Vanderbilt University
Virginia Commonwealth University
Virginia Department of General Services
Wagner College
Wake Forest University
Washburn University
Washington University in St. Louis
Wellesley College
Wesleyan University
West Chester University
West Liberty University
West Virginia Health Science Center
West Virginia Institute of Technology
West Virginia School ofOsteopathic Medicine
West Virginia State University
West Virginia University
Western Connecticut State University
Western Oregon University
Westfield State University
Wheaton College
Widener University

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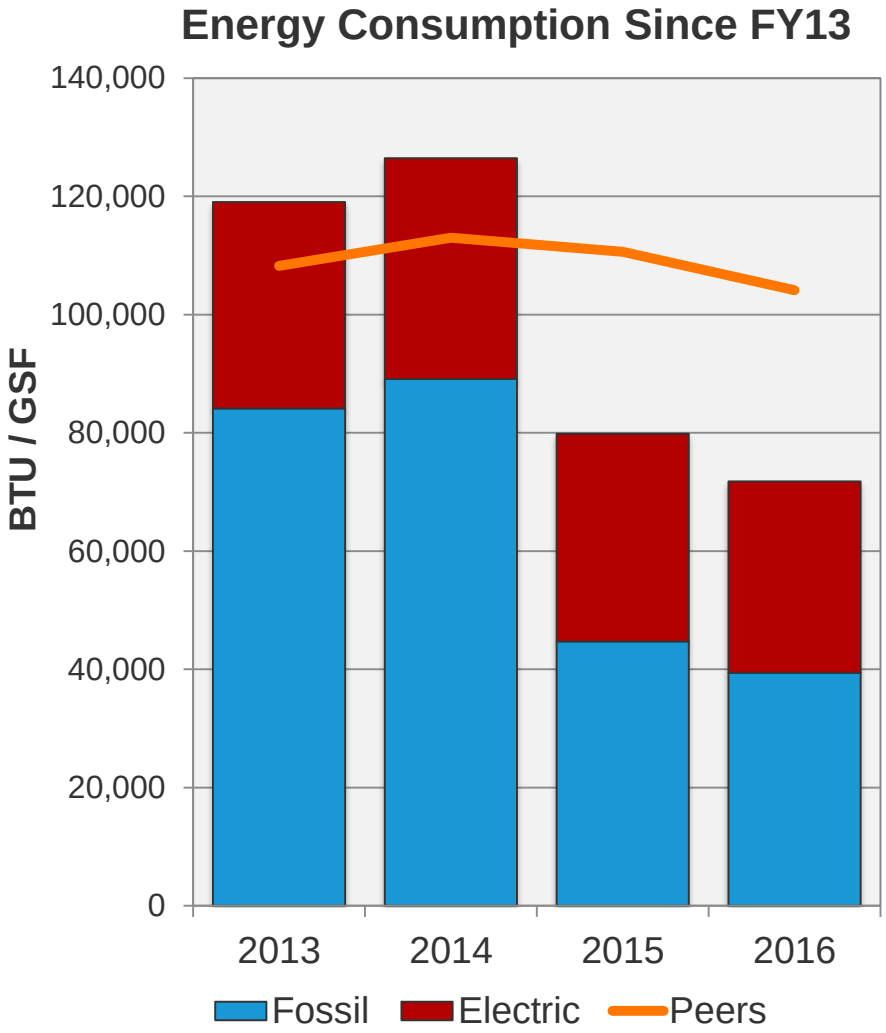
Shippensburg University of PA

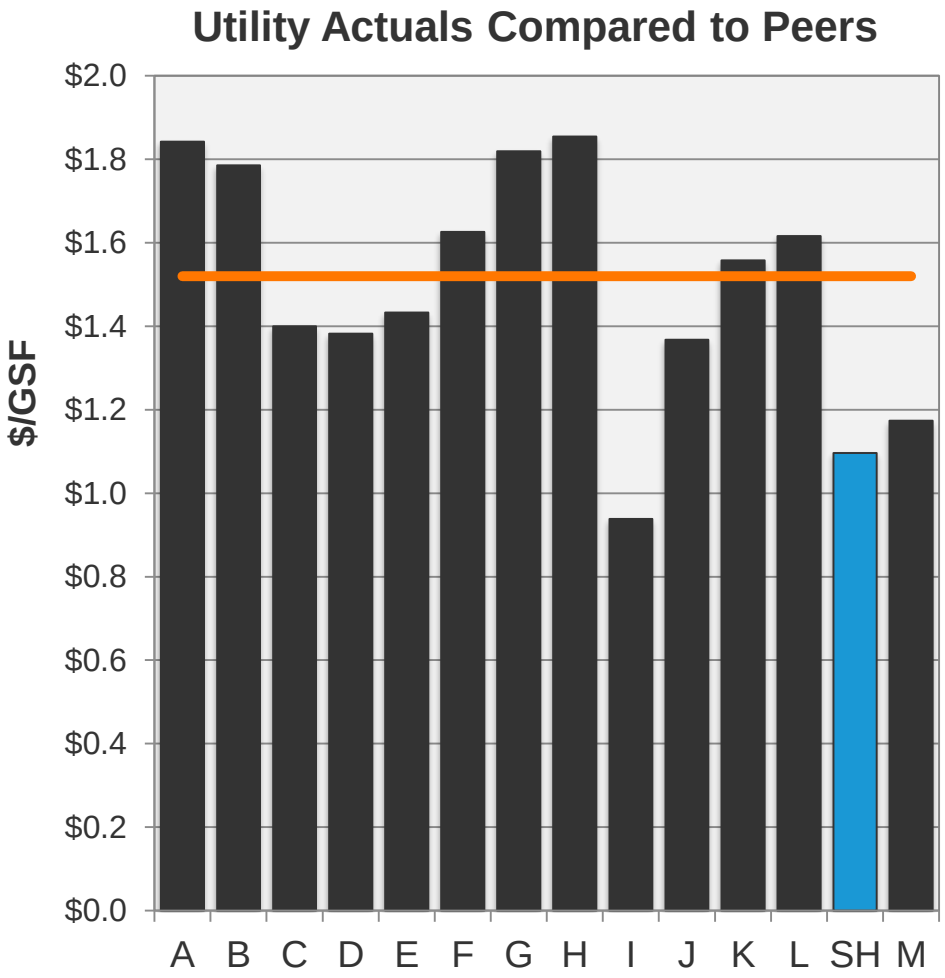
Presenters: Erica Barbuto and Emily Medina

January 2017

Decreasing Energy Consumption Creates Savings

Ship spends 28% less on utilities than peers





**Peers arrayed by tech rating*

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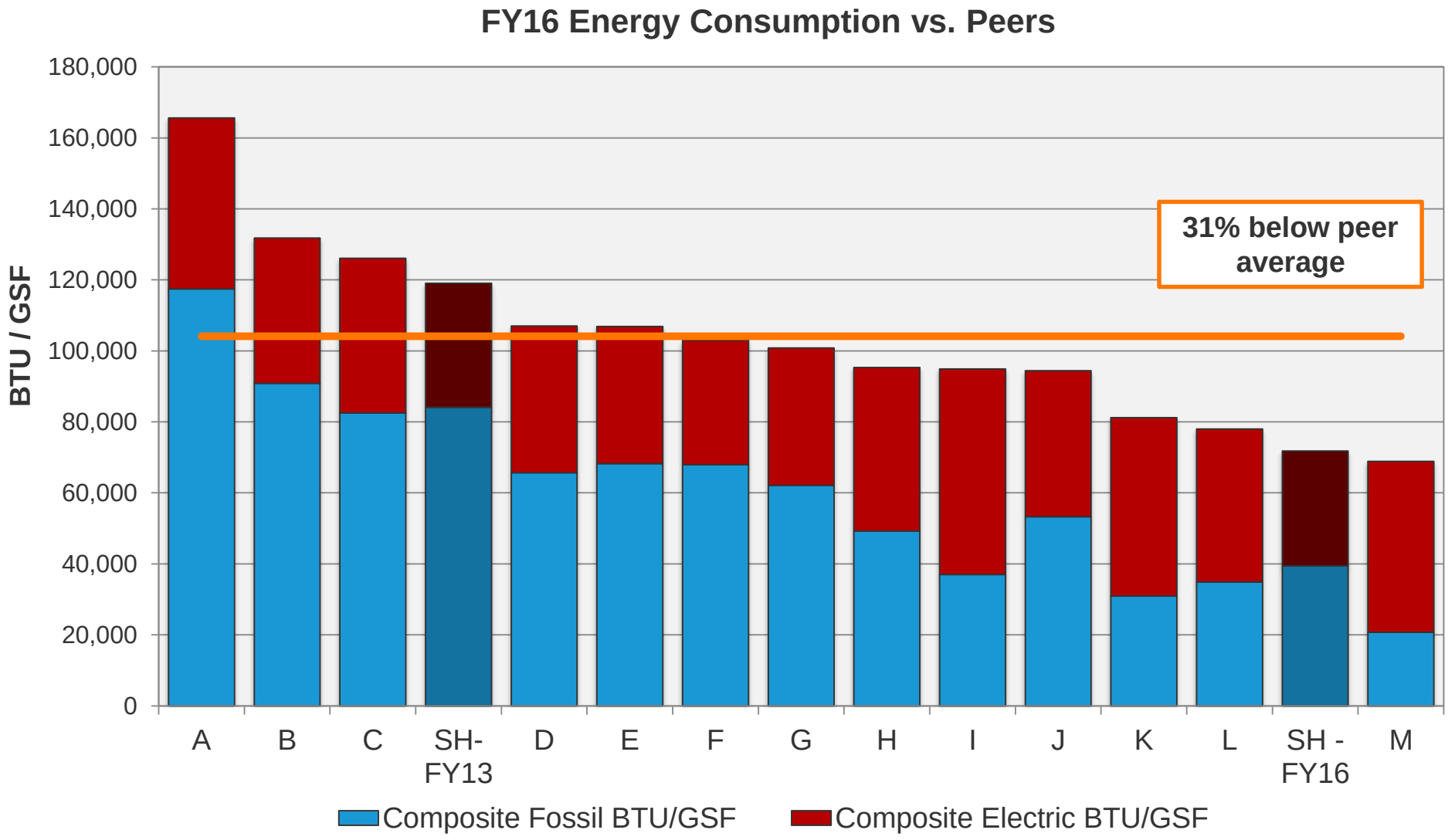
Ship Now Second Lowest Consumer in PASSHE



Institutions ordered by decreasing consumption

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Sustainability Solutions Peer Institutions

Peer Institutions
Babson College*
Bentley University*
Boston College
Emerson College
Fitchburg State University
Hamilton College*
Loyola University Maryland*
Millersville University*
Rensselaer Polytechnic Institute
Stockton University
The Catholic University of America

Key Concepts:

- Major Reductions in Scope 1 Emissions due to Infrastructure Overhaul
- Opportunities to Reduce Scope 2 and 3

