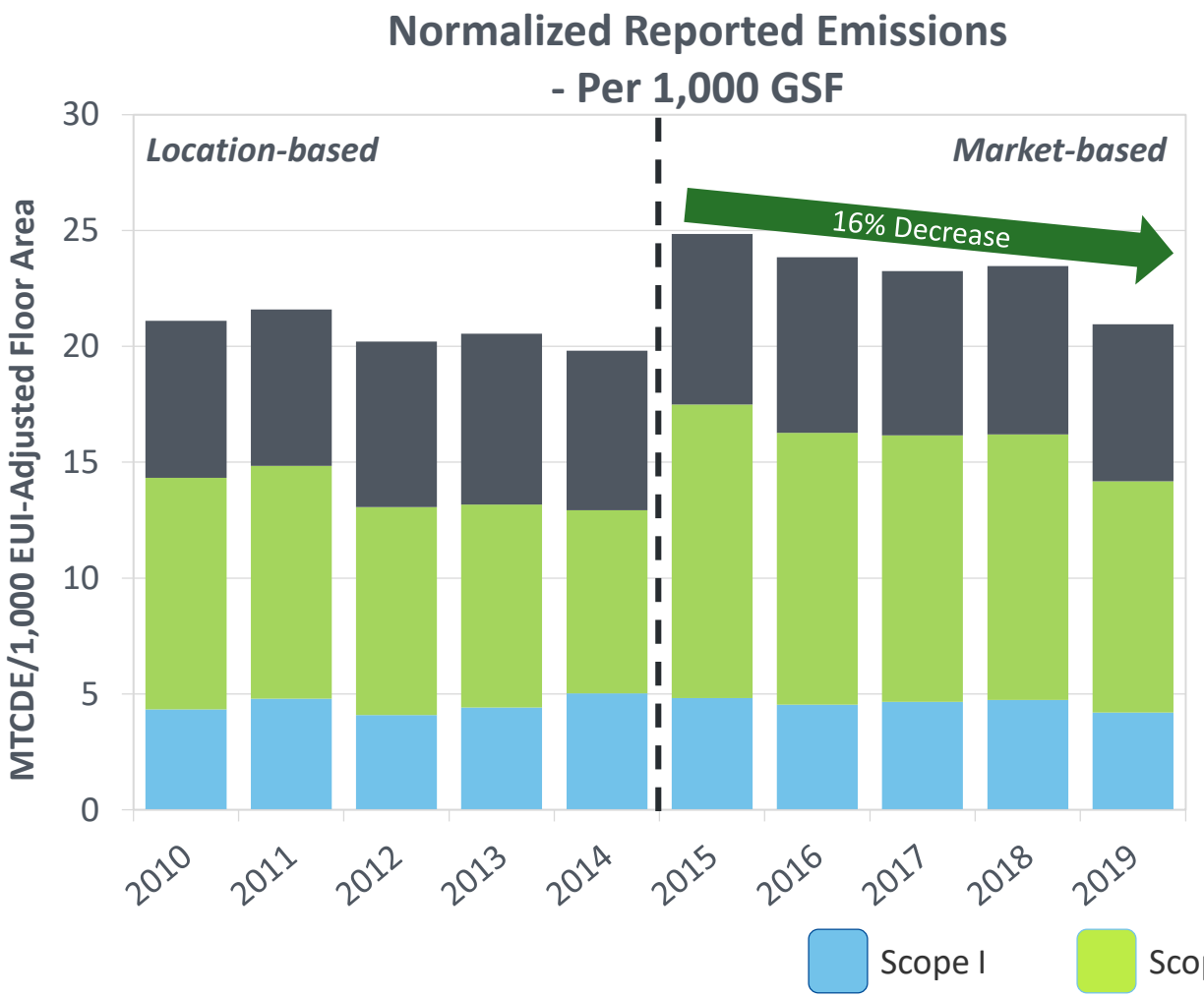
Total Emissions Continue to Increase since FY2010

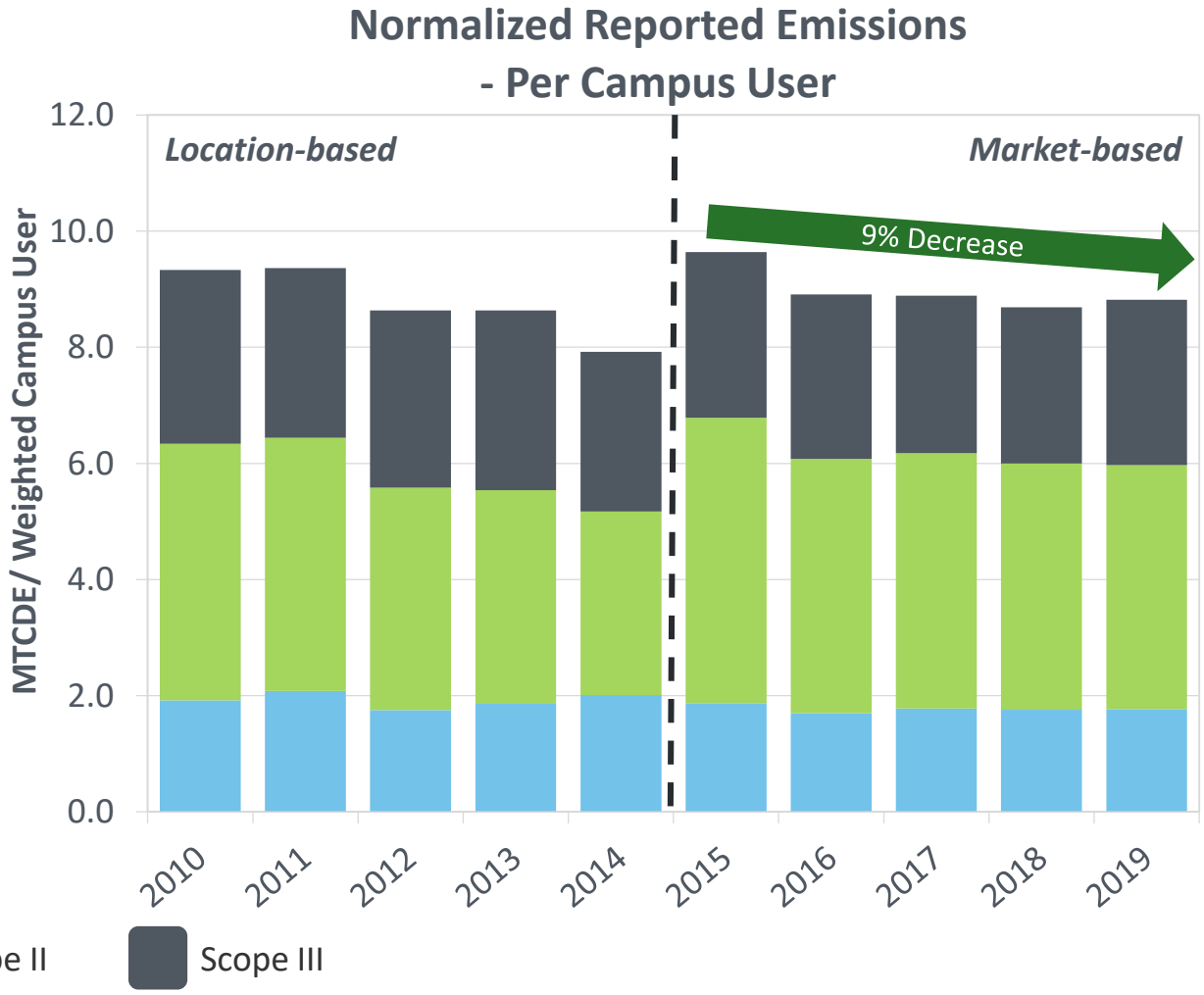
Scope 2 purchased electricity is the biggest driver of increased emissions



Clemson's Normalized Reported Emissions: Scope 1, 2, 3

With more space and more users on campus, Clemson's normalized emissions are on a downward trend





Scope I Scope II Scope III

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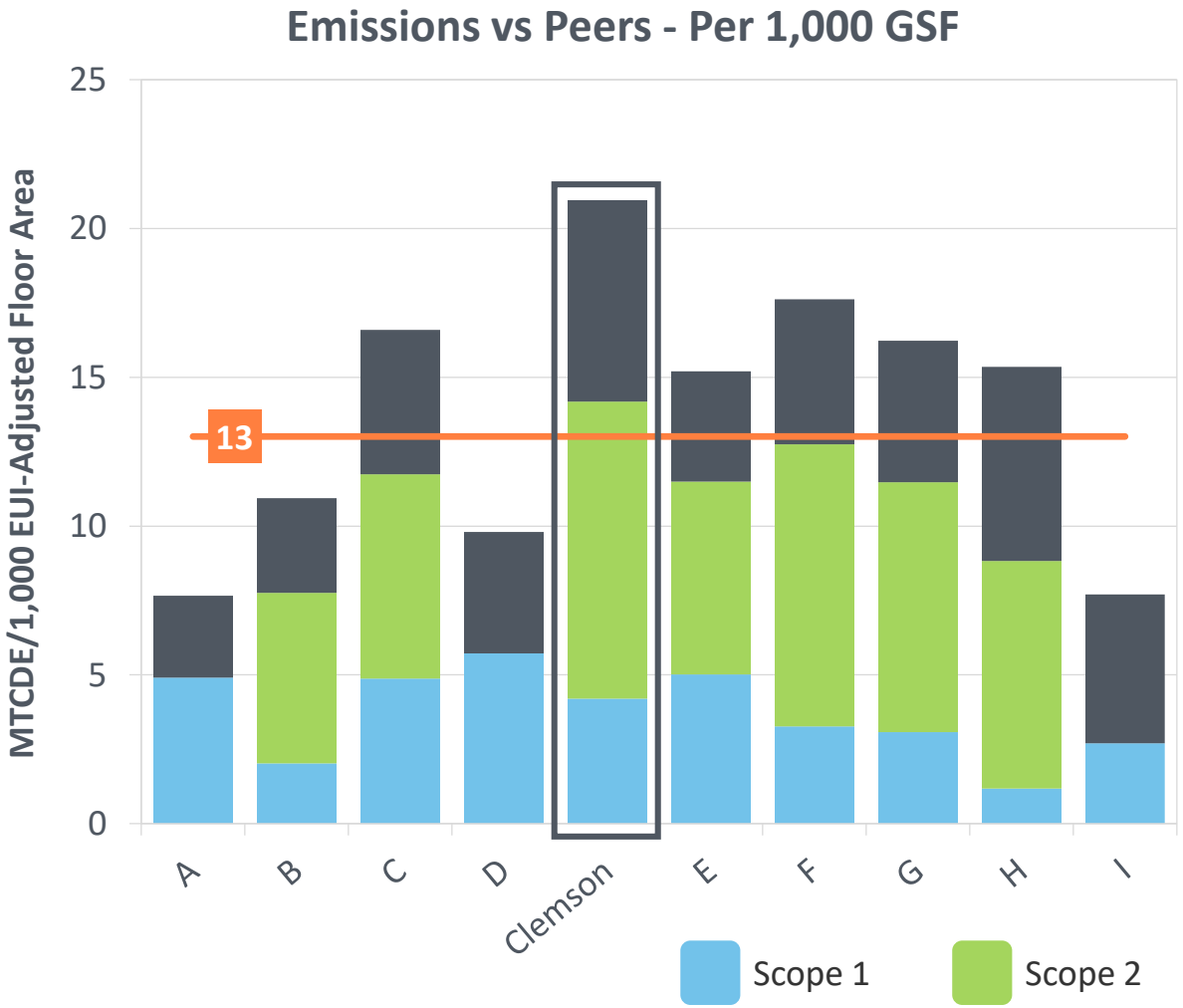
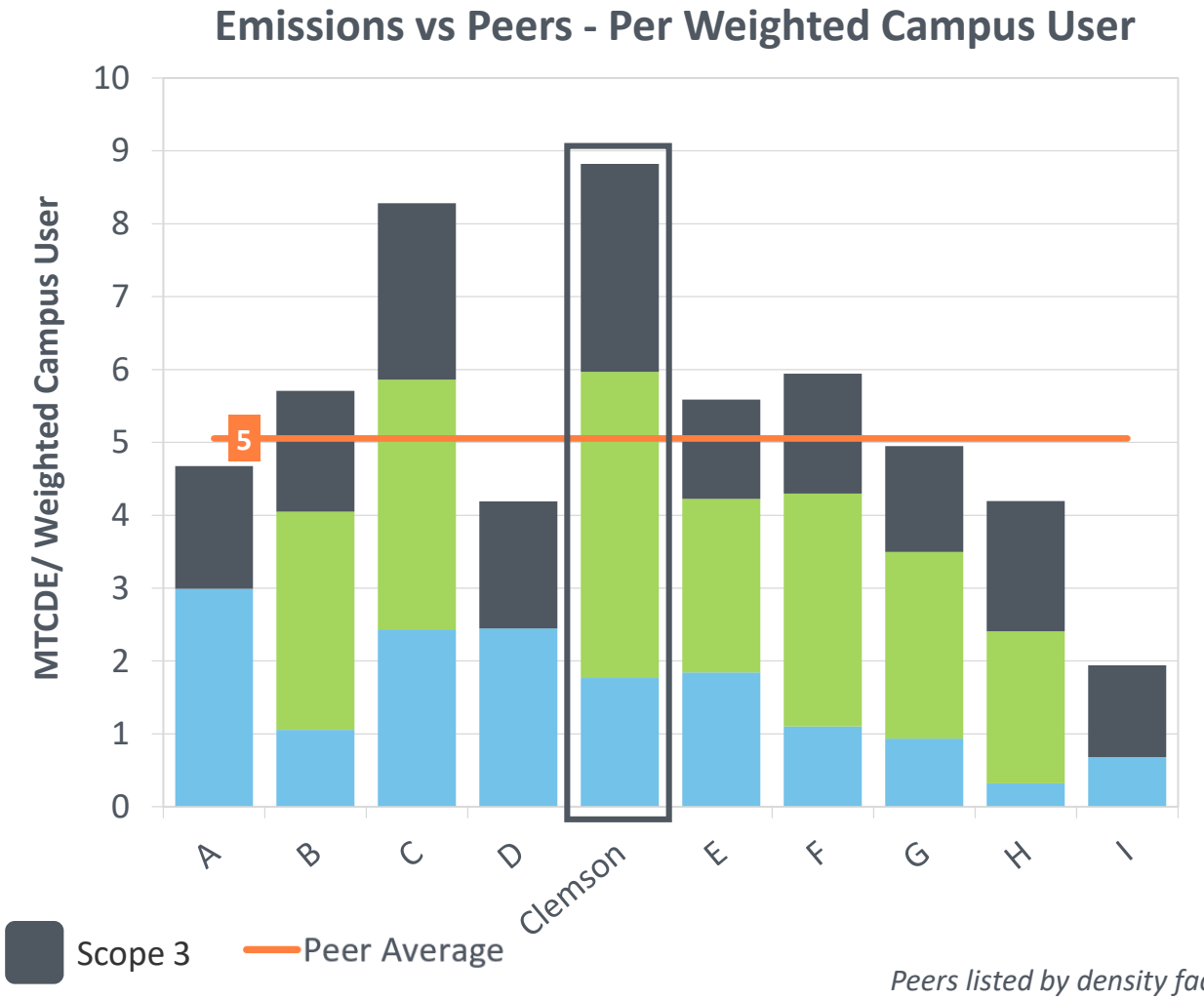
Clemson Produces More Emissions Than Peer Group

Normalized by GSF, Clemson emits 61% more than peers; normalized by campus user, 75% more than peers





Scope 1 Scope 2 Scope 3 Peer Average

Peers listed by density factor

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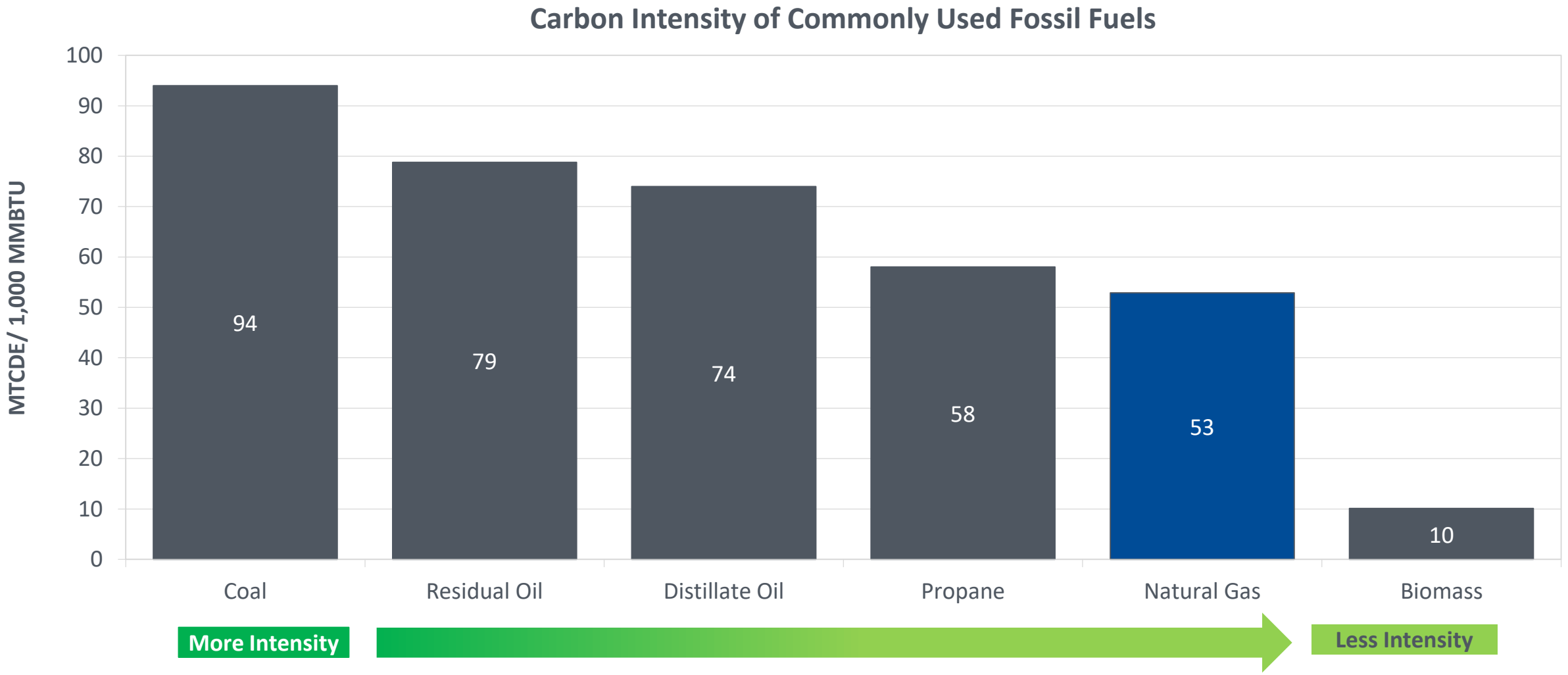
Scope 1 Emissions Profile

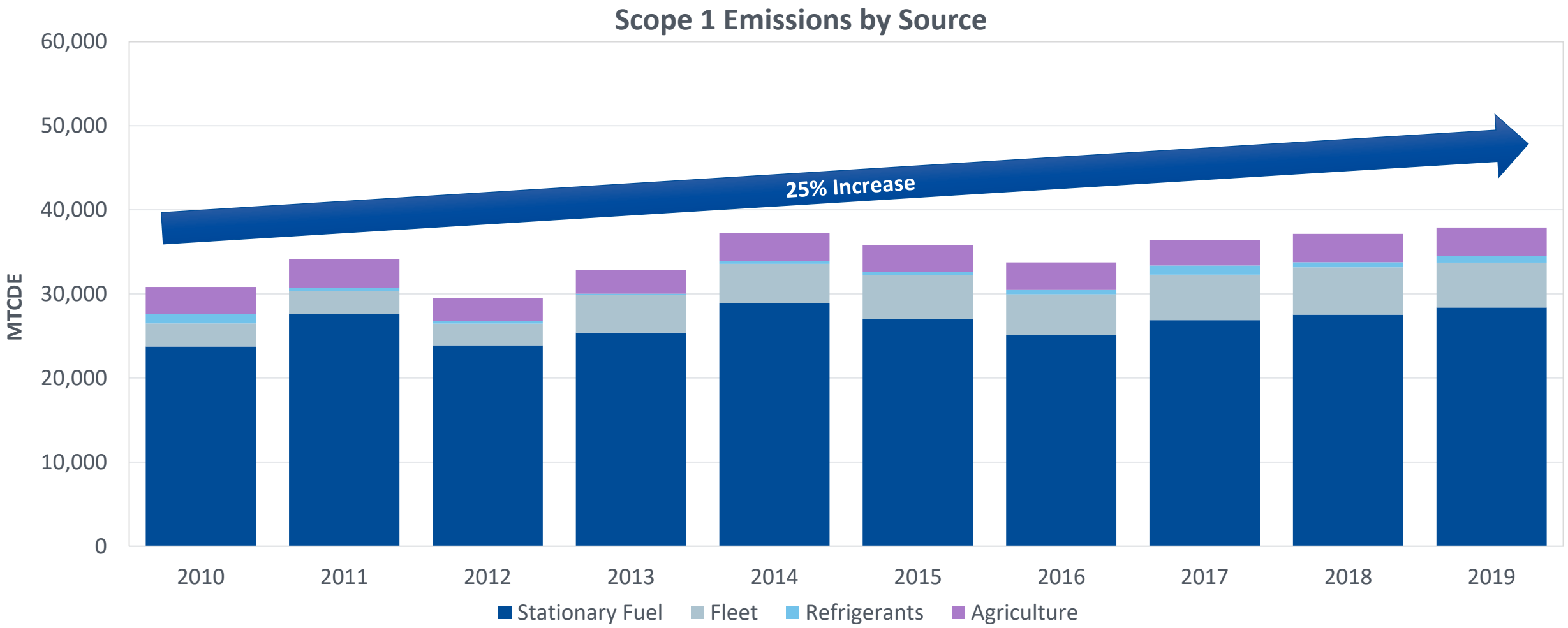
MTCDE for Commonly Used Scope 1 Fuels

Clemson benefits from using a lower carbon intense fuel



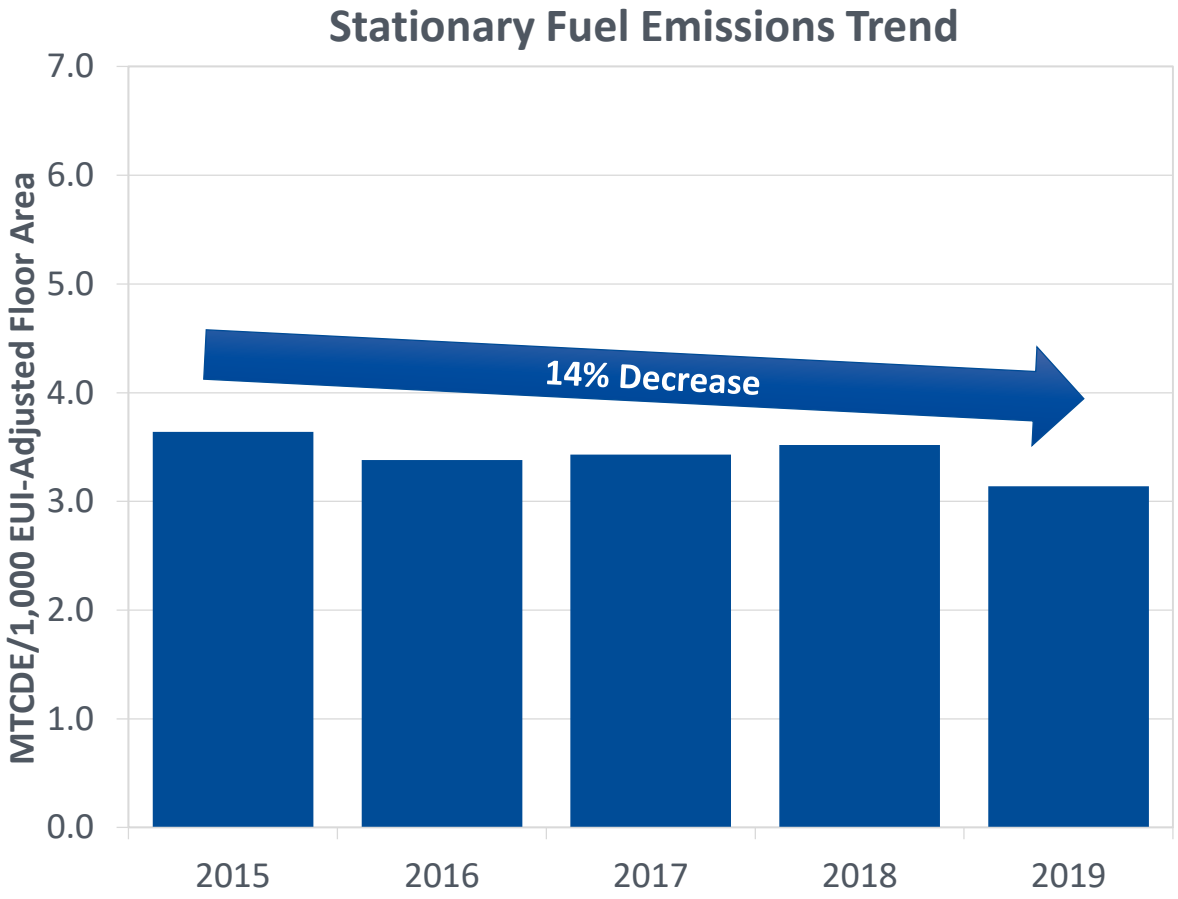
Continuous Growth in Space & Population Attribute to Emissions Increase