*Institutions previously benchmarked in Shippensburg's GHG analysis

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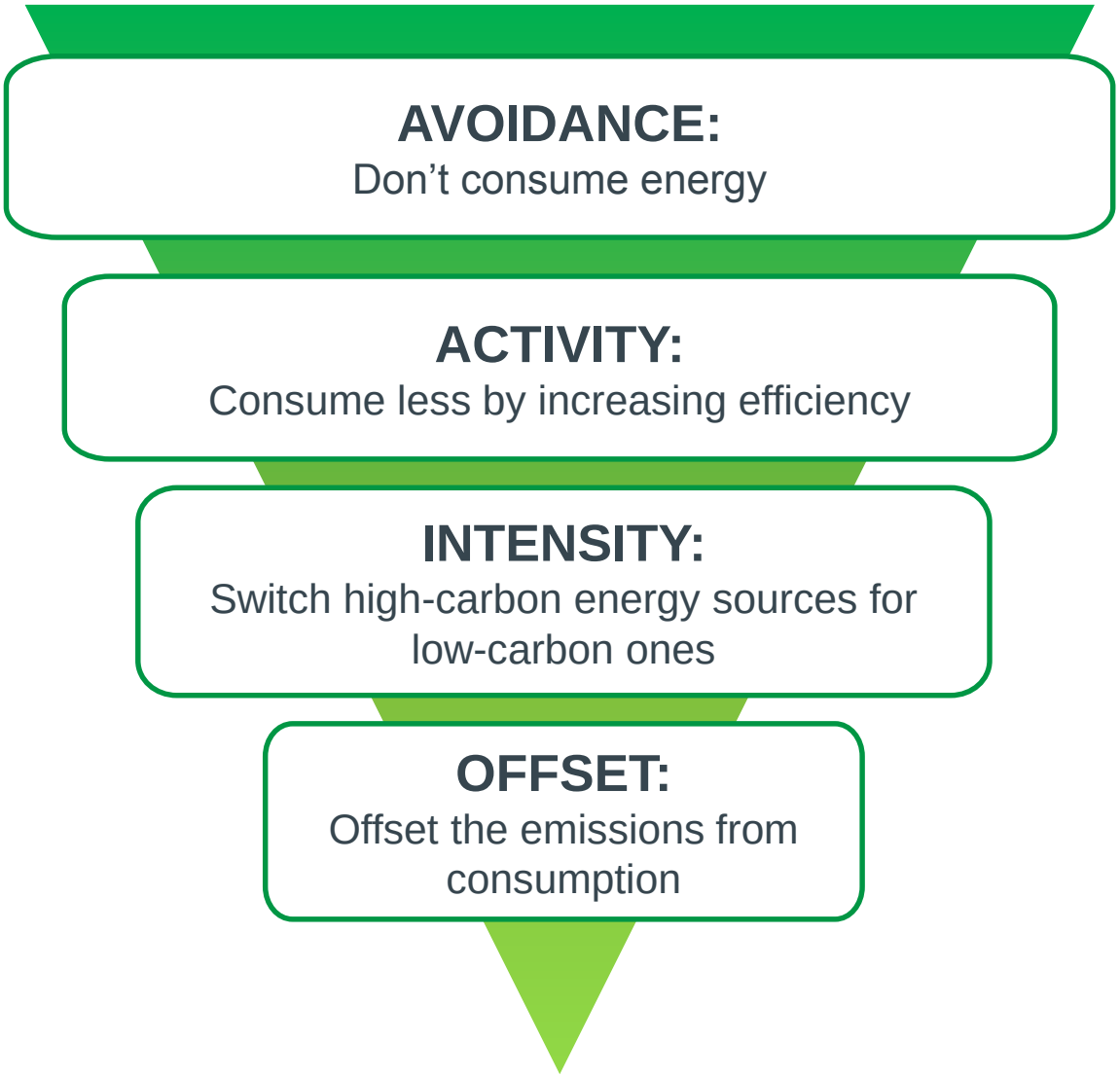
Carbon Management for Energy



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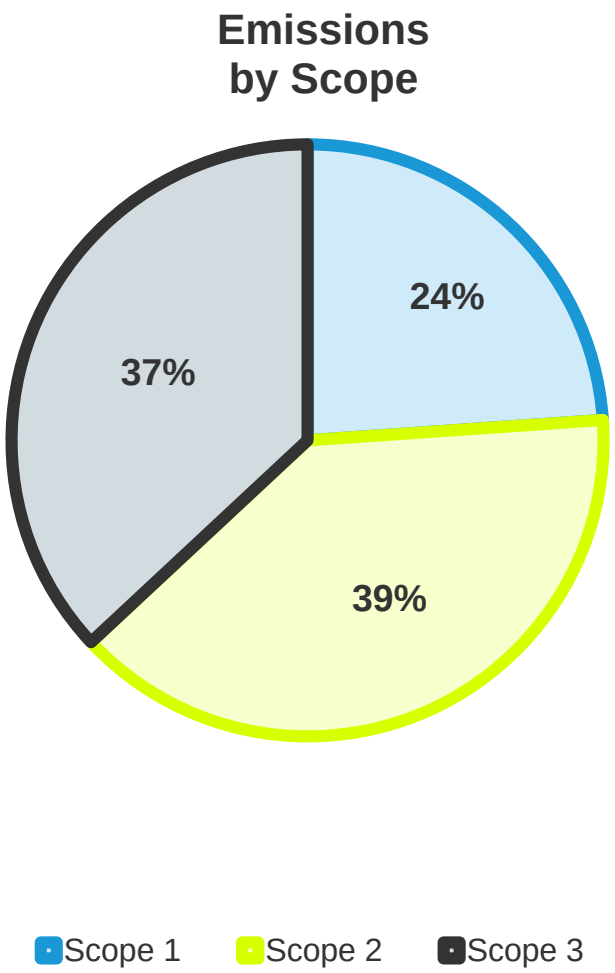
Distribution of Emissions by Level of Control

Scope 1 makes up the smallest portion of Ship's emissions footprint



Less Control

Scope 1 – Direct GHGs

- Natural Gas, Coal
- Vehicle Fleet
- Refrigerants
- Fertilizer

Scope 2 – Upstream GHGs

- Purchased Electricity

Scope 3 – Indirect GHGs

- Faculty/Staff/ Student Commuting
- Directly Financed Travel
- Study Abroad Travel
- Solid Waste
- Wastewater
- Paper Purchasing
- Transmission & Distribution Losses

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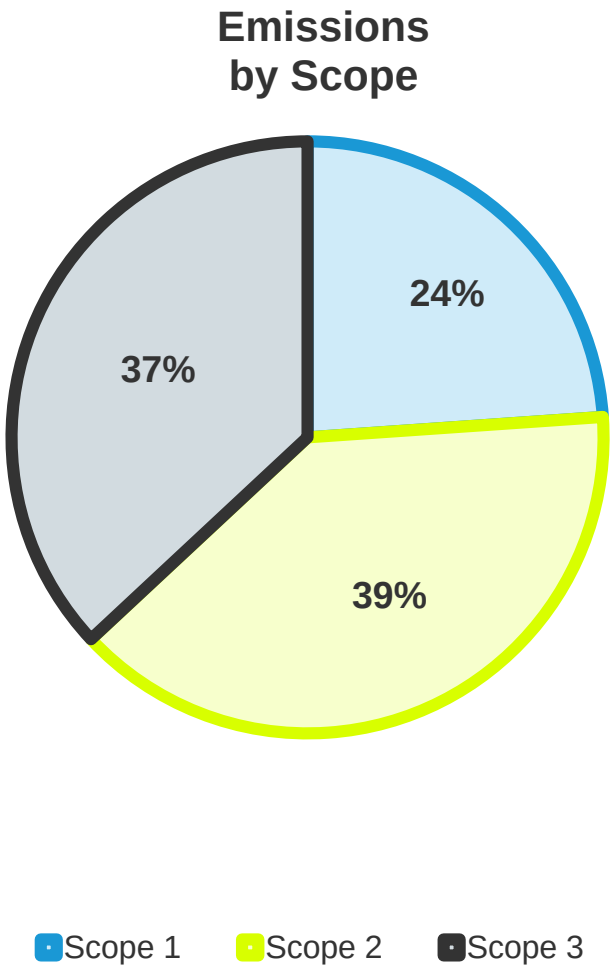
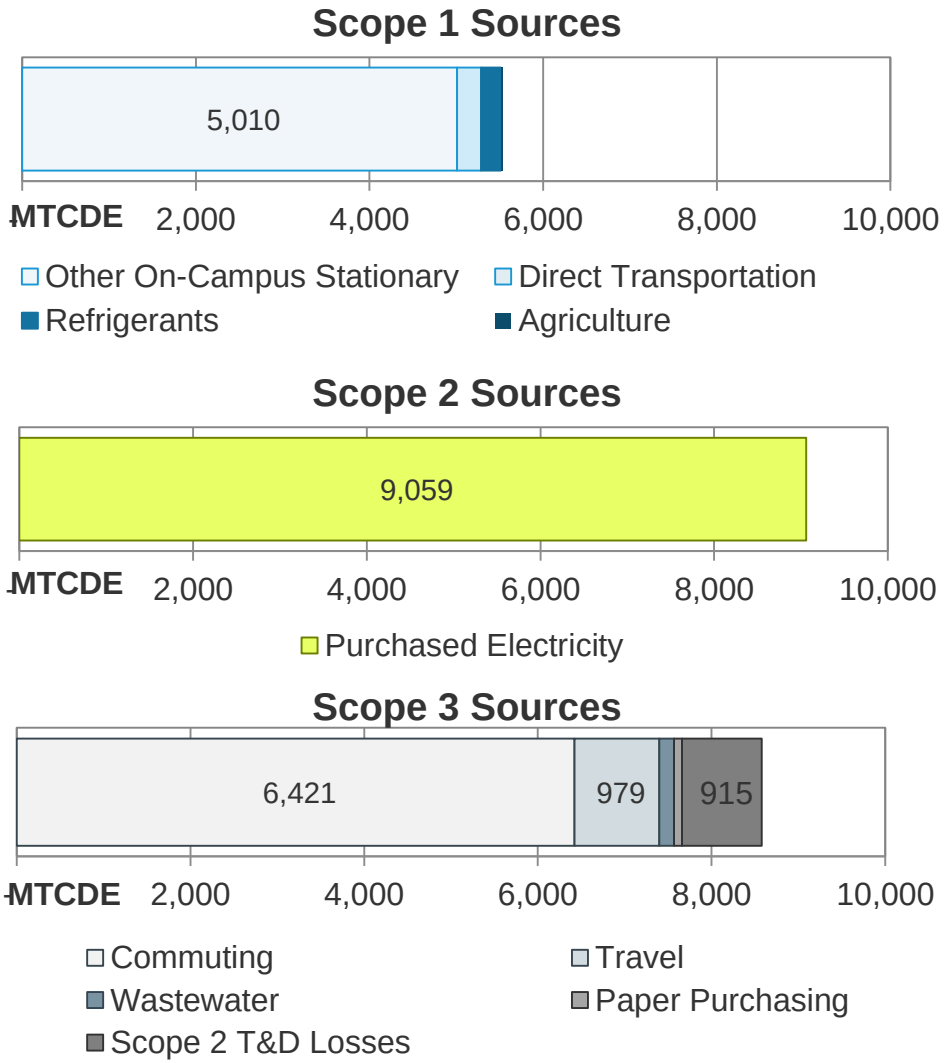
Distribution of Emissions by Level of Control