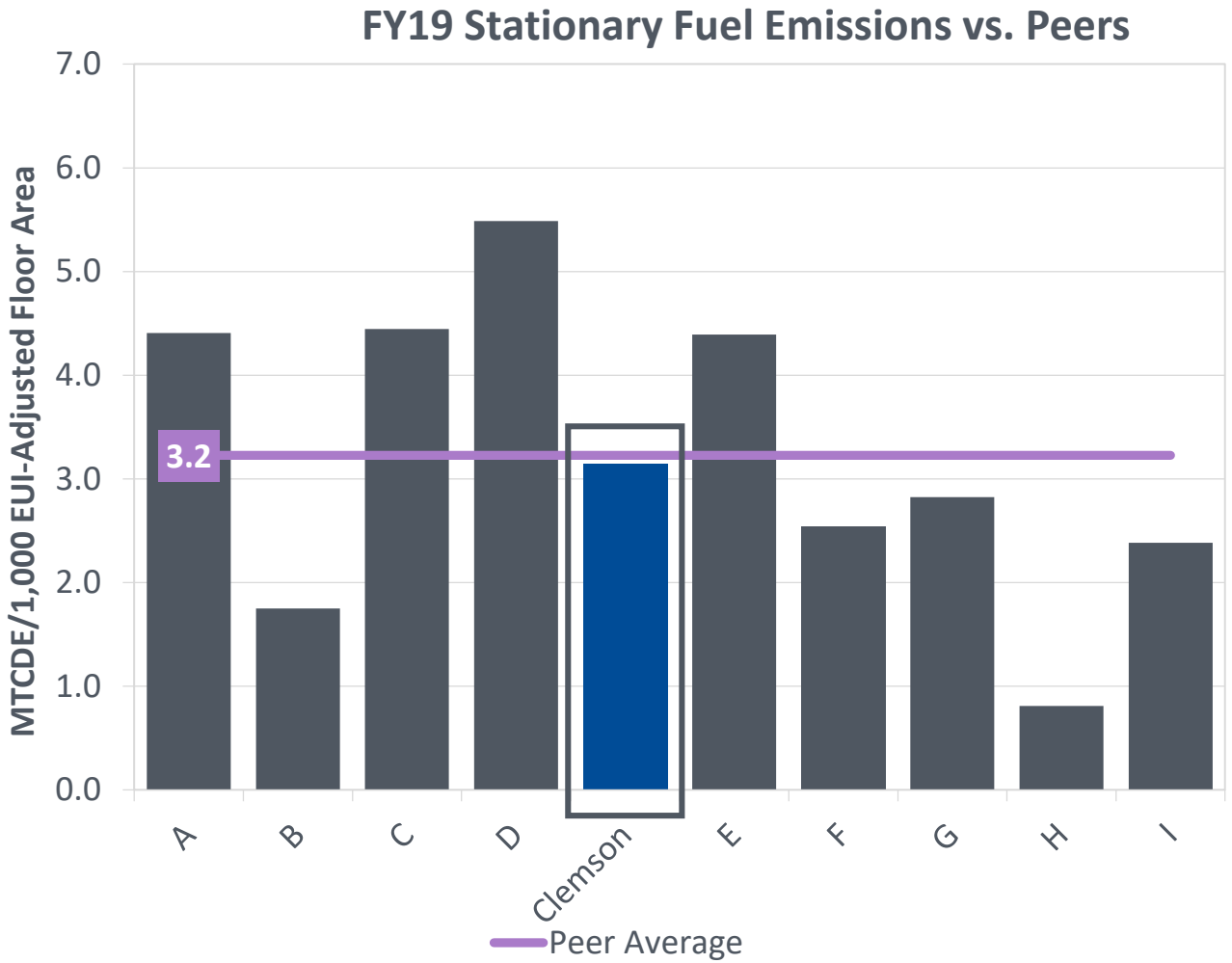
Stationary Fuel is the biggest driver of Scope 1 increase; Fleet Emissions doubled since 2010



Additional GSF Results in Overall Decrease of MTCDE's

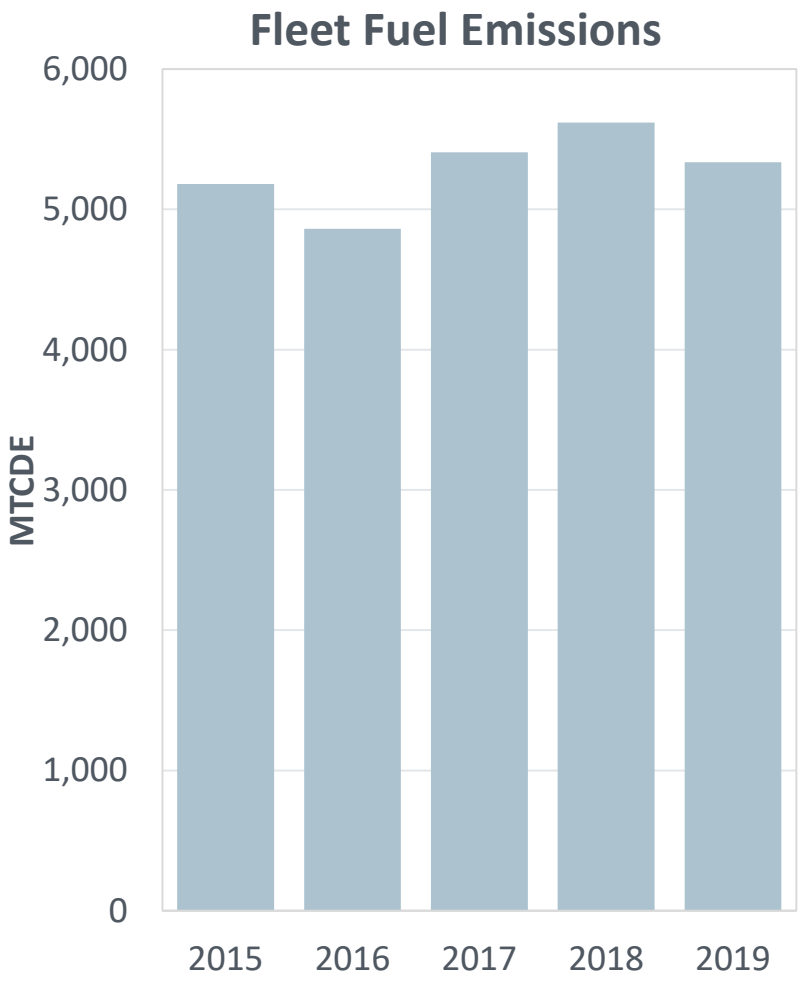
Normalized to peers, Clemson's stationary fuel emissions per GSF are similar to peer average

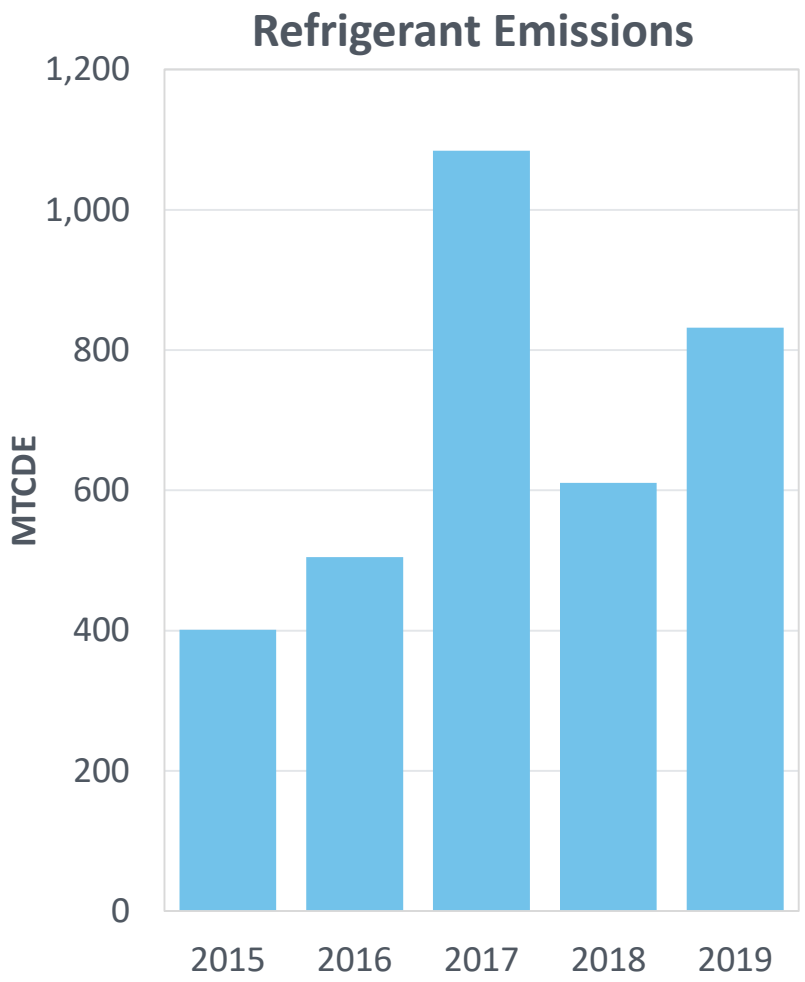


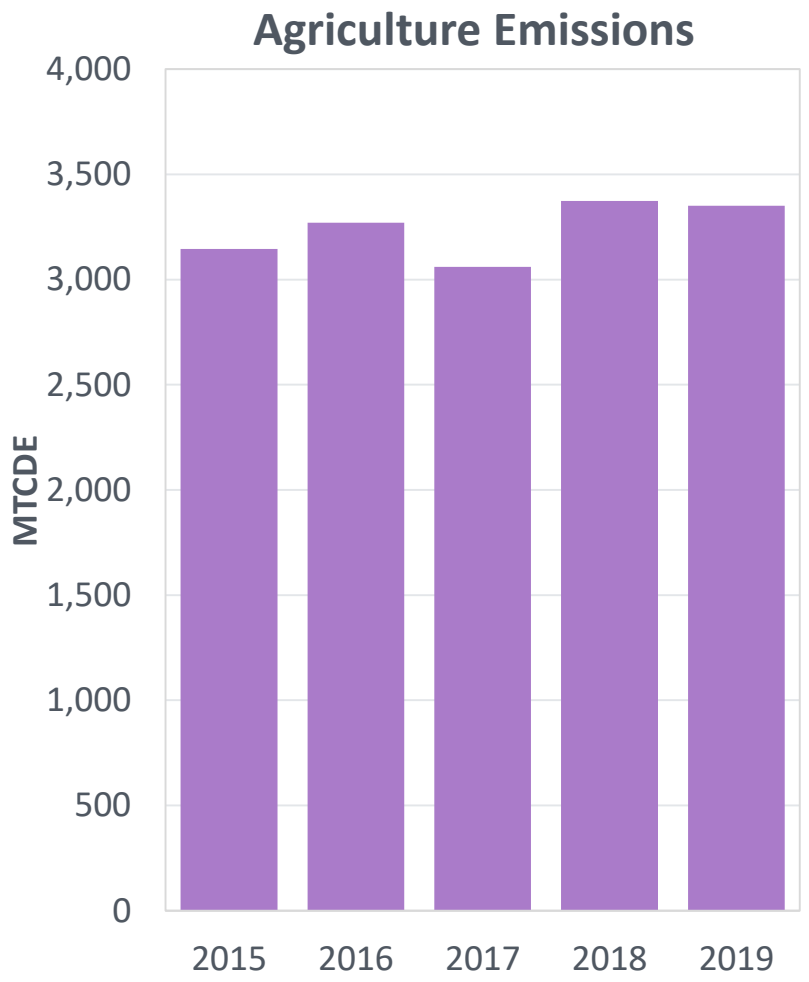


*Peers ordered by Density

De Minimis Sources Contribute 18% of Scope 1 Emissions







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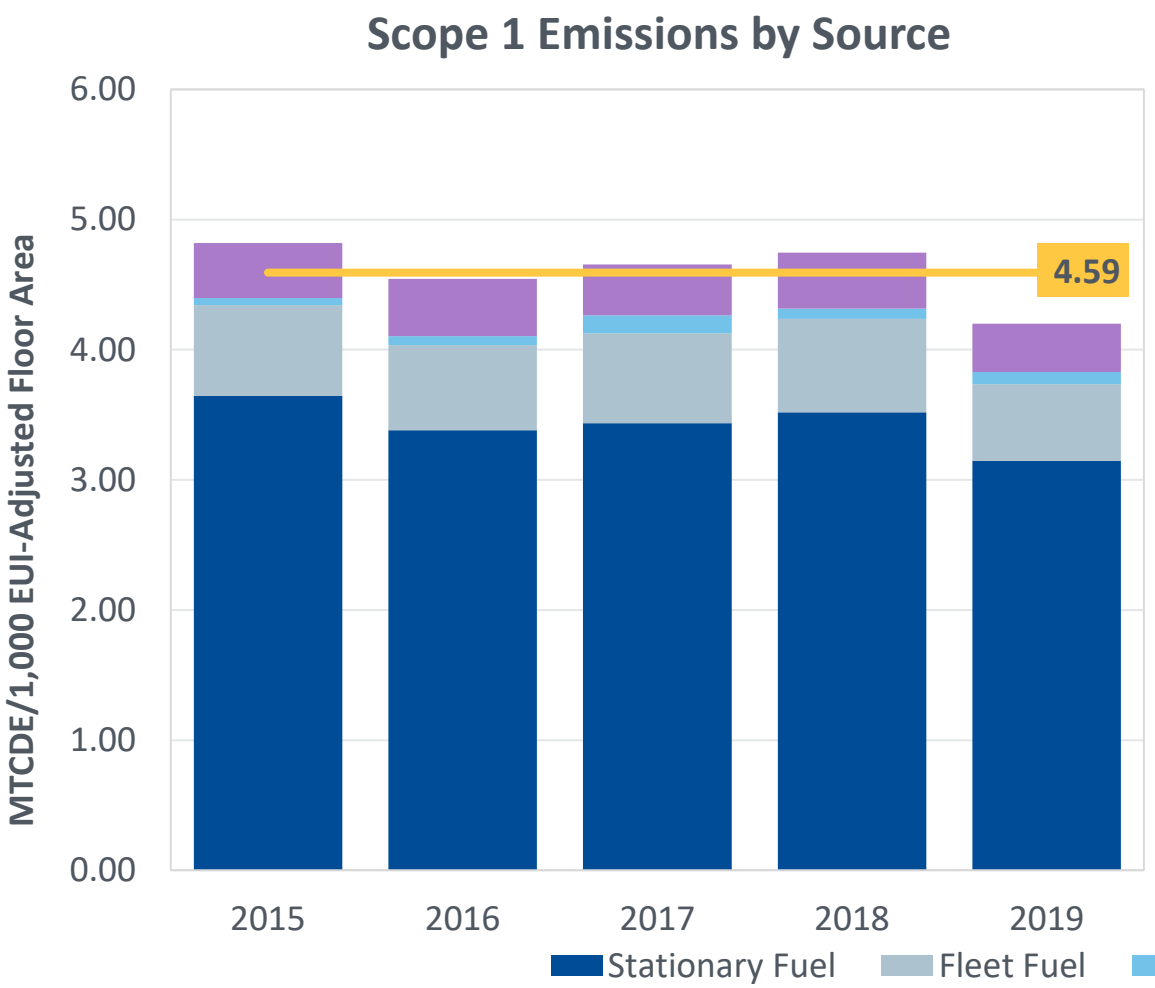
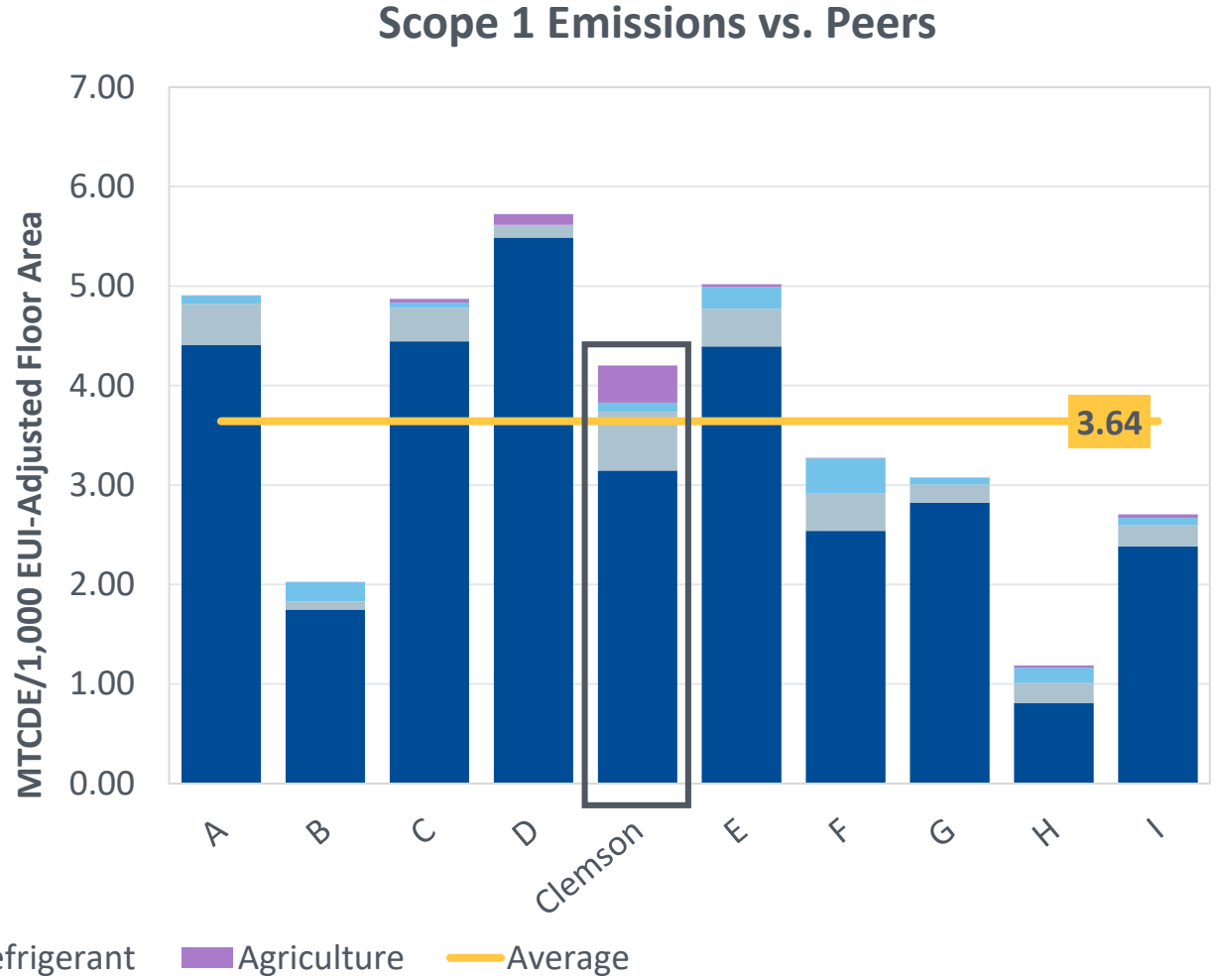
In FY19, Clemson Produced 15% More Scope 1 Emissions Than Peers

When normalized to peers, Clemson decreased total scope 1 emissions per space FY2015-FY2019





*Peers ordered by Density

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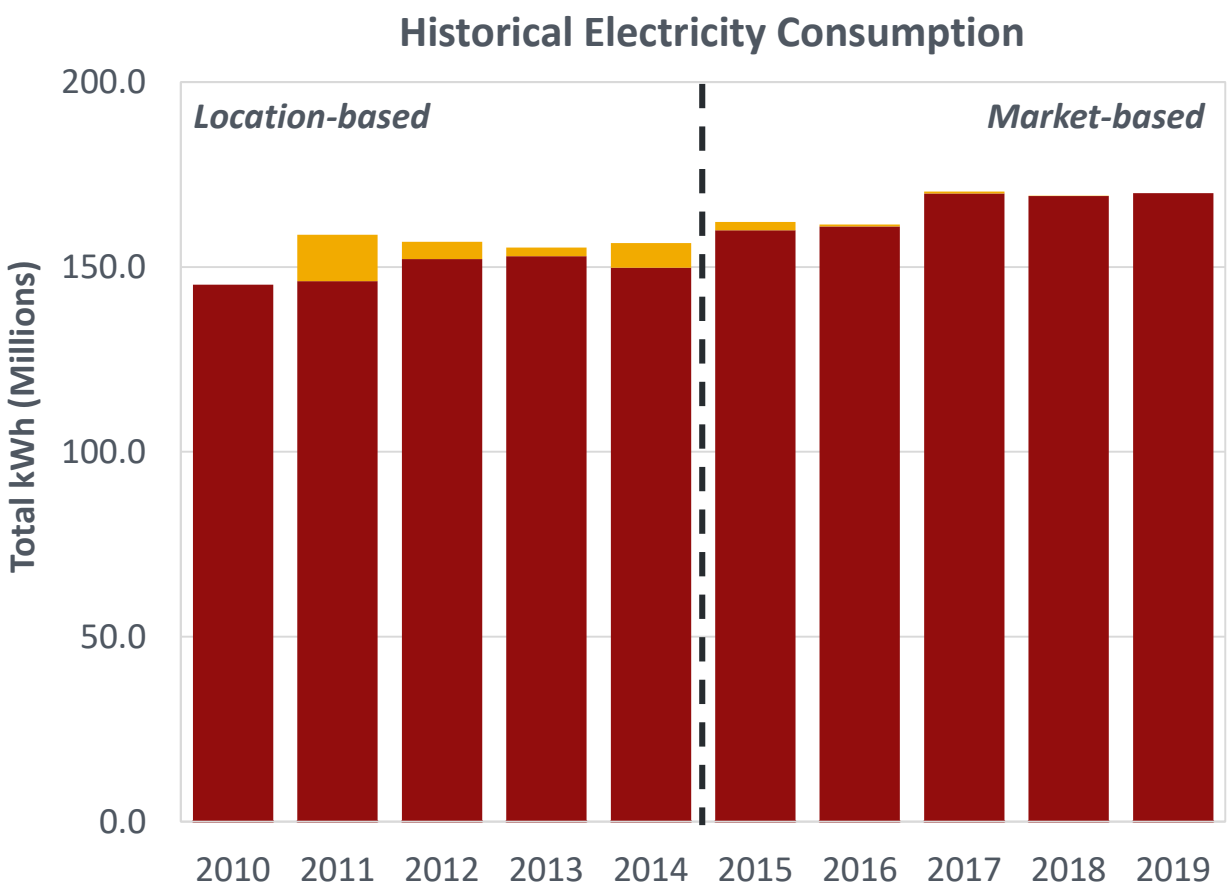
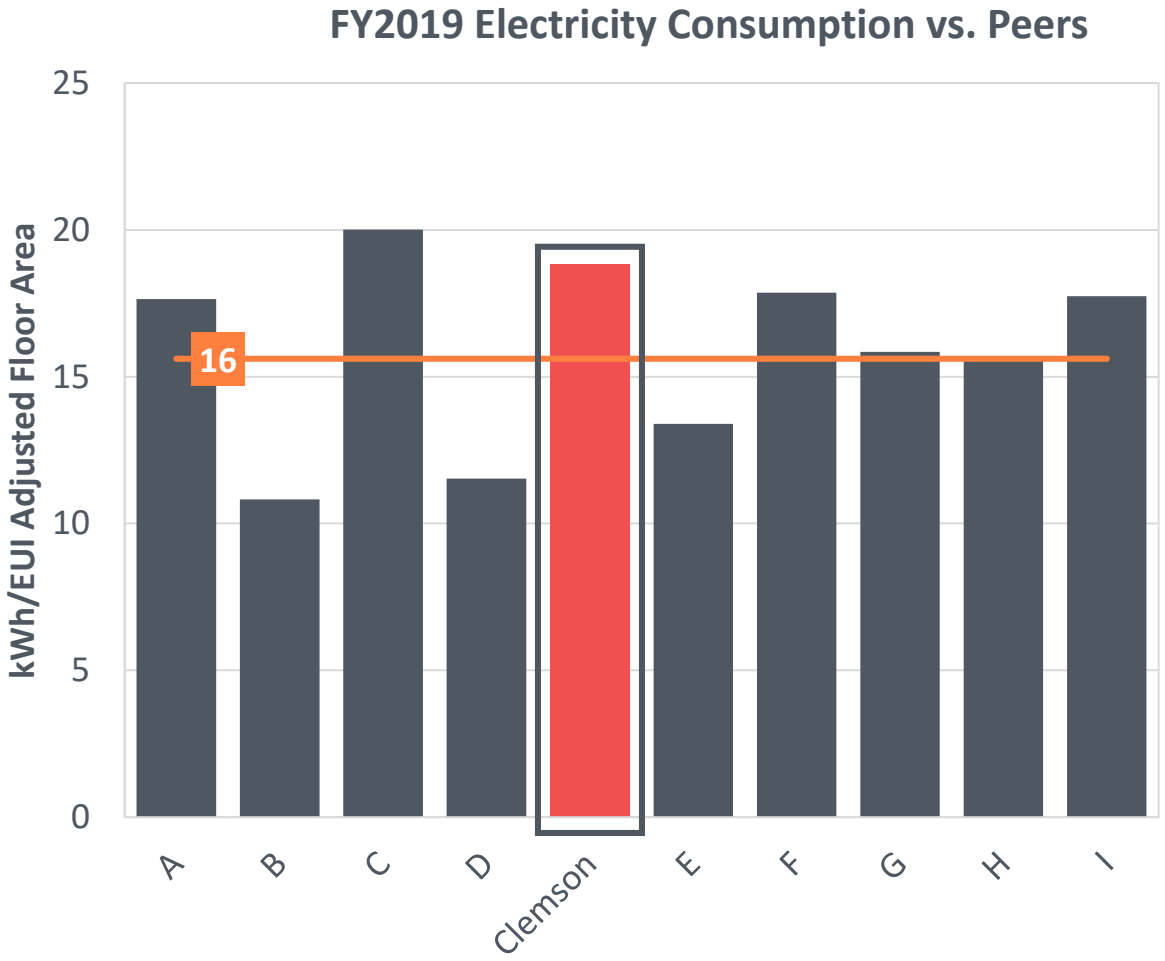
Scope 2 Emissions Profile