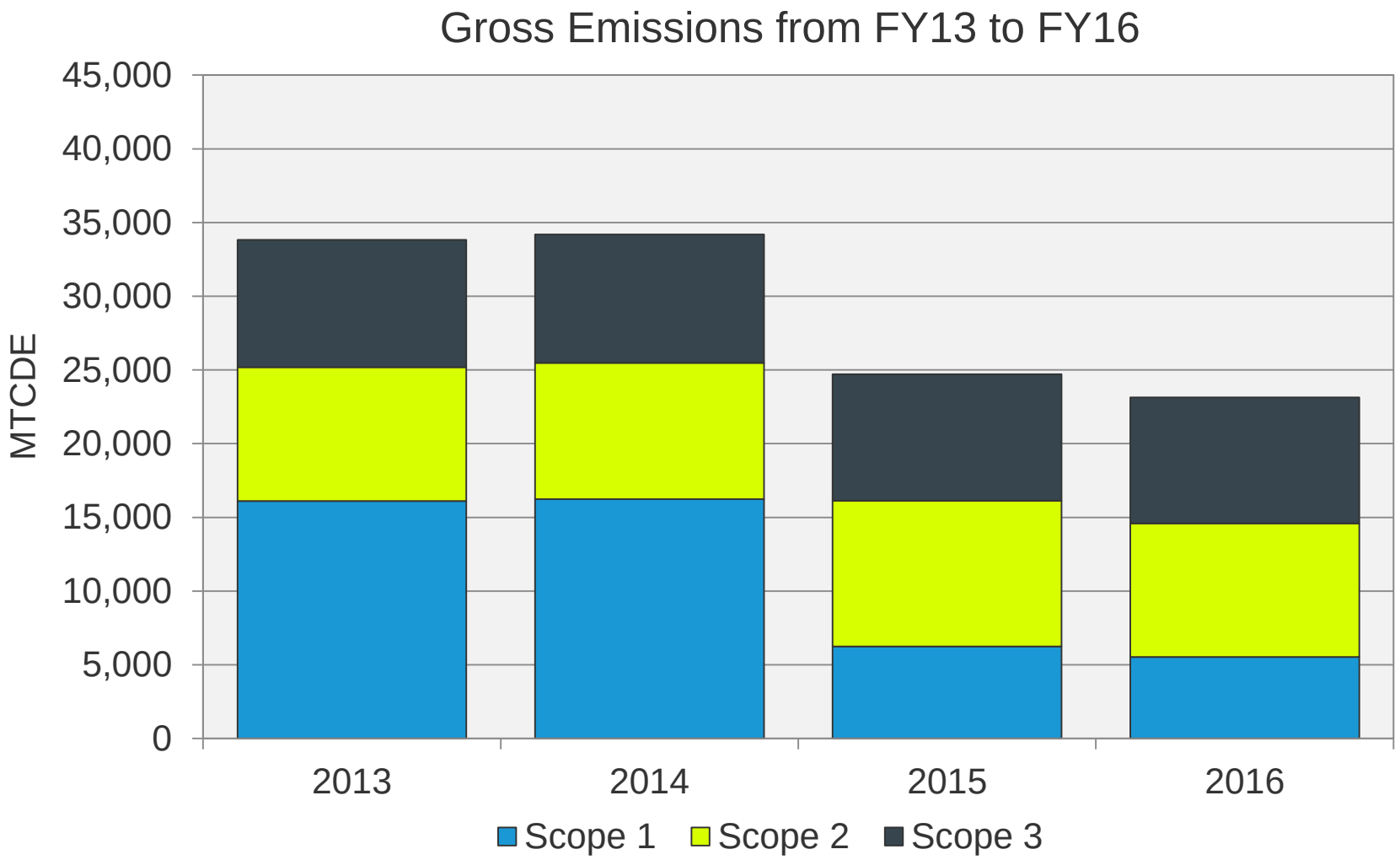
Purchased electric and commuting/travel generate the most emissions



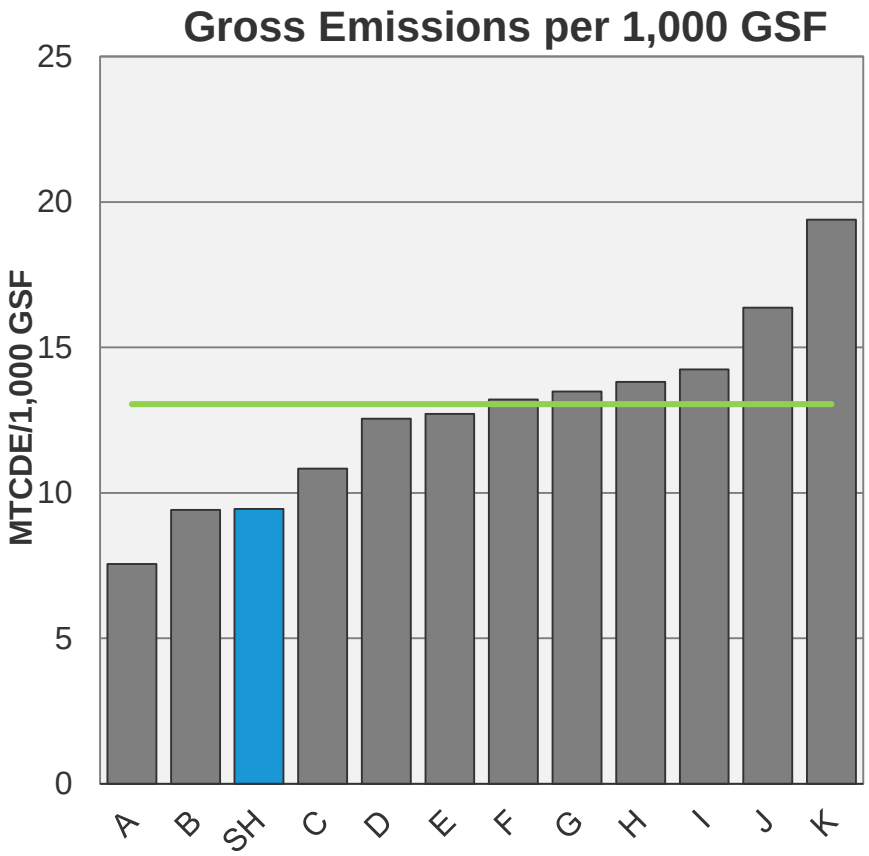


Infrastructure Project Led to a Strong Emissions Profile

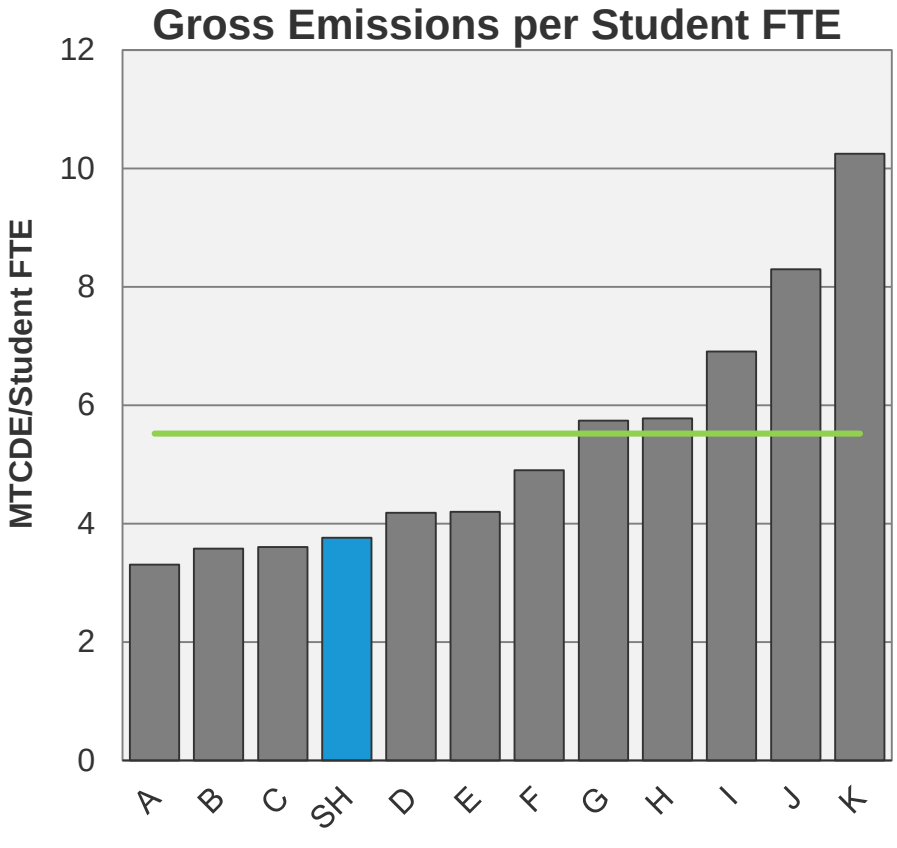
Gross emissions decreased 32% since 2013, driven by scope 1



Two Ways to Compare Emissions to Peers



Benchmarking by GSF is useful for emissions that are affected by space characteristics, such as age, technical complexity, and systems efficiency.



Benchmarking by Student FTE is useful for emissions that are affected by individual habits, such as commuting and waste production/recycling.