Electricity Consumption Increased 17% Since FY2010

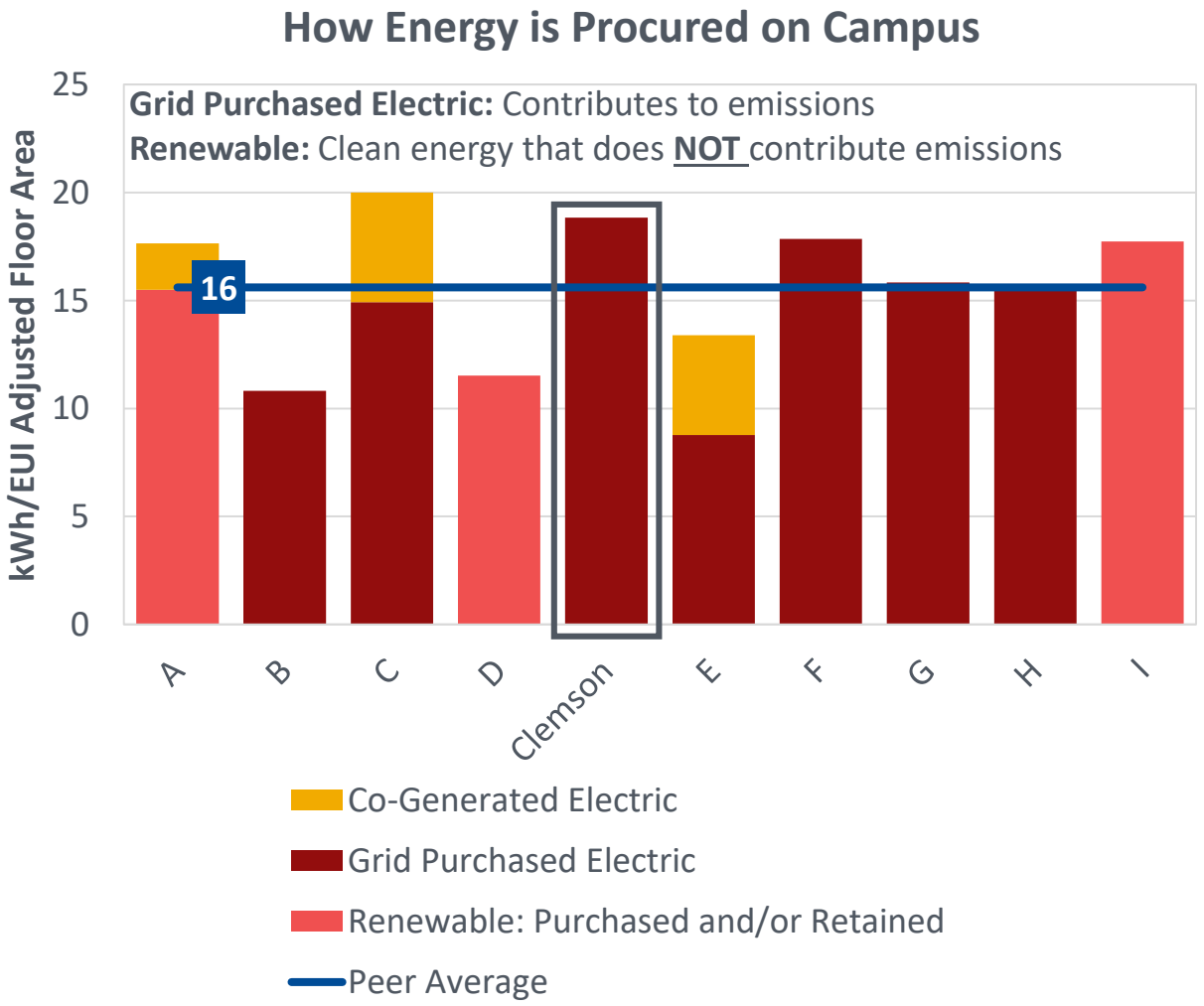
Clemson consumes the second most electricity when compared to peers

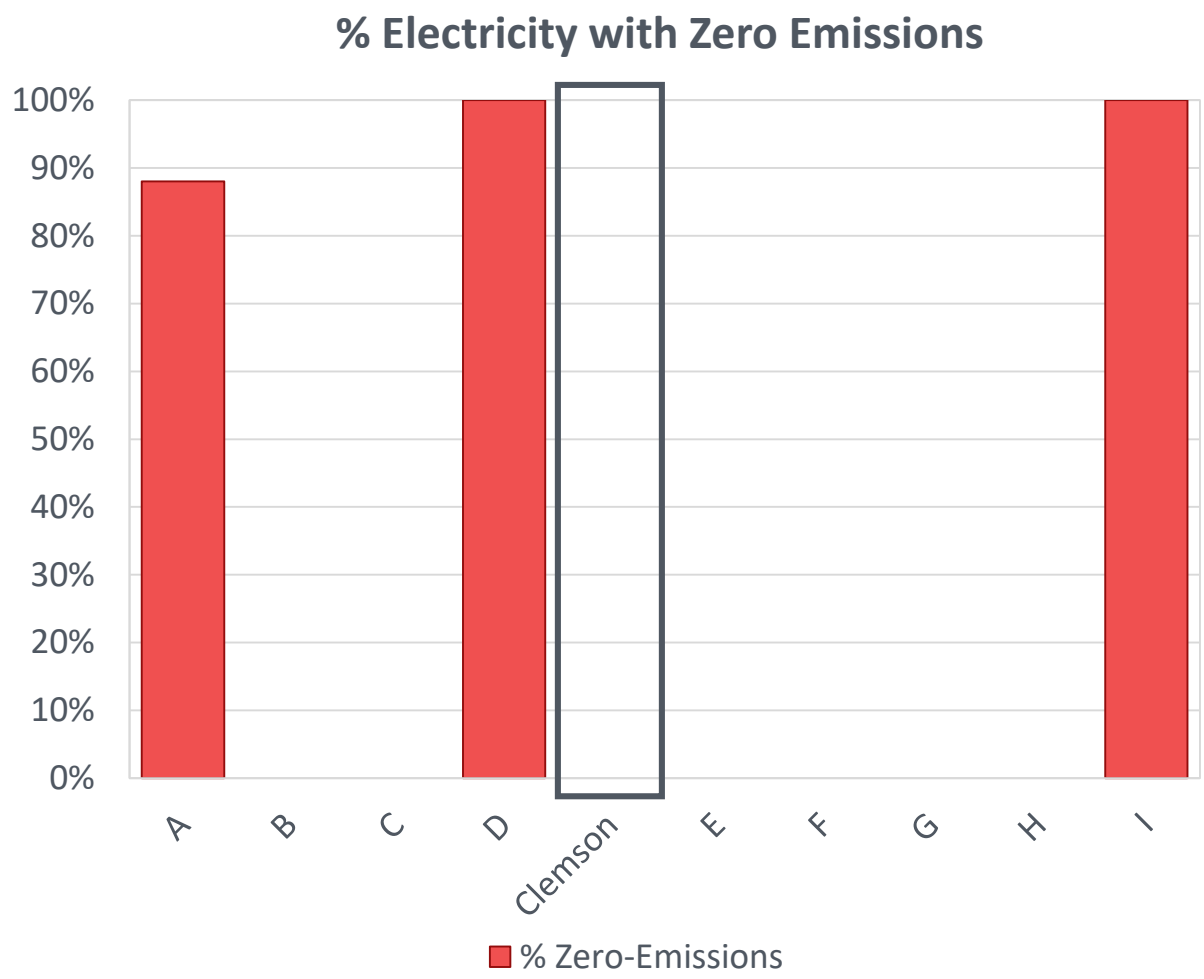




Methods of Electricity Procurement vs. Impact on Scope 2 Emissions

Clemson consumes more grid purchased electricity than peers





*Peers ordered by Density

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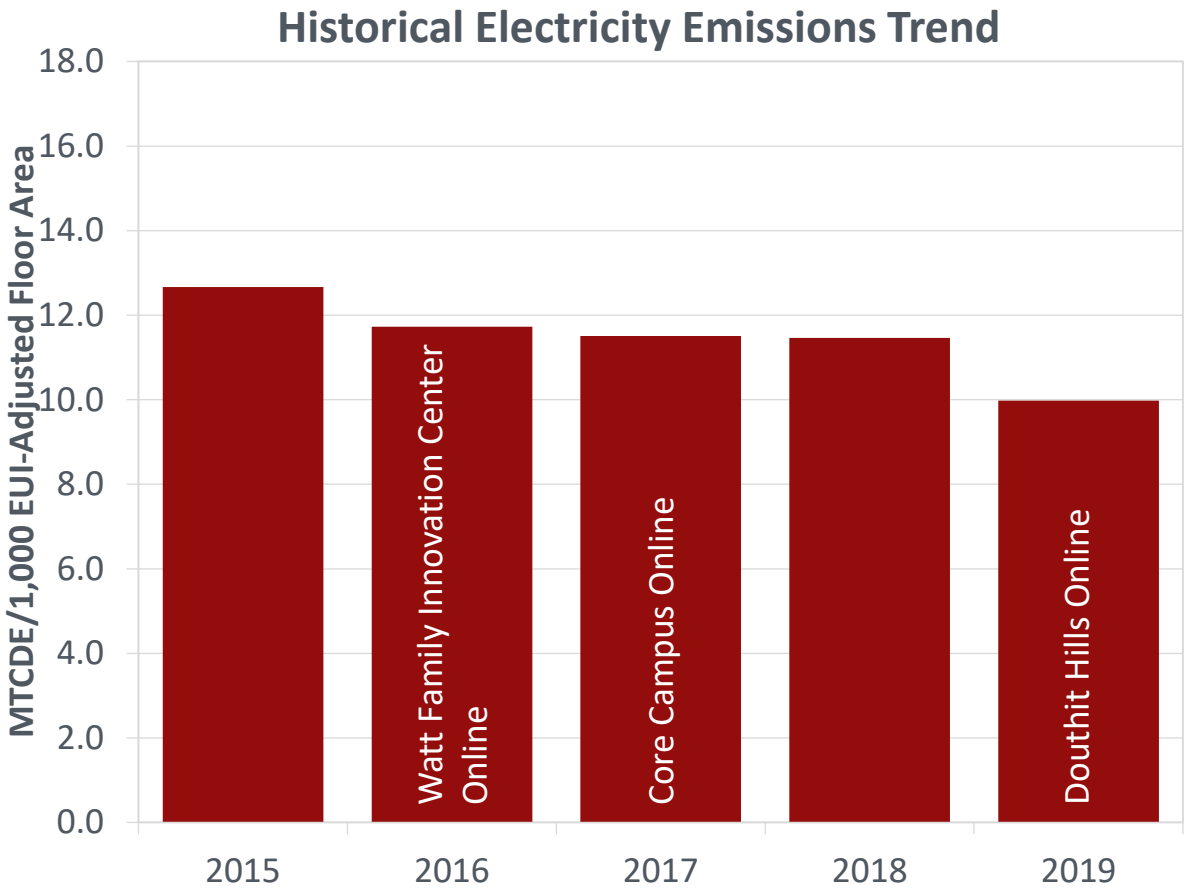
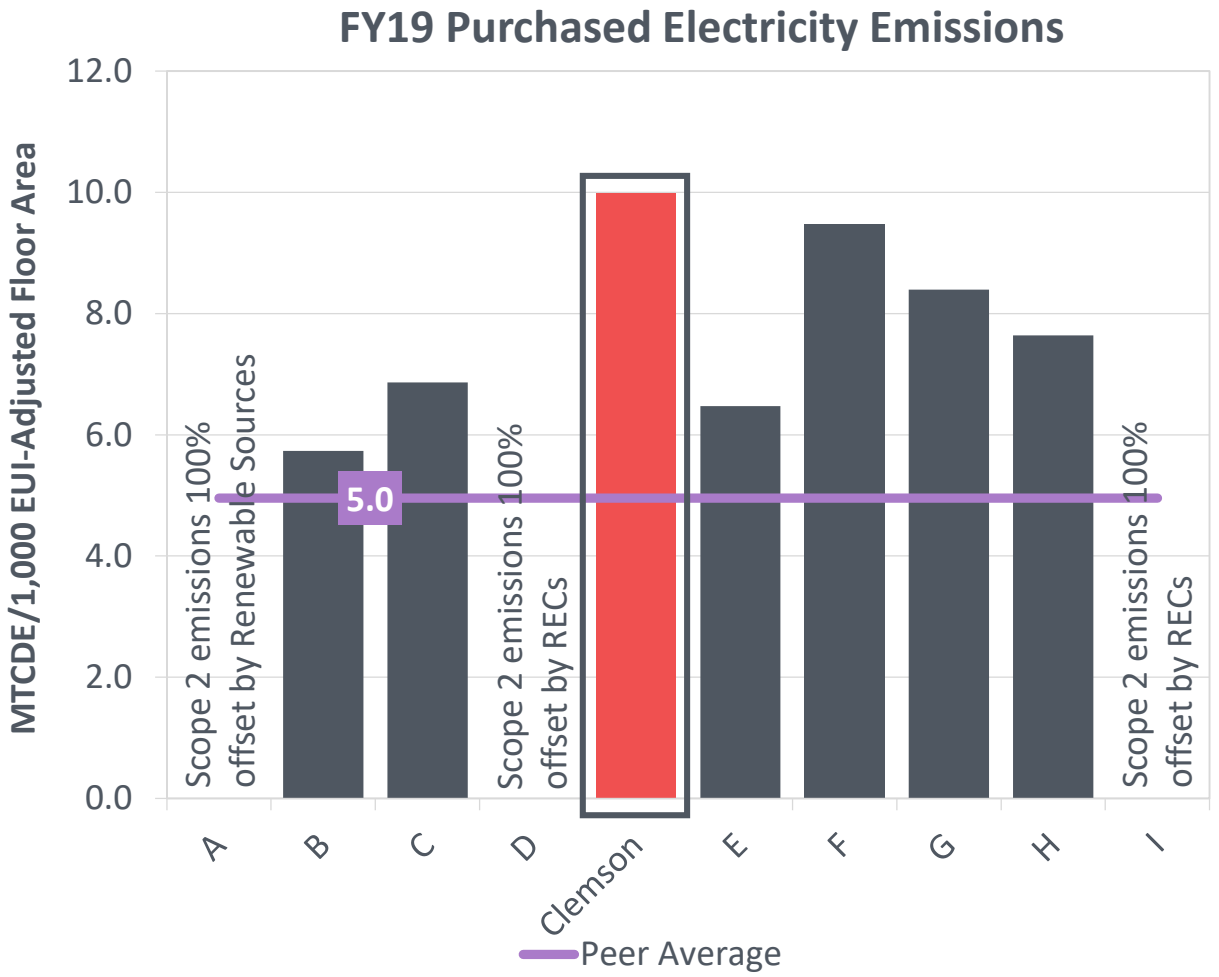
Scope 2 Emissions Decrease as New Space Came Online

Normalized to peers who use offsets and RECs, Clemson produces more Scope 2 emissions per space





*Peers ordered by Density

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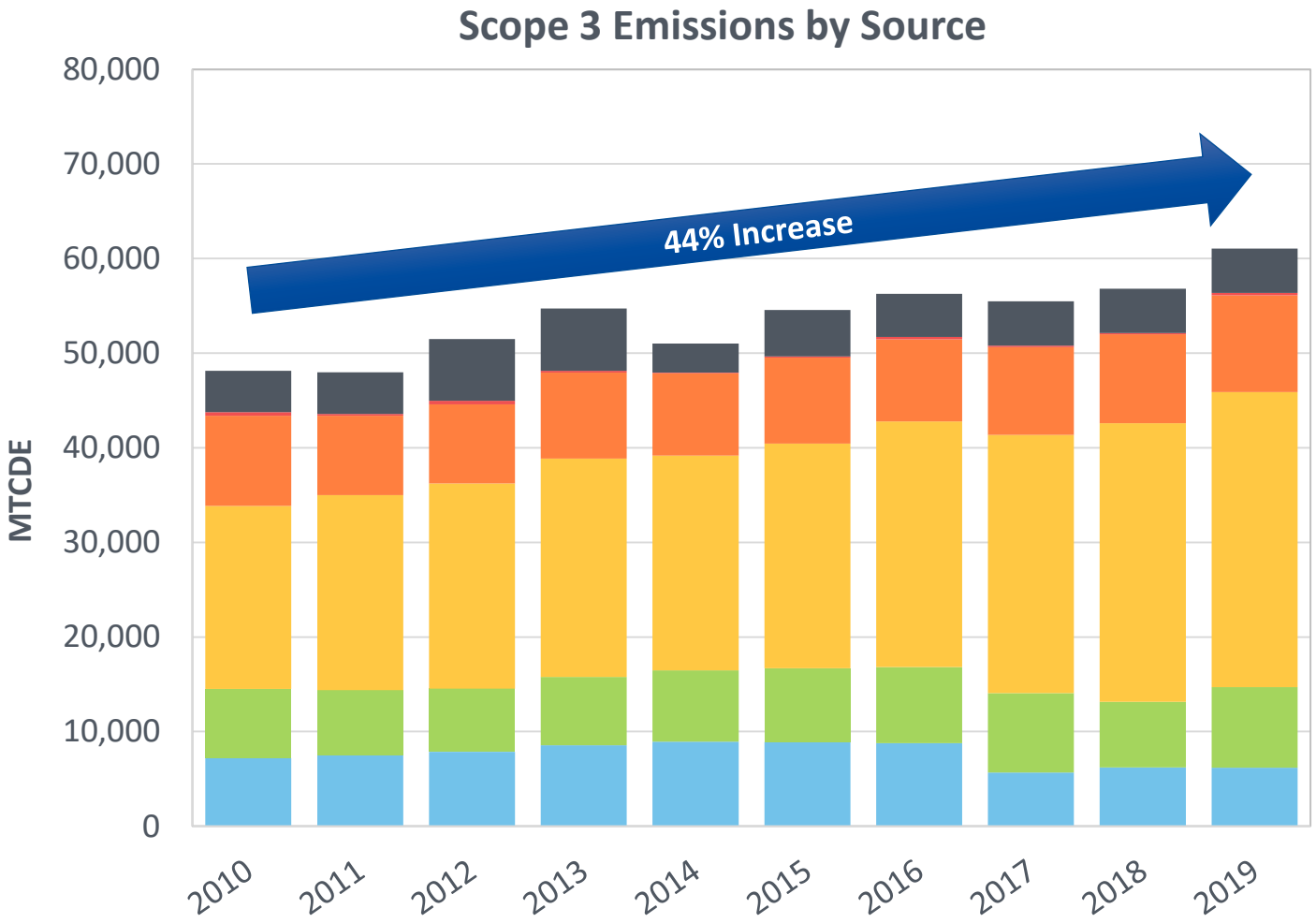
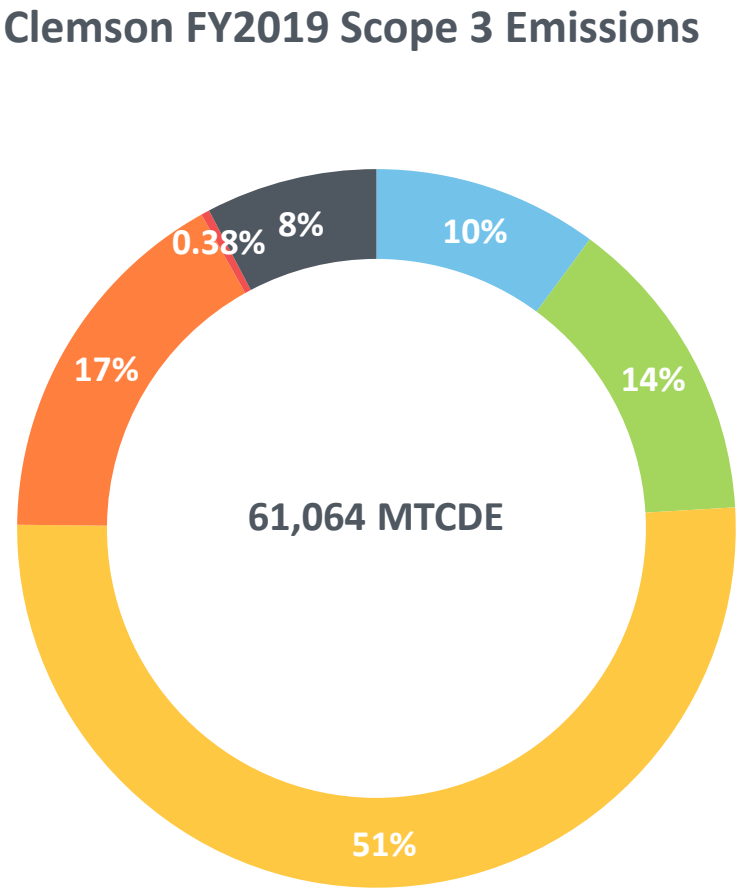
Scope 3 Emissions Profile

Travel Contributes to Over 50% of Clemson's Scope 3 Emissions

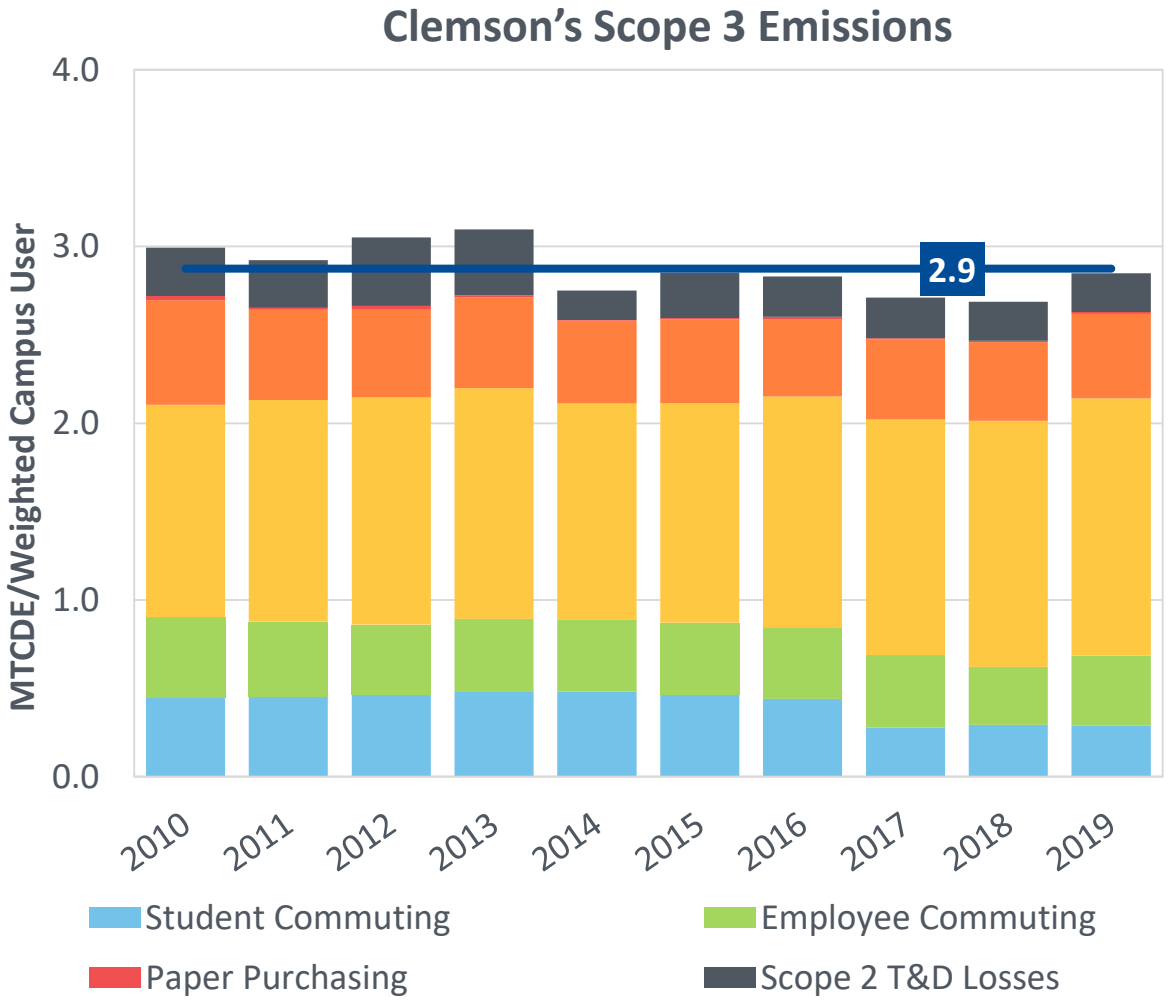


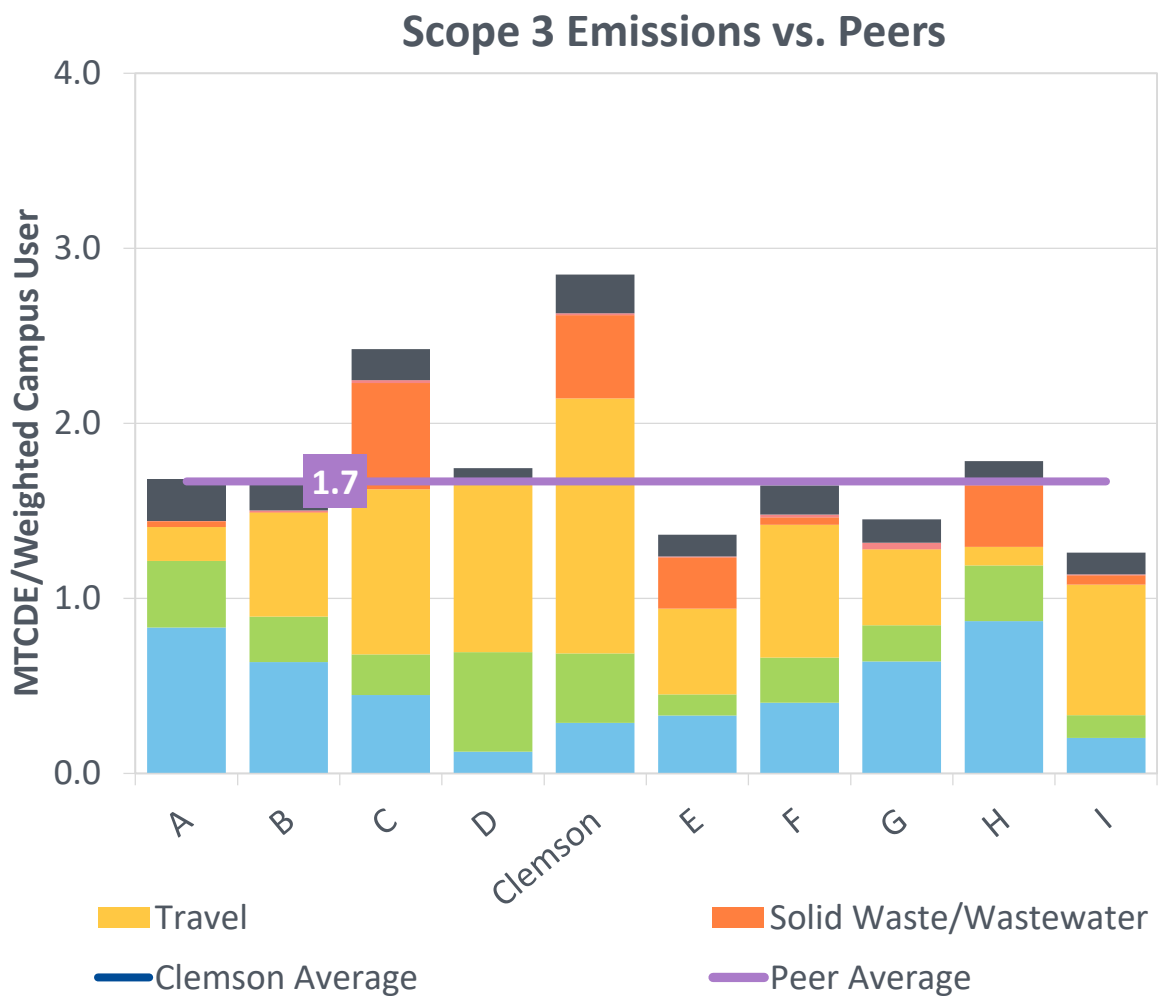


Commuting information pulled from FY2018
Clemson has a new commuting survey pending

Normalized Scope 3 Emissions Decreased 5% Since FY2010

Travel emissions per Weighted Campus User push Clemson's Scope 3 total highest among peers