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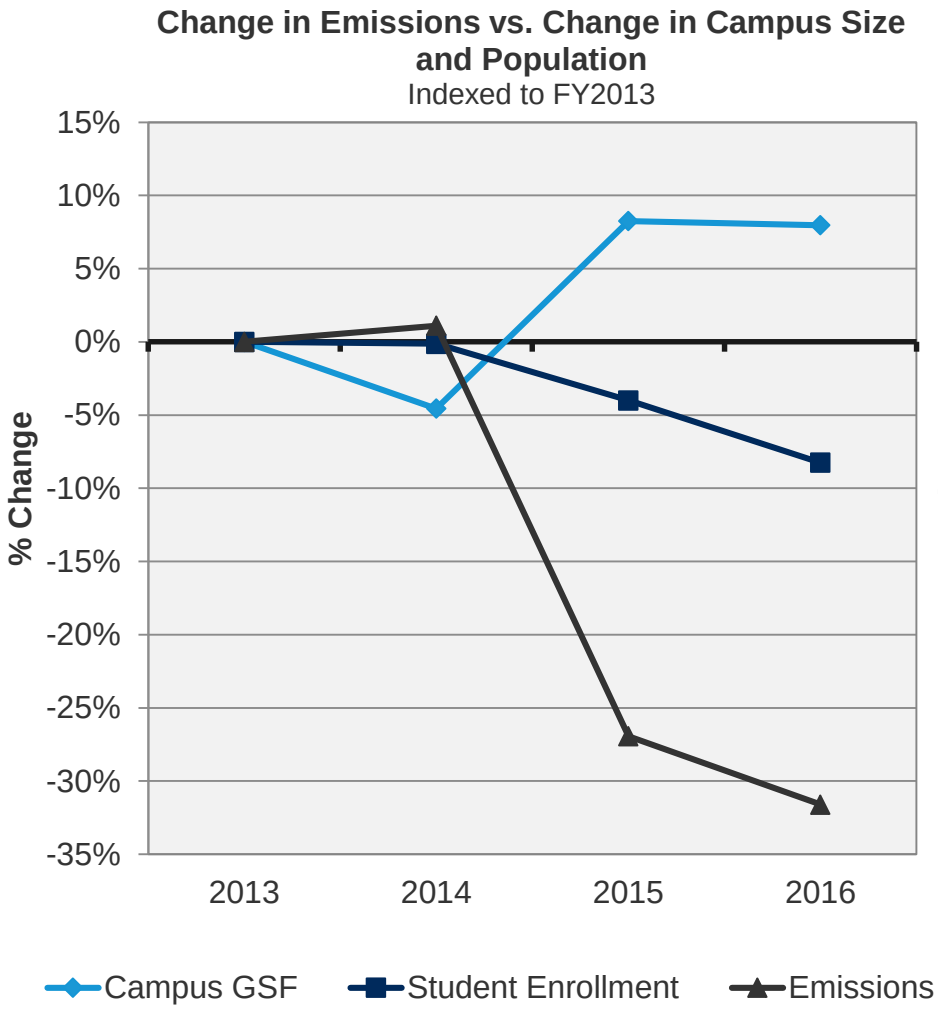
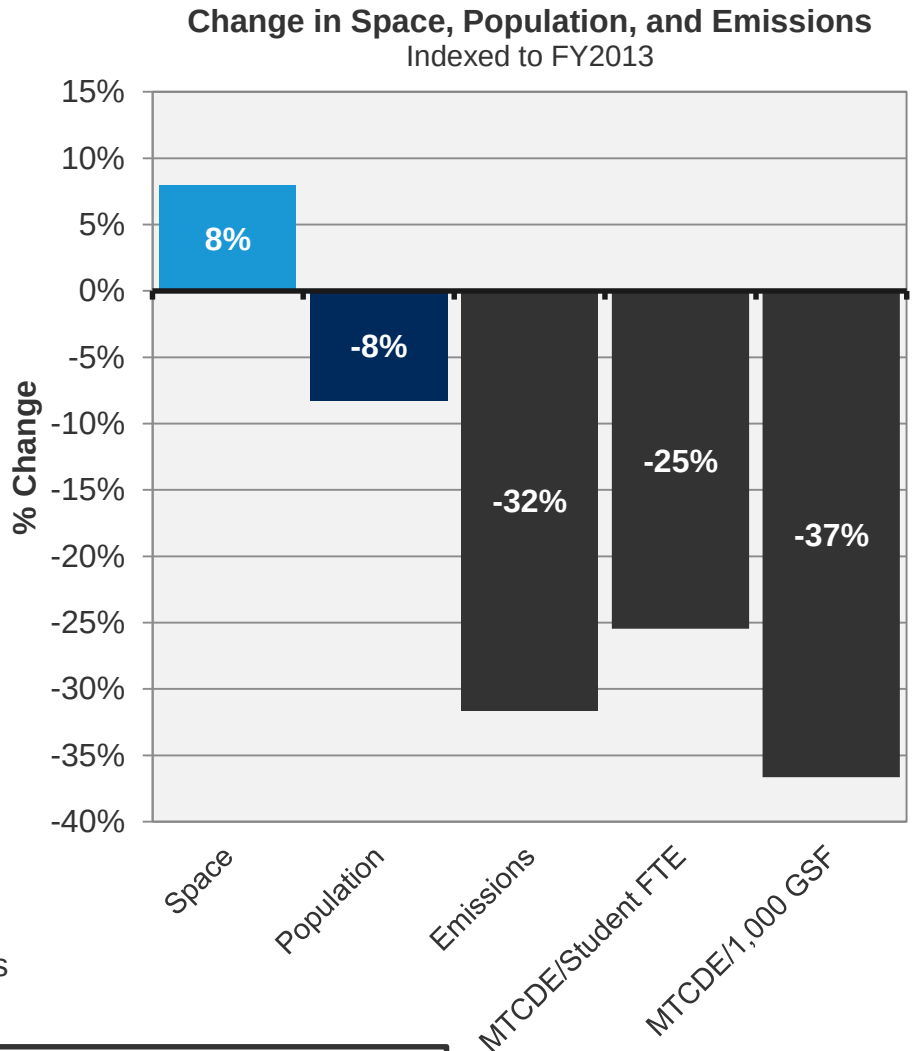
Emissions Dropping Despite Increasing Space

Infrastructure upgrades have kept campus efficient





Nation-wide emissions dropped 3% since 2013

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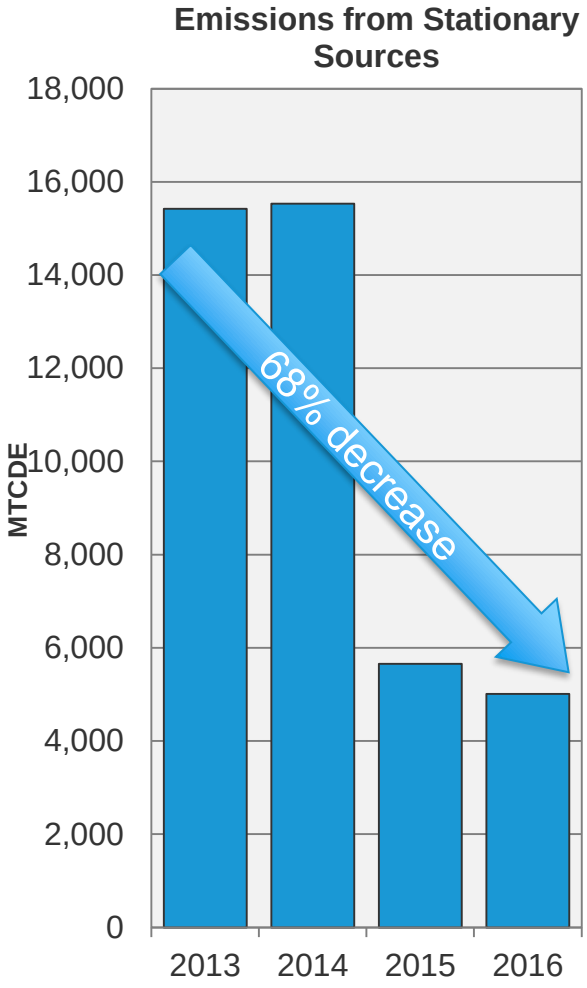
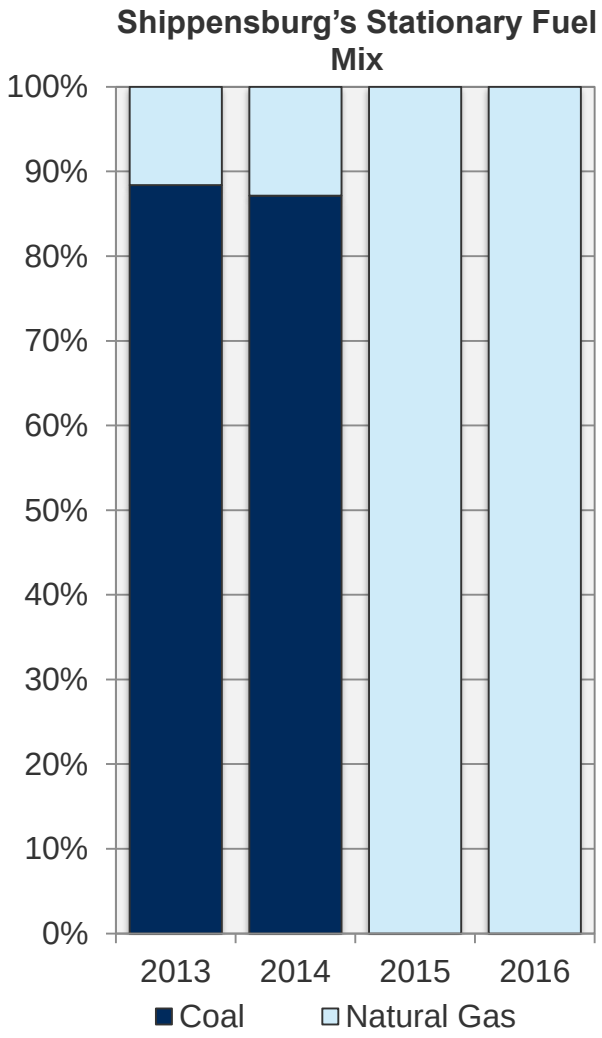
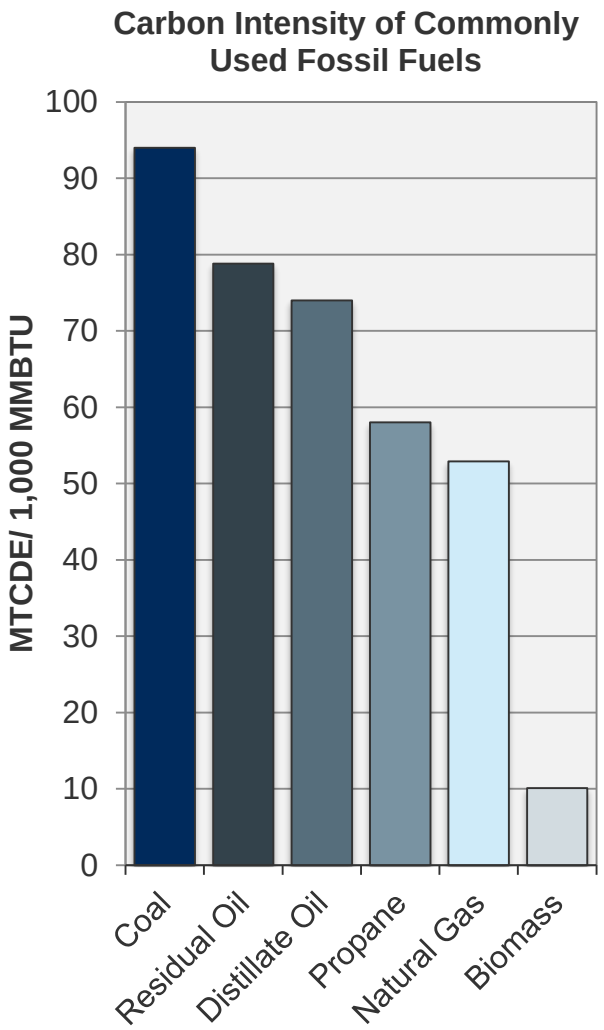
Drastic Drop in Scope 1 Emissions Due to Coal Avoidance

Fuel carbon intensity affects scope 1 emissions







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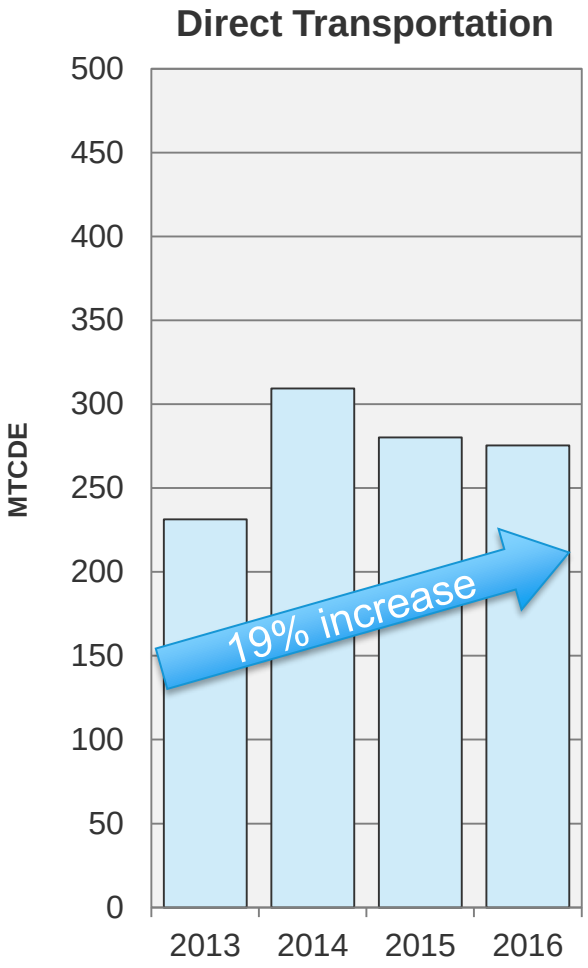
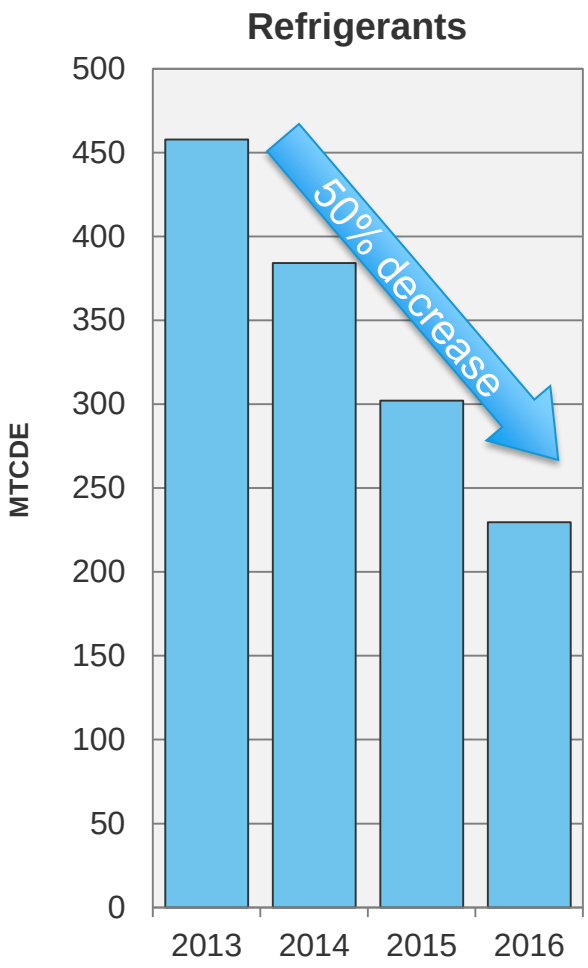
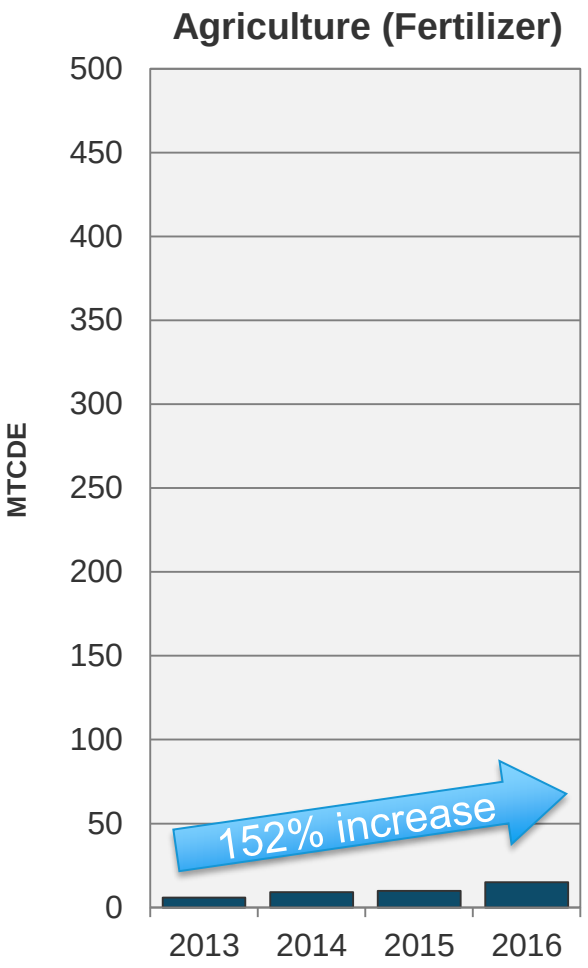
Success in Reducing Refrigerants Emissions

Though these sources are a smaller portion of scope 1, they provide additional successes and opportunities

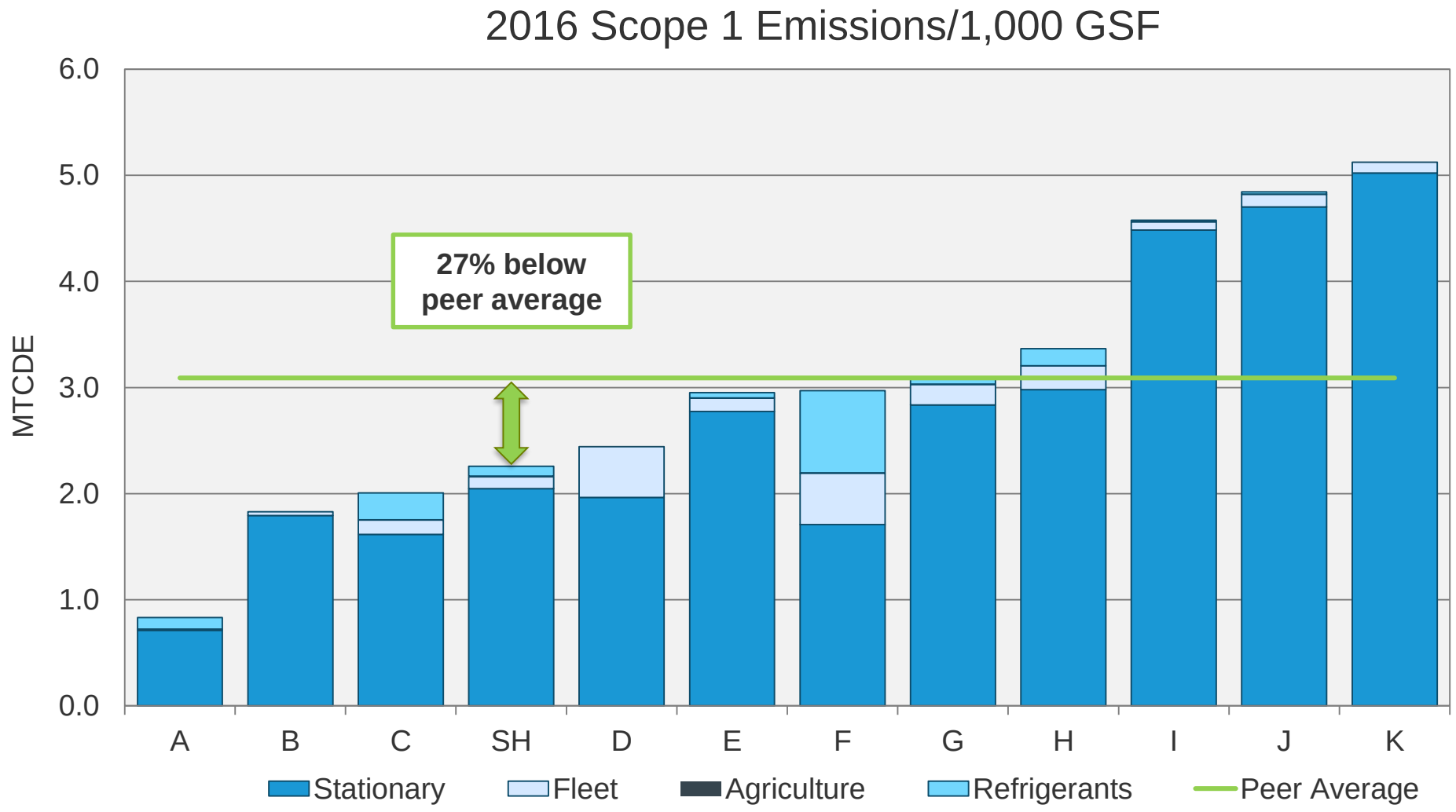






Ship Emissions Below Peer Average

Fleet and refrigerants make up a greater portion of Scope 1 emissions for some peers