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Processing Student Travel Information

Line #	Line Descr	Long Descr	Ref	Date
1	Dominica trip	50% program fee for Student Site Leaders on the Dominica trip.	ABP-SL-01	6/21/2019
79	Prepaid	Architecture, Arts, & Humanities FY18 prepaid amounts allocated to FY19 expense accounts.	CHG06070	10/30/2018
1	Student Travel	Marketplace		7/7/2018
105	Baggage Fees	AP Accrual	O0051830	7/7/2018
104	A Martin return flight change	AP Accrual	H0051831	7/10/2018
1526	1. Reimbursement for travel/h	AP Accrual	69883156	10/31/2018
3	AMERICAN AIR00121991368 11-JUL	Transactions Posted 11-JUL-2018 WIDENER, SALLY	########	7/16/2018
4	AMERICAN AIR00121991546 11-JUL	Transactions Posted 11-JUL-2018 WIDENER, SALLY	########	7/16/2018
5	AMERICAN AIR00121991368 11-JUL	Transactions Posted 11-JUL-2018 WIDENER, SALLY	########	7/16/2018
6	AMERICAN AIR00121991368 11-JUL	Transactions Posted 11-JUL-2018 WIDENER, SALLY	########	7/16/2018
7	DELTA AIR 00623320403 11-JUL	Transactions Posted 11-JUL-2018 WIDENER, SALLY	########	7/16/2018
450	10% deposit on May 2019 Market	AP Accrual	74165512	2/22/2019
13	UNITED 01671206555 06-JUL	Transactions Posted 11-JUL-2018 SORBER, TRISHA	7/9/2018	7/16/2018
14	Orbitz 7364208511748 06-JUL	Transactions Posted 11-JUL-2018 SORBER, TRISHA	7/9/2018	7/16/2018
15	DELTA AIR 00671206604 06-JUL	Transactions Posted 11-JUL-2018 SORBER, TRISHA	7/9/2018	7/16/2018
30	Roberts Gas Reimb Columbia,SC	AP Accrual	H0051842	7/16/2018
31	Baggage Fees	AP Accrual	O0051838	7/16/2018
1457	Adobe Internship	AP Accrual	C0051835	7/16/2018
1458	Adobe Internship	AP Accrual	C0051836	7/16/2018
1538	10/1 - travel - Atlanta	AP Accrual	H0313673	12/17/2018
1460	Expense Distribution	AP Accrual	L0303568	7/16/2018
1461	Travel Wong Wallops AFB	AP Accrual	H0051845	7/16/2018
1462	Travel Matthews Wallops AFB	AP Accrual	H0051847	7/16/2018
1463	Baggage Fees	AP Accrual	O0051832	7/16/2018
1464	Baggage Fees	AP Accrual	O0051833	7/16/2018
1465	Baggage Fees	AP Accrual	O0051834	7/16/2018
1	DELTA AIR 00671202101 03-JUL	Transactions Posted 05-JUL-2018--27-JUN-2018 RAYMARK, PATRICK	7/5/2018	7/17/2018
2	INTERDISCIPLINARY 15-JUL	Transactions Posted 05-JUL-2018--27-JUN-2018 RAYMARK, PATRICK	########	7/17/2018
3	Baggage Fees	AP Accrual	O0051854	7/17/2018
3	INTERDISCIPLINARY 15-JUL	Transactions Posted 05-JUL-2018--27-JUN-2018 RAYMARK, PATRICK	########	7/17/2018
18	AMERICAN AIR00171202179 03-JUL	Transactions Posted 05-JUL-2018--27-JUN-2018 RAYMARK, PATRICK	7/5/2018	7/17/2018
19	DELTA AIR 00671202101 03-JUL	Transactions Posted 05-JUL-2018--27-JUN-2018 RAYMARK, PATRICK	7/5/2018	7/17/2018
673	10/1 Atlanta	AP Accrual	H0308833	10/26/2018
21	Group Travel, Meals	AP Accrual	O0303671	7/17/2018
22	Airfare stipend	AP Accrual	O0051852	7/17/2018
23	Airfare stipend	AP Accrual	O0051853	7/17/2018
768	Rental Car Total Day/Week Amou	AP Accrual	65467257	7/17/2018

Example Key Words Included:

- Airfare
- Airline names (e.g. Delta, United)
- Mileage
- Rental Car
- Van

Example Key Words Excluded:

- Airbnb
- Baggage Fees
- Hotel names (e.g. Hilton, Marriott)
- Lodging
- Meals

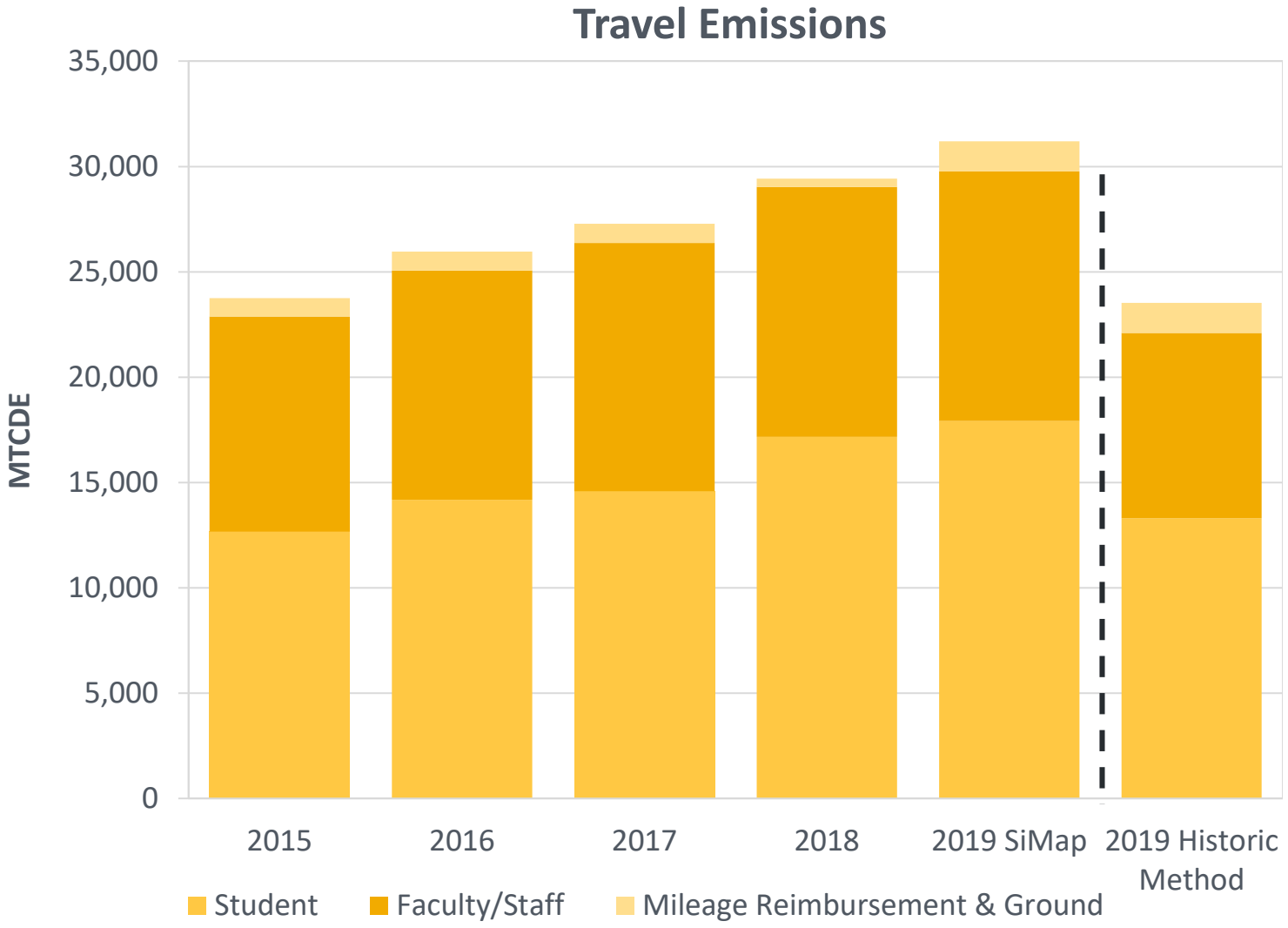
Changes in Processing Travel – Carbon Calculator vs. SiMap

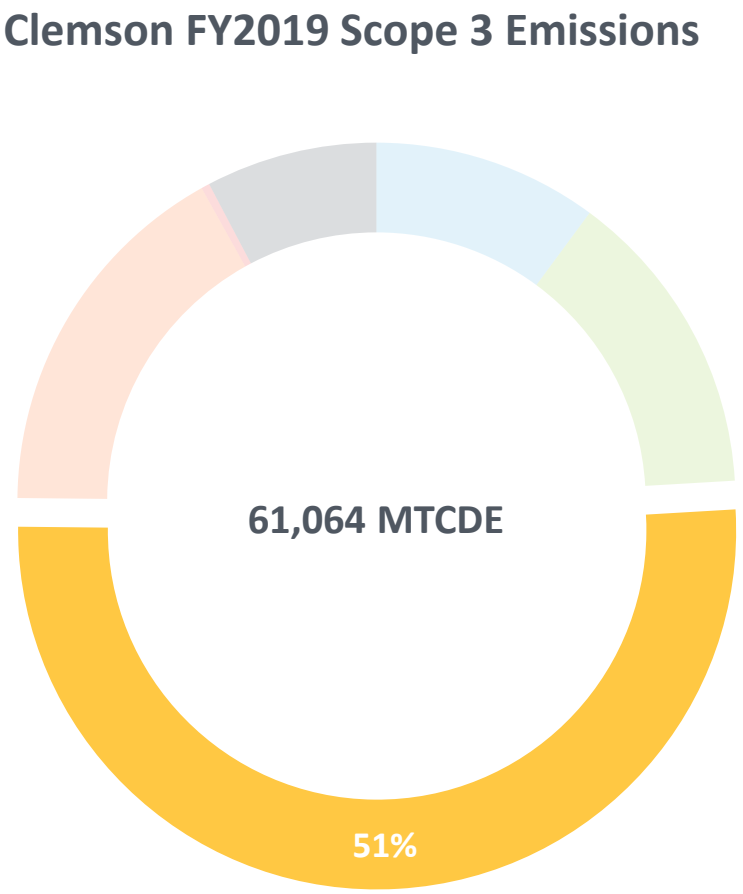
- Historically, Sightlines utilized a Scope 3 Template when processing Clemson's travel information.
- The template calculated total dollars to miles using an annual standard conversion rate.
- Miles were translated to MTCDEs using UNH's historic Carbon Calculator.

SIMAP
SUSTAINABILITY INDICATOR MANAGEMENT & ANALYSIS PLATFORM

- In FY2017, SiMap was released and updated the methodology of how carbon emissions are calculated, including travel.
- With SiMap, travel dollars can be directly converted to MTCDEs.
  - The new methodology performs a behind-the-scenes calculation that results in higher emissions than what was produced historically.
- A more accurate depiction of travel emissions is through the aggregation of travel miles.

Current SiMap Methodology Results in MTCDE Growth





**SiMap converts dollars into miles*

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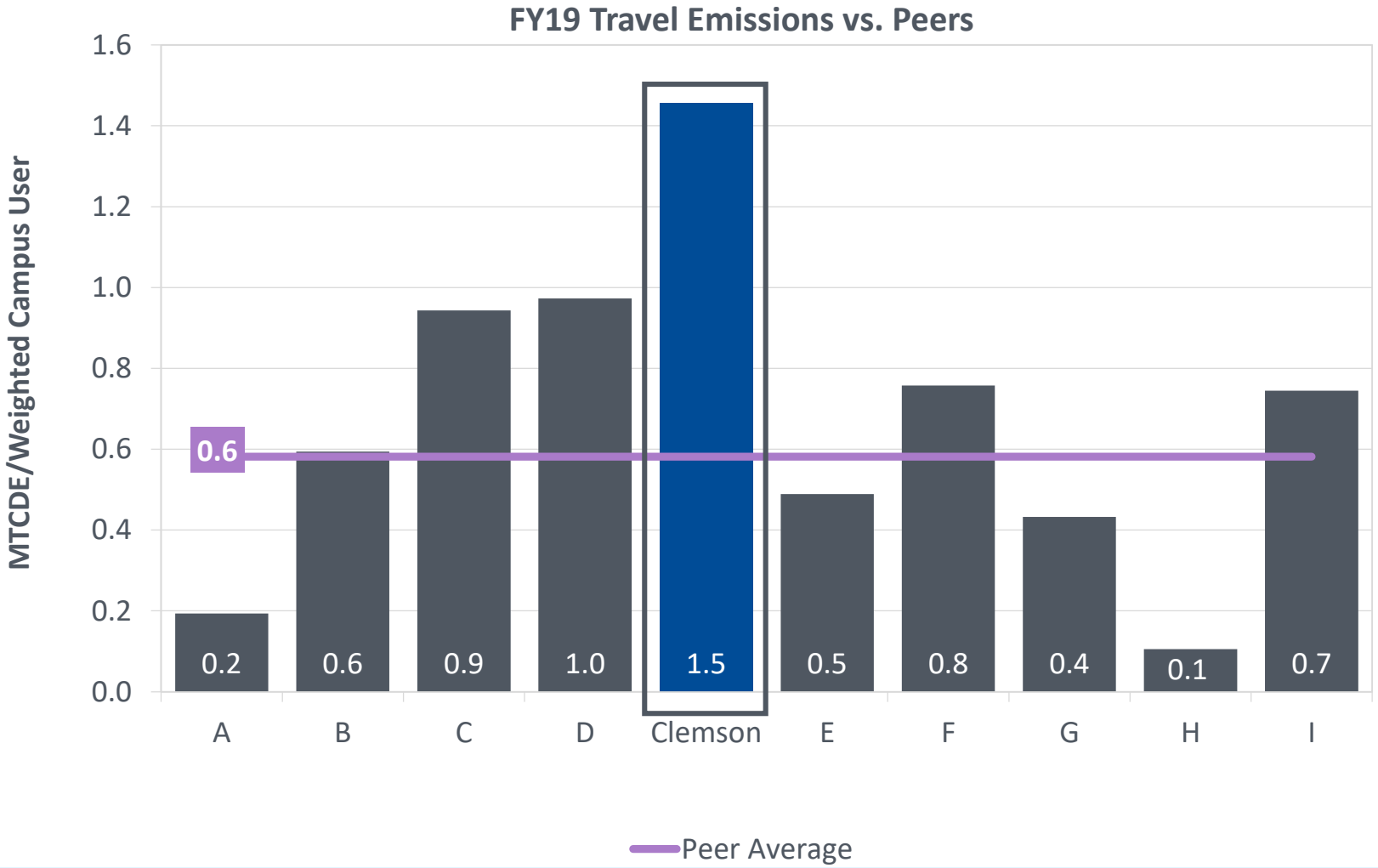
Current Method of Data Tracking Shows Users at Clemson Travel More