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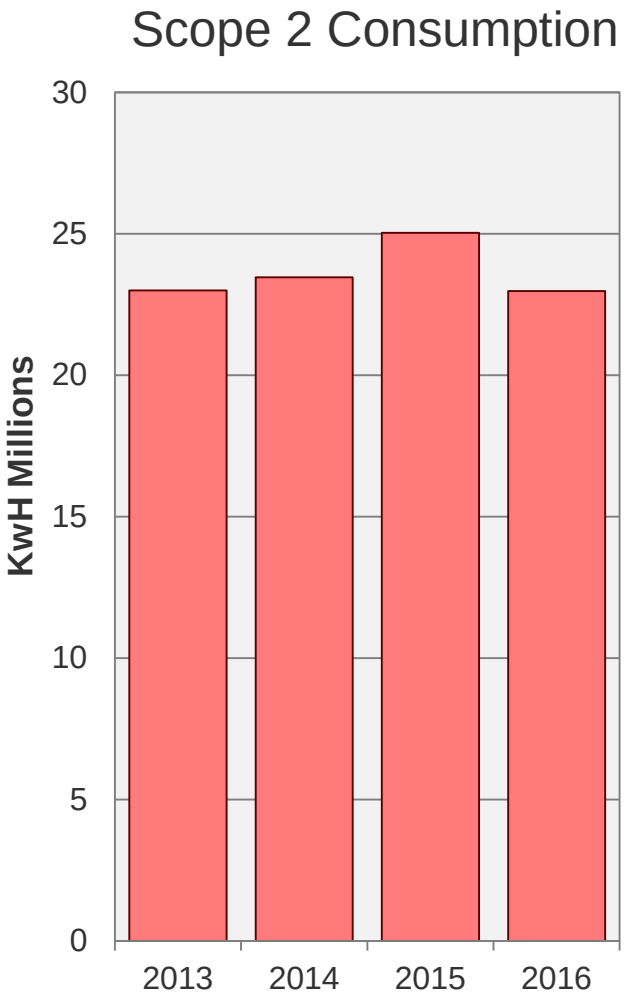
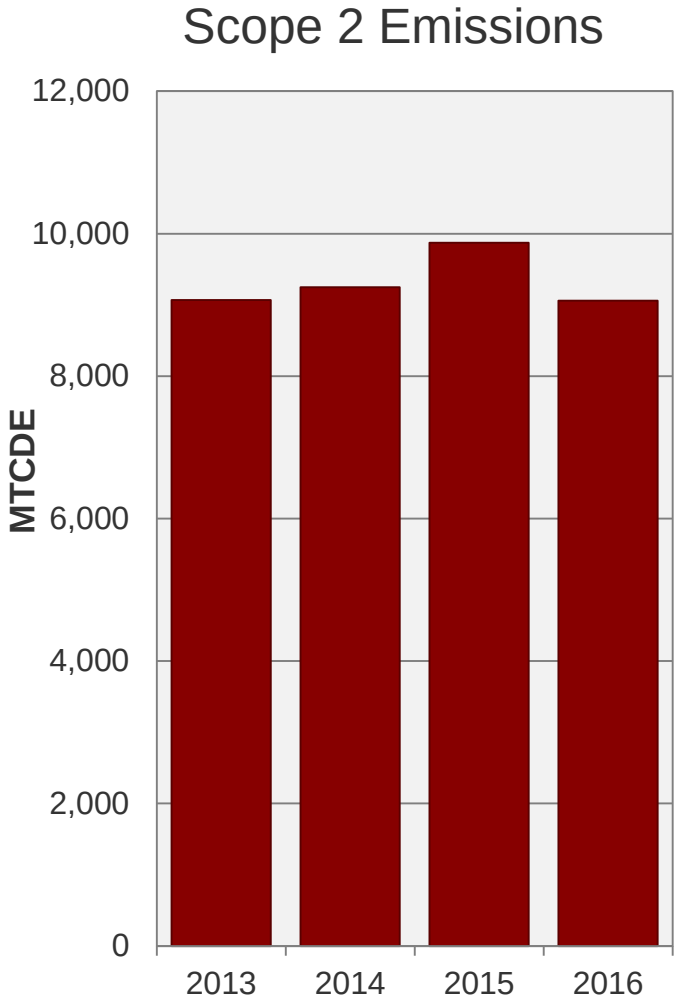
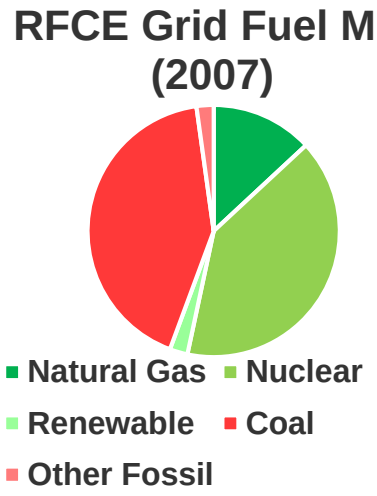
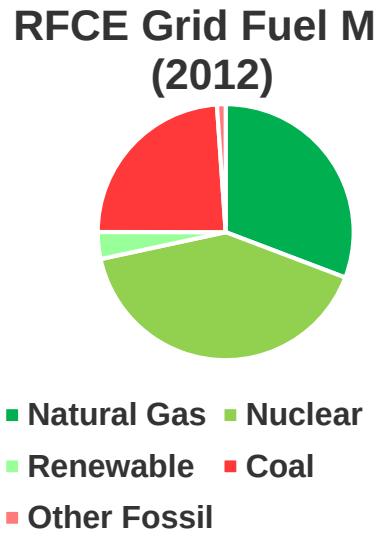
No Change in Scope 2 Emissions