Robust travel programs on campus produce more emissions than peer group

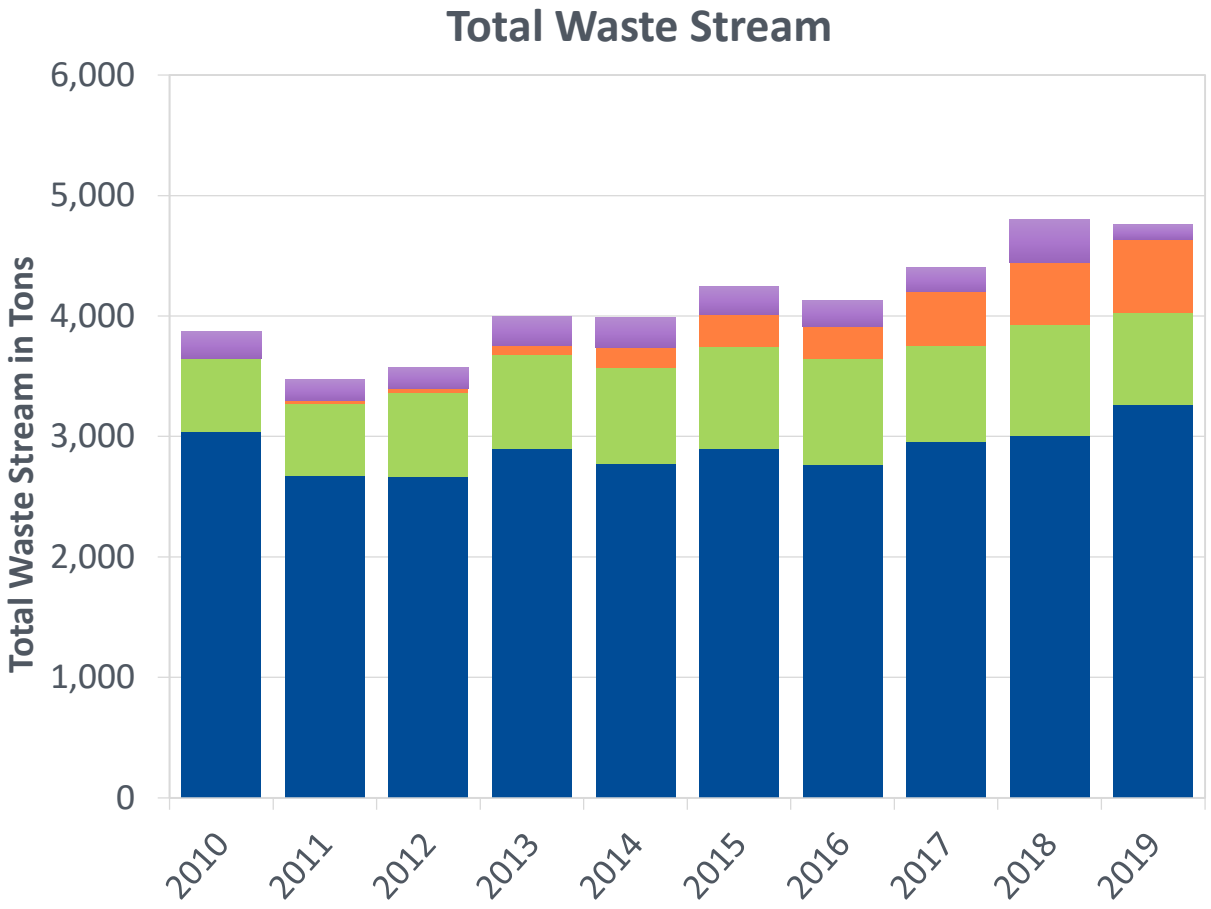


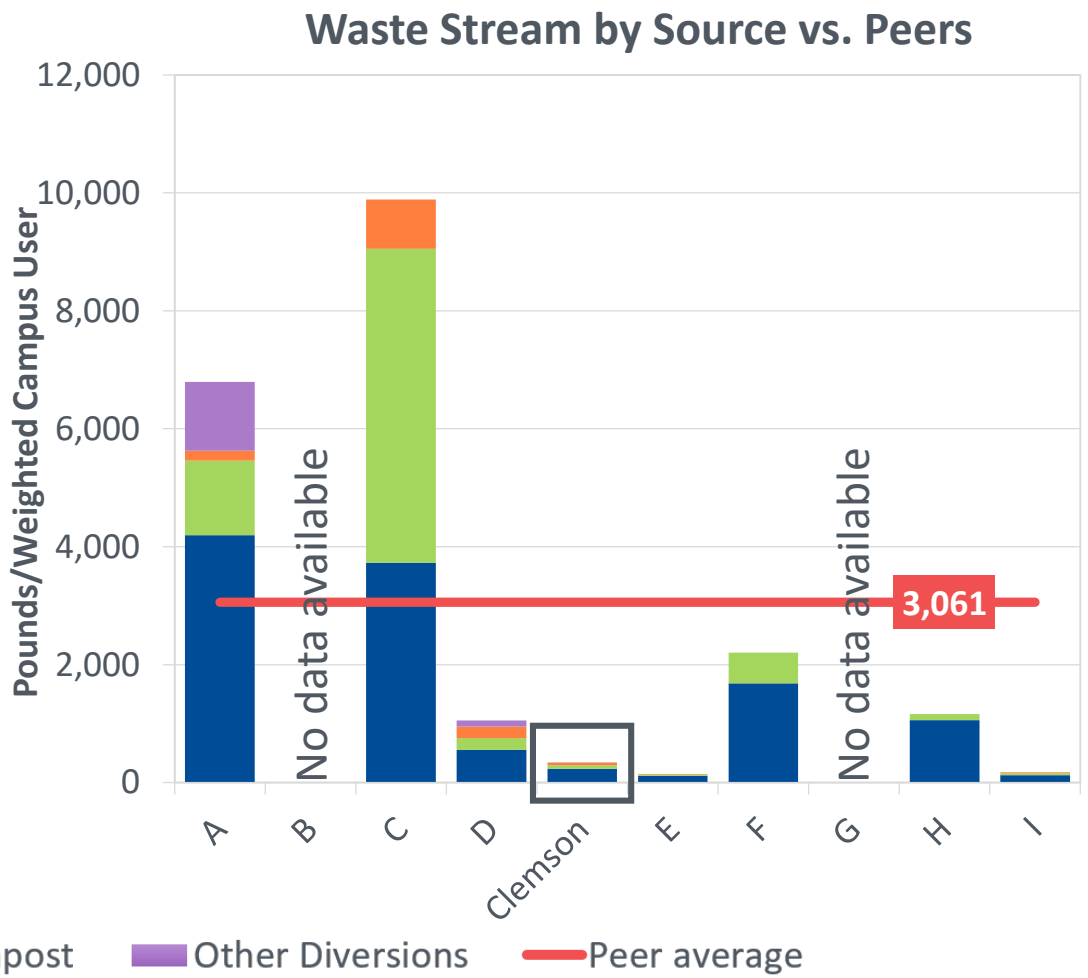
Differences in Travel Clemson vs. Peers

- Some peers may not be tracking travel as extensively.
- Some peers may be providing more robust/accurate tracking of miles, destinations of travel.
- Clemson also includes athletic travel, other peers may not participate in the same capacity of athletic programs.

Campus Population Growth Results in Additional Landfill Waste

Clemson produced more landfill waste and composting, less recycling FY2018 to FY2019





*C&D waste excluded from totals

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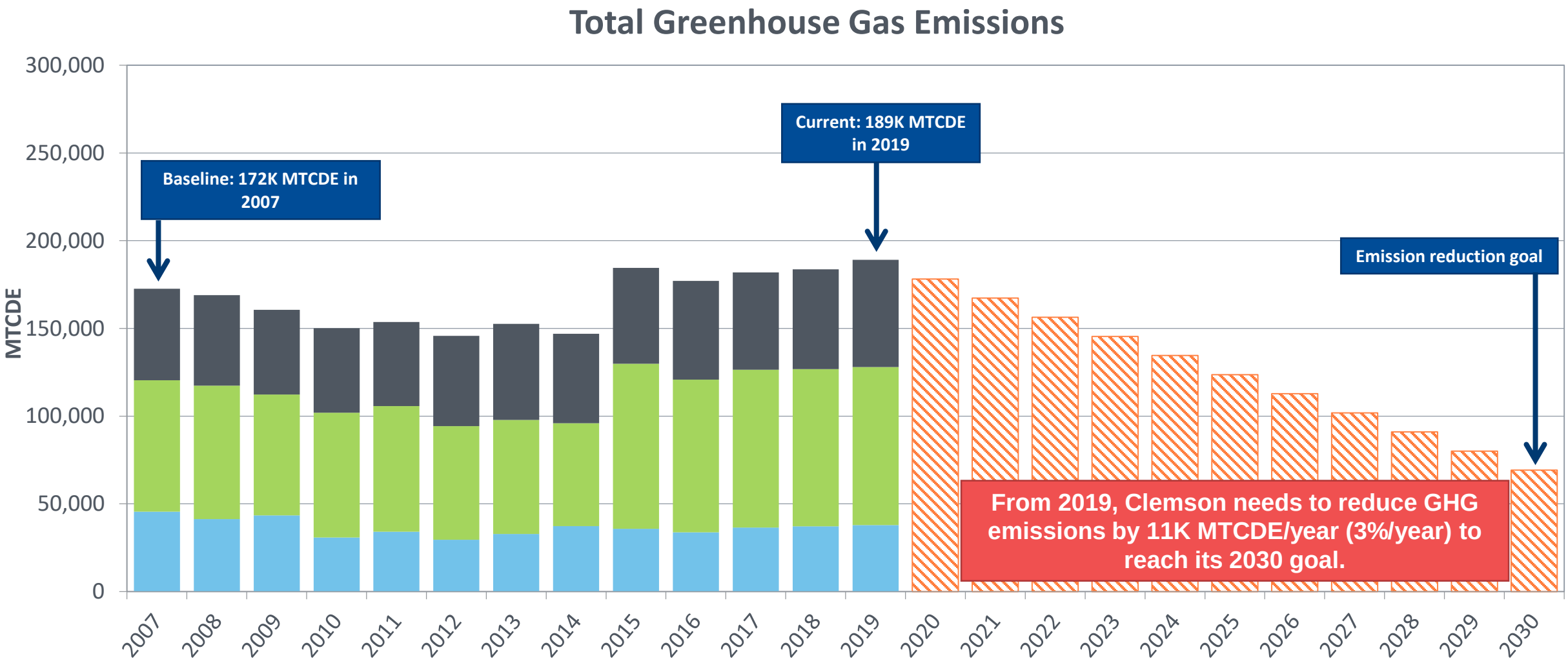
Progress Towards Carbon Emission Reduction Goal



Future of Electricity and Steam Generation at Clemson

- **Clemson will purchase electric from a new system Duke Energy will build on campus.**
  - This will reduce greenhouse gas emissions that is produced compared to purchased electricity from the grid.
- **As a by-product of the electric generation, the new system will also produce steam.**
  - The steam will be used in conjunction to the natural gas to provide heat to campus.
  - Since the system will be owned by Duke Energy, the additional natural gas usage should not be considered part of Clemson's consumption.

DUKE ENERGY®

Key Takeaways by Scope

Scope 1: Clemson has **increased** total Scope 1 emissions by **25% since 2010.** Revision in the procurement policies of de minimis sources provides an opportunity for demonstrated commitment to "green practice". This includes a transition to electric/hybrid fleet vehicles and organic fertilizers.

Scope 2: Although Clemson has added new space, its Scope 2 electric consumption has **been consistent since 2017**. Utilizing renewable sources of energy and collaboration with energy partners on strategic generation can help Clemson **reduce consumption, minimize costs and lower emissions.**

Scope 3: Clemson has **increased** Scope 3 emissions by **44% since 2010. Travel emissions** make up **51%** of Scope 3 emissions, and have increased by **61%** since 2010. Better tracking of travel data will provide a clear baseline for next steps towards achieving emissions reduction goal.

sightlines

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Questions & Discussion