Scope 2 includes electric consumption



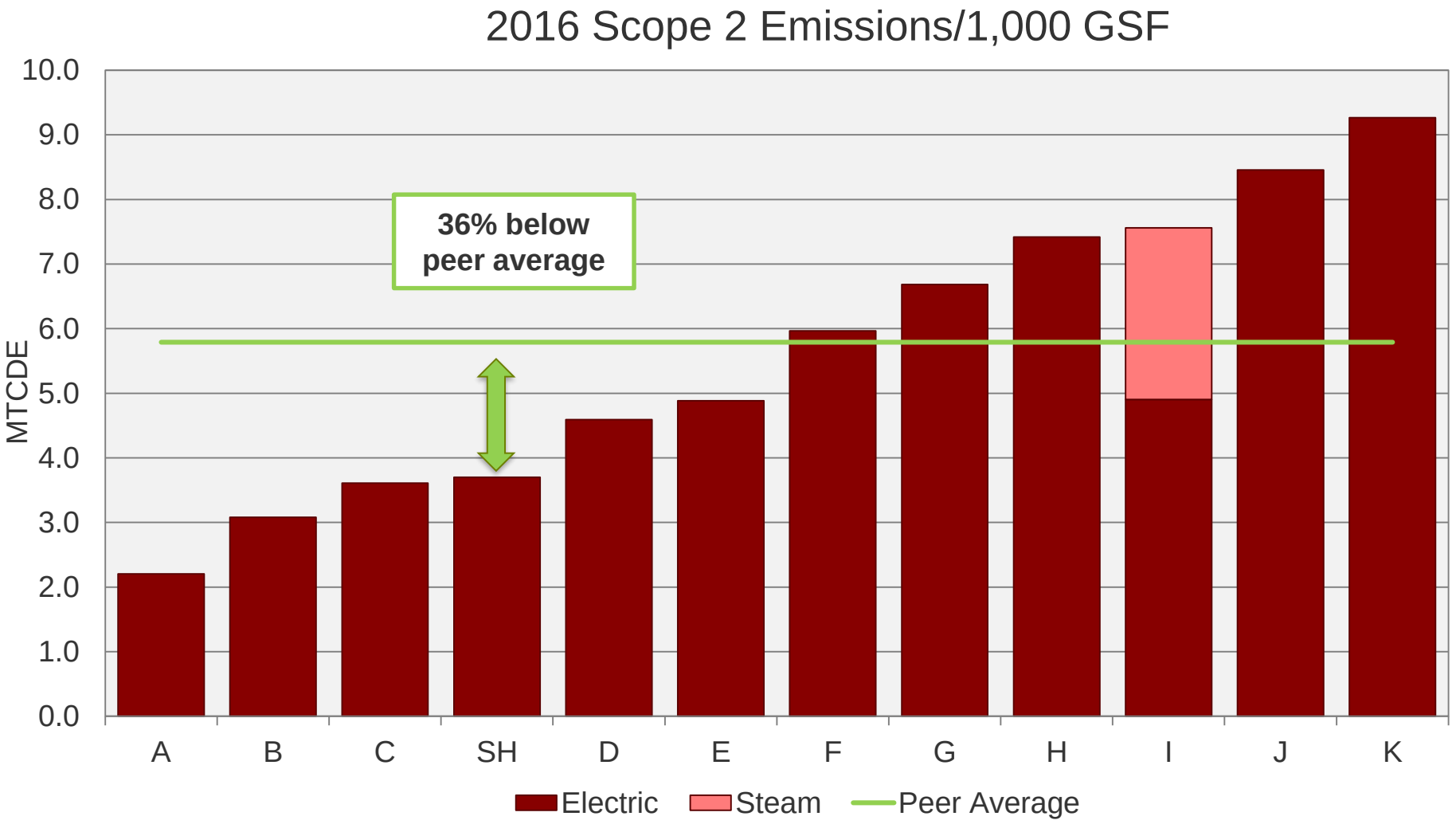




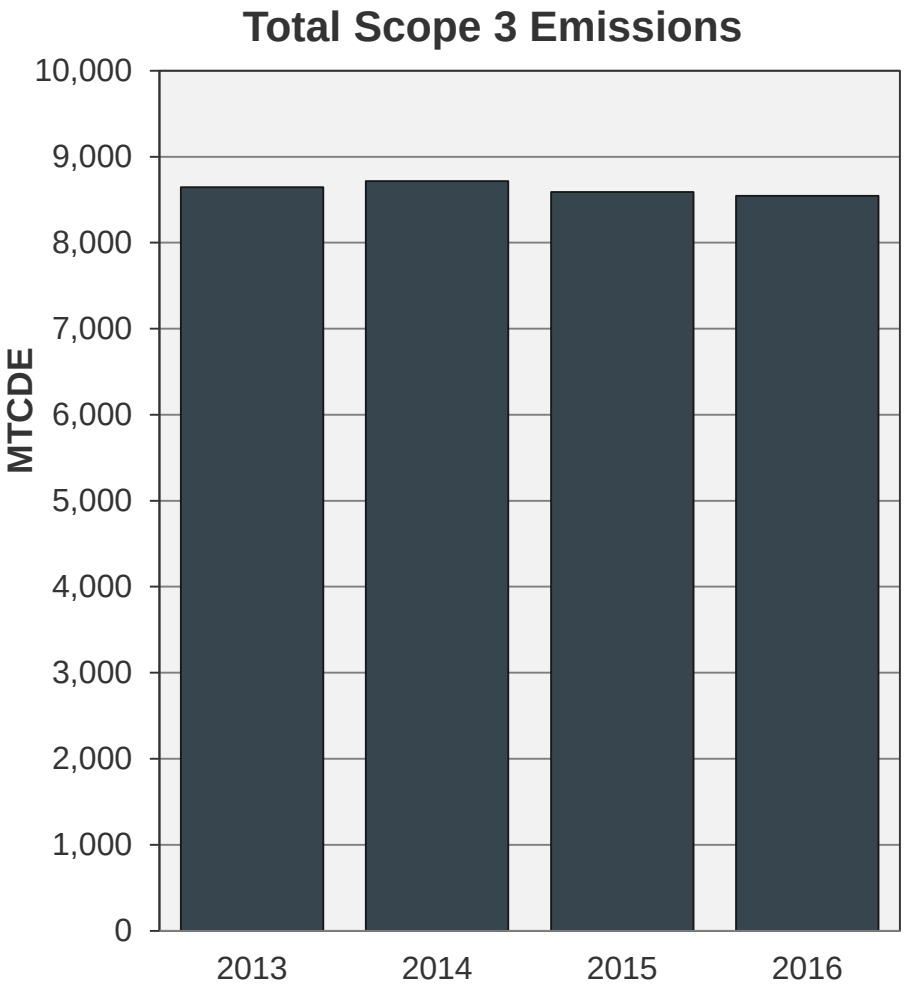


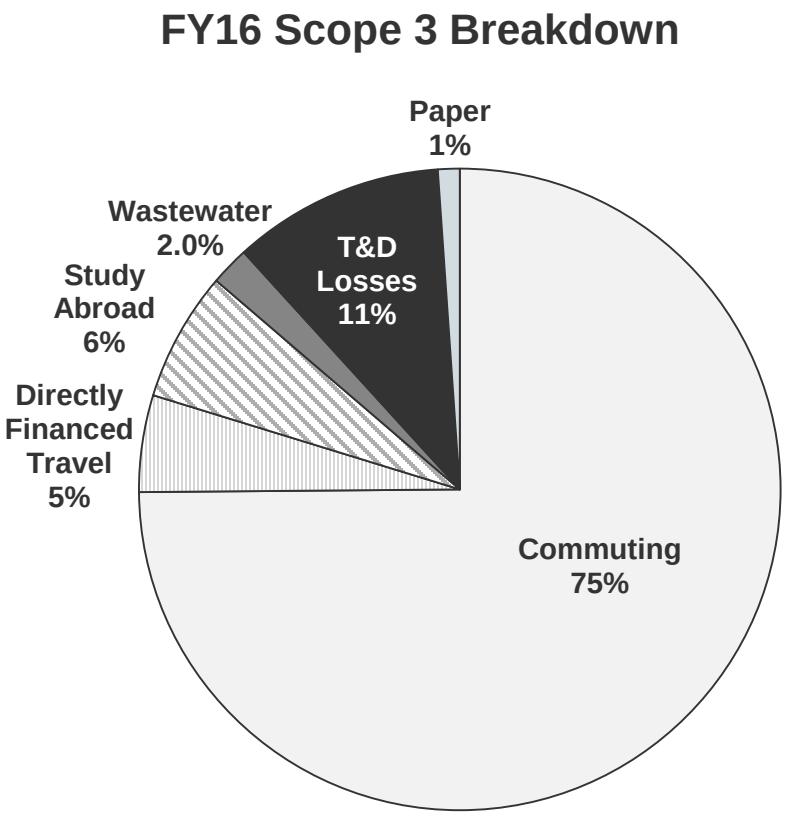
Scope 2 Emissions Below Peer Average

Ship outperforming peers in both Scope 1 and Scope 2 emissions levels



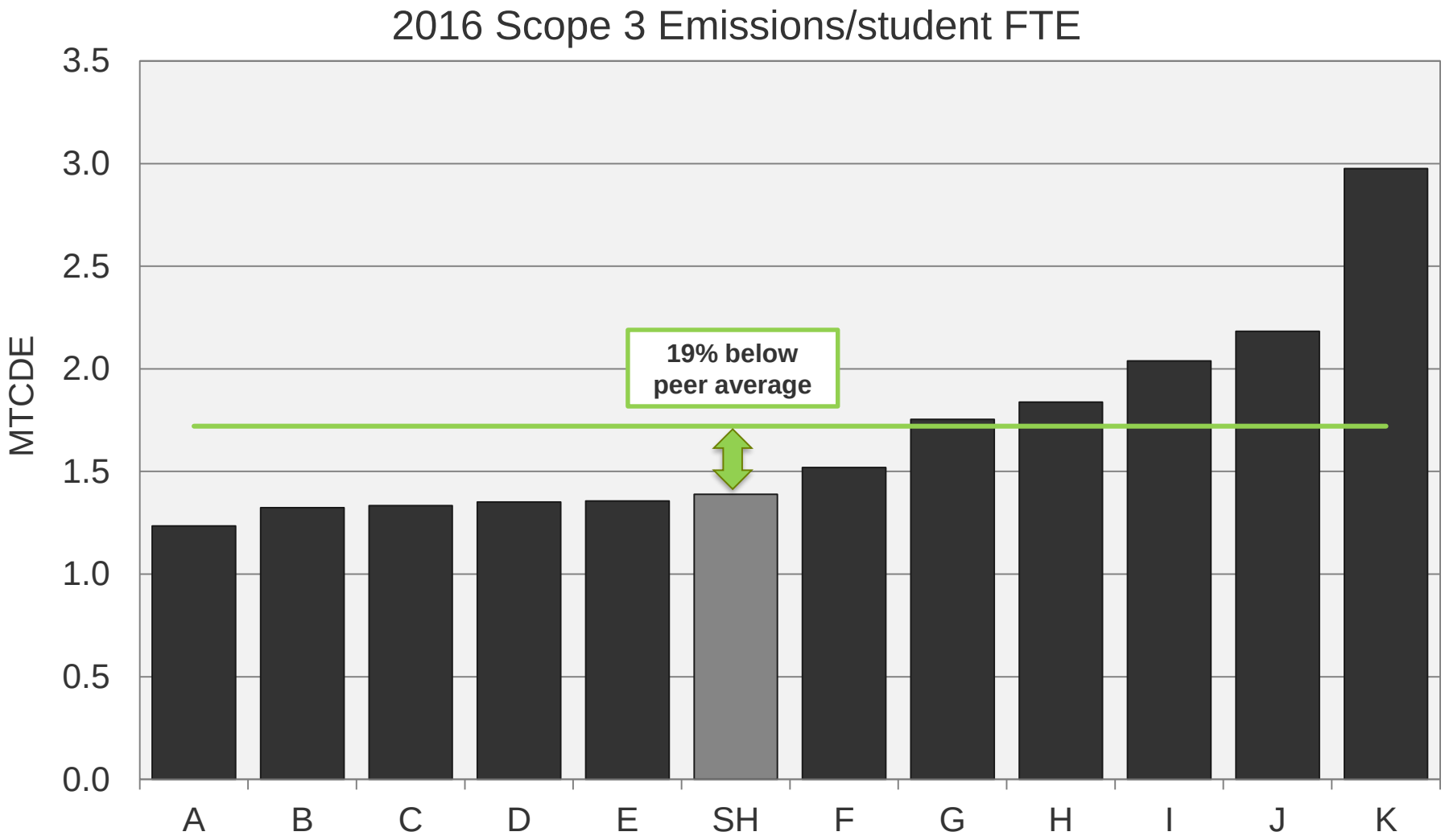
No Change in Scope 3 Emissions





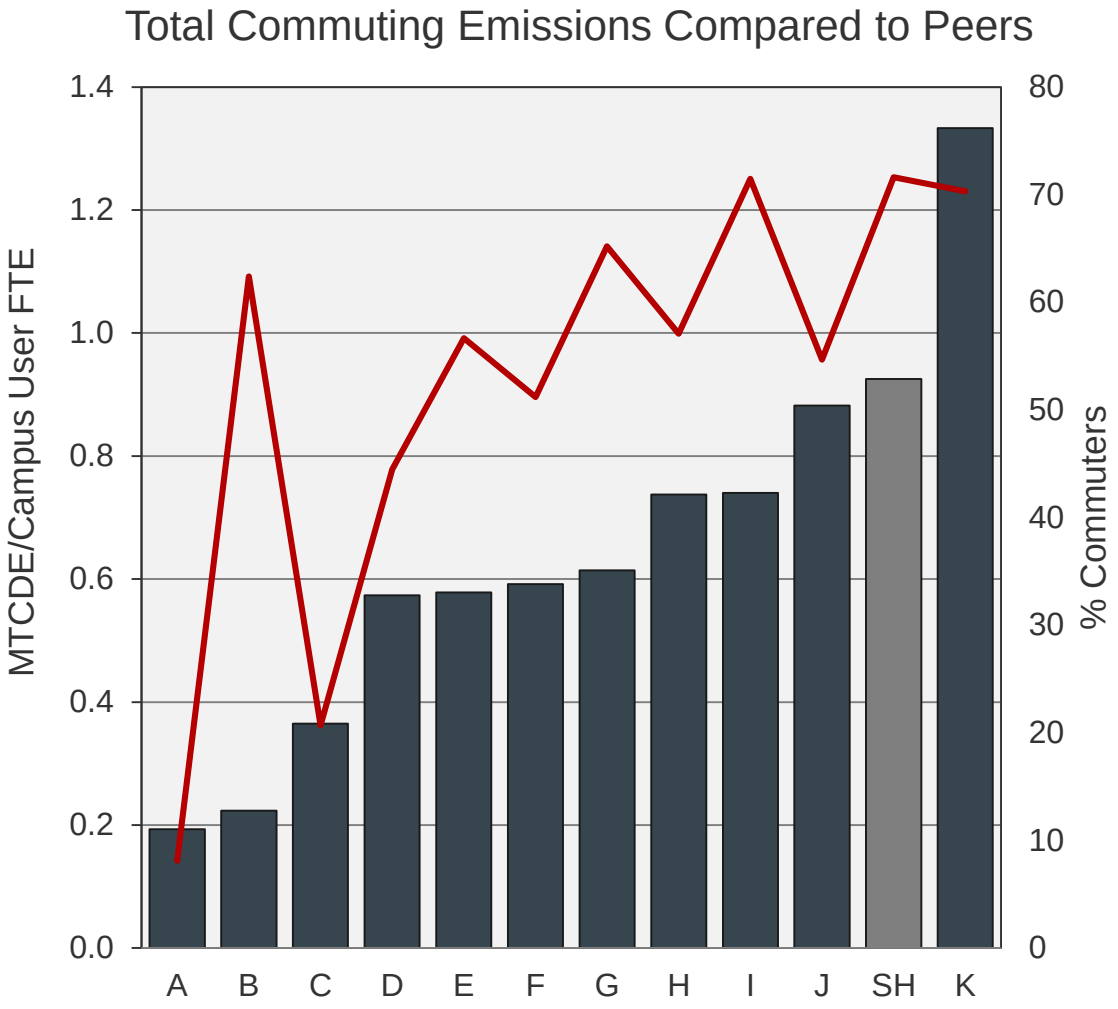
Scope 3 Emissions Closer to Peer Average

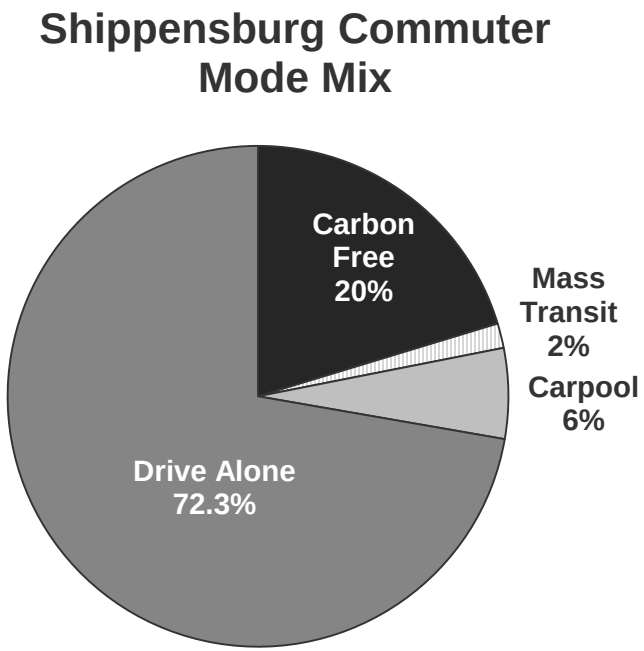
FTEs (rather than GSF) has greater impact on Scope 3 emissions



Ship Commuting Emissions are Among Highest in Peer Group

Carpool and mass transit incentives could reduce Scope 3 footprint





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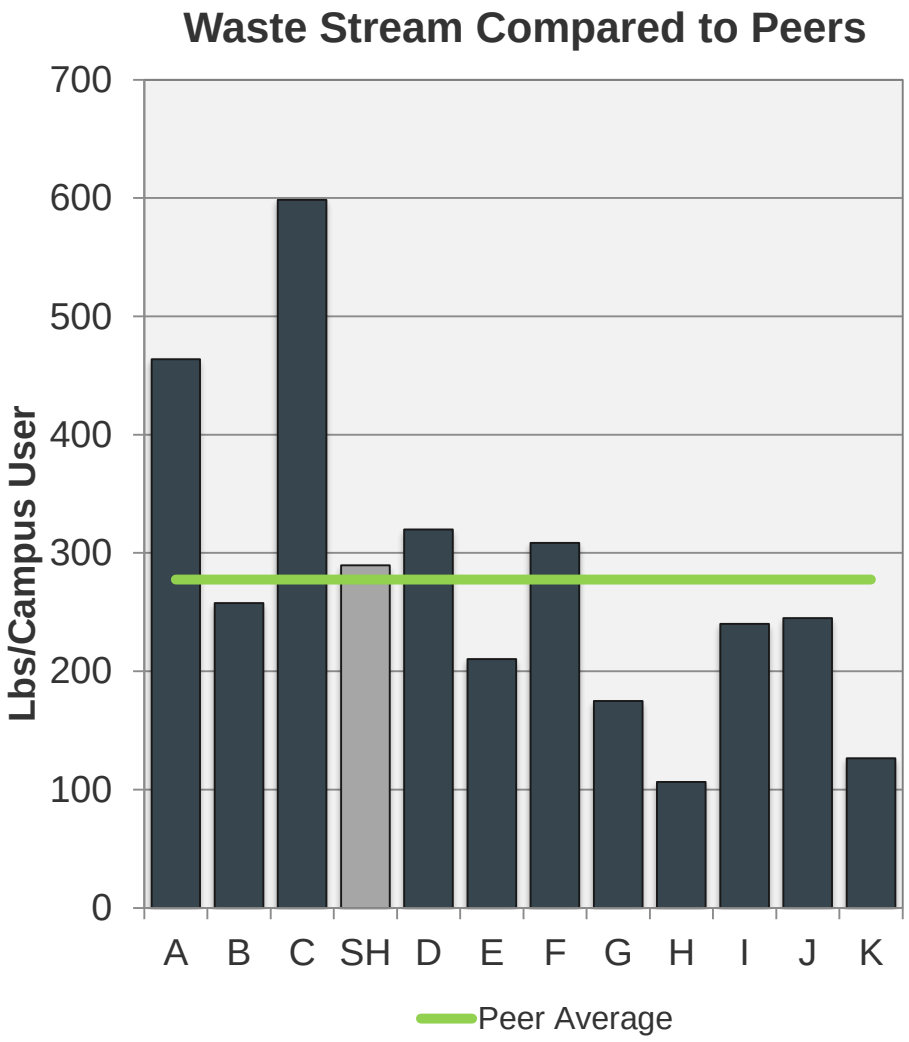
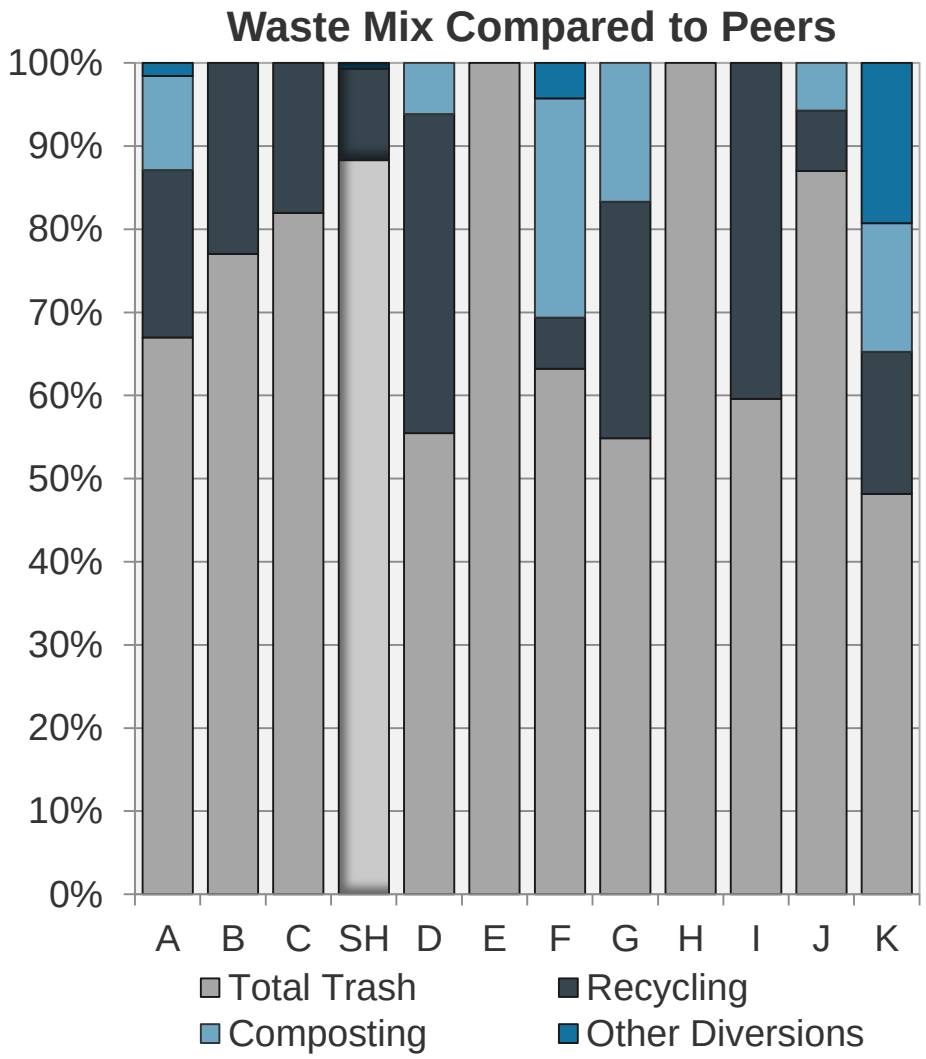
Peers Do More Recycling and Composting

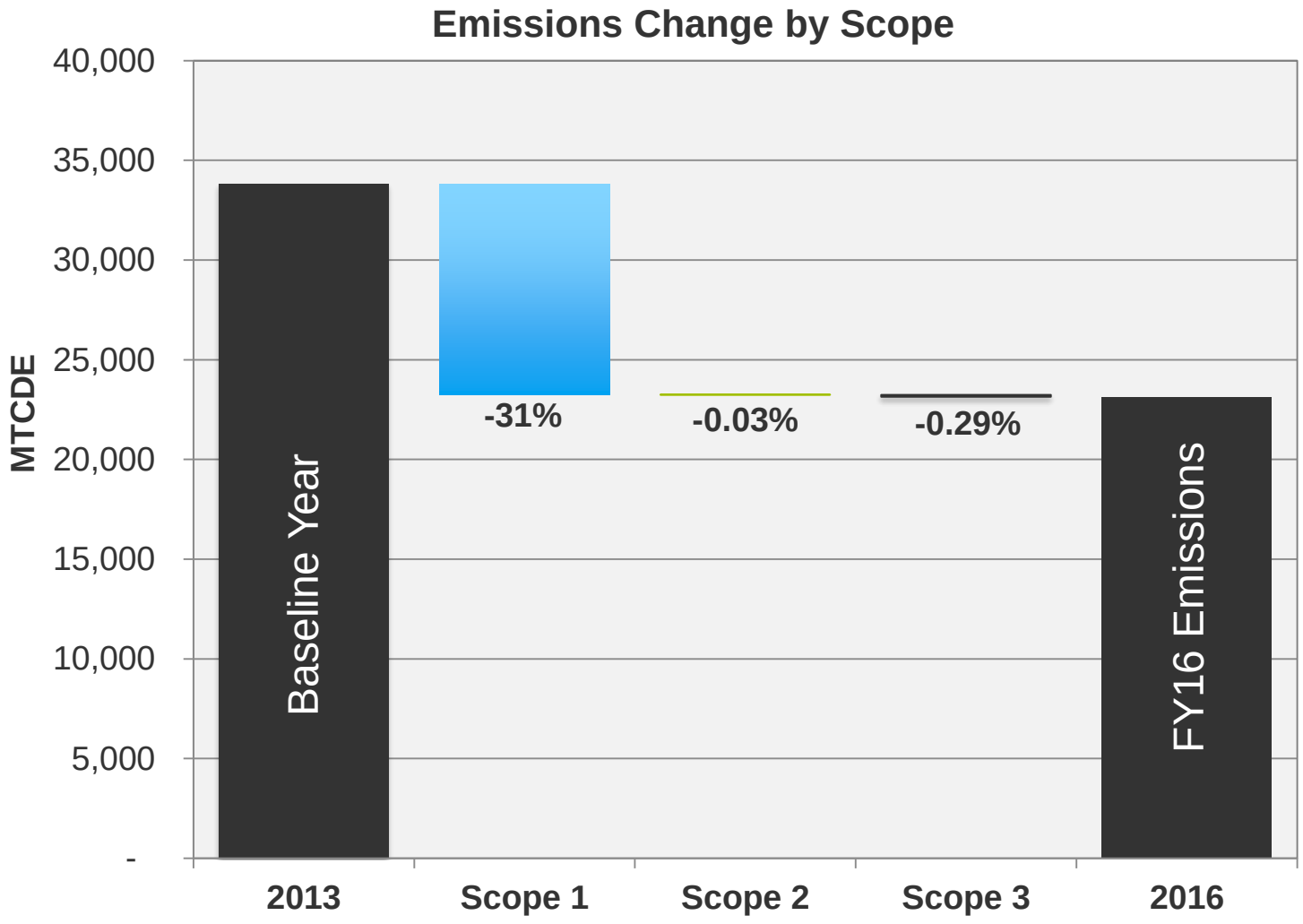
Total waste in FY16 was about 290lbs/campus user





Scope 1 Accounts for Almost All Emissions Reductions

Scope 2 and 3 should be prioritized for gradual decreases moving forward



Ship Emissions Decrease
32%

FY13-FY16
Peers reduced emissions by 6%

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Concluding Comments

Scope 1

- The infrastructure project has produced a drastic drop in Scope 1 emissions – focus must now turn to smaller and consistent reductions over time.
- Continue reducing emissions by switching to less intense refrigerants and improving fleet fuel efficiency.
- Consider implementing anti-idling policies and combining work order requests to reduce travel

Scope 2

- Identify a plan for electric reductions and implement efficiency measures.
- Focus on implementing LED lighting across campus.

Scope 3

- Educate commuters about less carbon intense commuting options.
- Review options to condense class scheduling to increase more carpooling opportunities.
- Continue to improve recycling program, and consider composting as an additional option to divert waste.
- Electric reductions will also decrease emissions from T&D losses.