

Champlain College Greenhouse Gas Inventory FY2018

The White House
Office of the Press Secretary

For Immediate Release

November 19, 2015

Fact Sheet: Ahead of the Conference on Climate Change, More than 200 Colleges and Universities Sign the American Campus Act on Climate Pledge to Demonstrate Support for Strong International Climate Action

President Laackman signed onto White House initiative [American Campuses Act on Climate Change](#) (December 2015)

**WE ARE
STILL IN**

President Laackman signed onto [We Are Still In](#) letter in support of the Paris Climate Accord (June 2017)

BURLINGTON
2030
DISTRICT®

Champlain became a member (Fall 2017)

Included Emission Sources at Champlain College

Scope 1 – Direct

- Natural Gas Consumption
- Vehicle Fleet & Shuttle
- Fertilizer
- Refrigerants

24%

Scope 2 – Upstream

- Electricity Purchased from the Regional Grid

28%

Scope 3 – Indirect*

- Employee & Student Commuting
- Employee Air Travel & Student Study Abroad
- Personal Mileage Reimbursement
- Landfill Waste
- Wastewater
- Purchased Paper
- T&D Losses

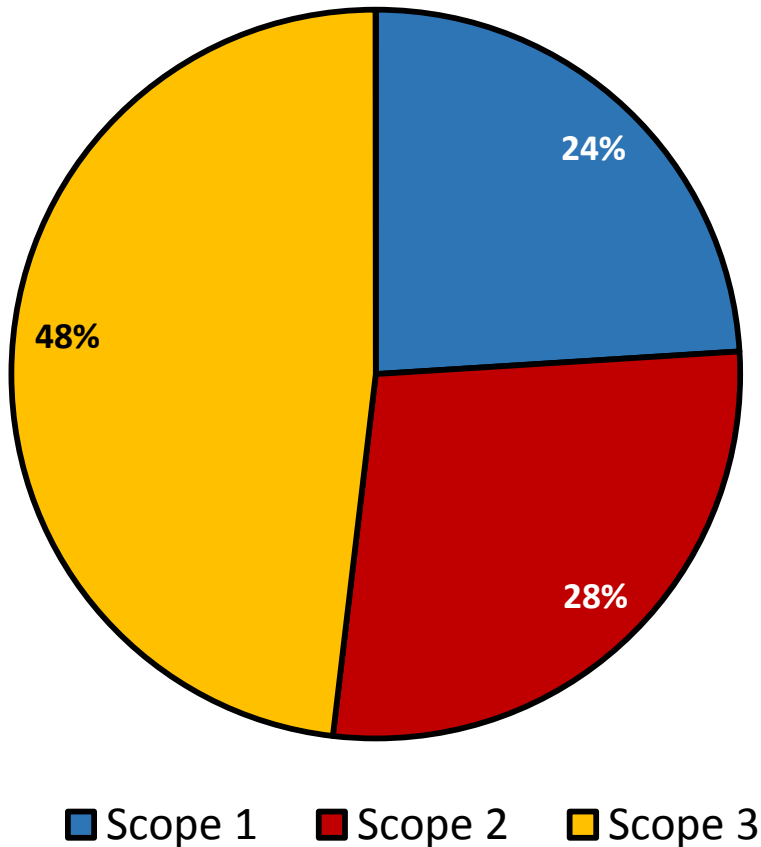
48%

Increasingly Difficult to Control and Mitigate These Sources of Emissions

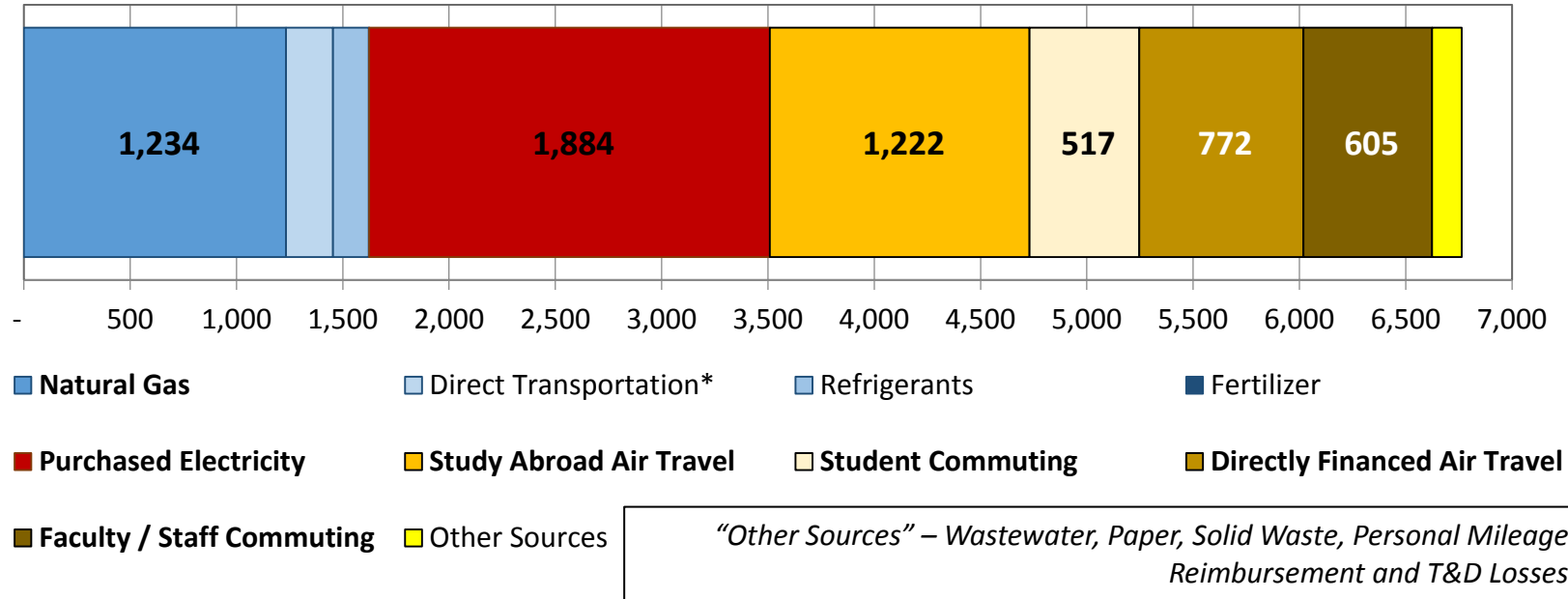
*T & D Losses excluded from new SIMAP GHG calculation – excluded in all years

Summary of Champlain's GHG Emission Sources

GHG Emissions by Scope



Campus GHG Emissions by Source - MTCDE



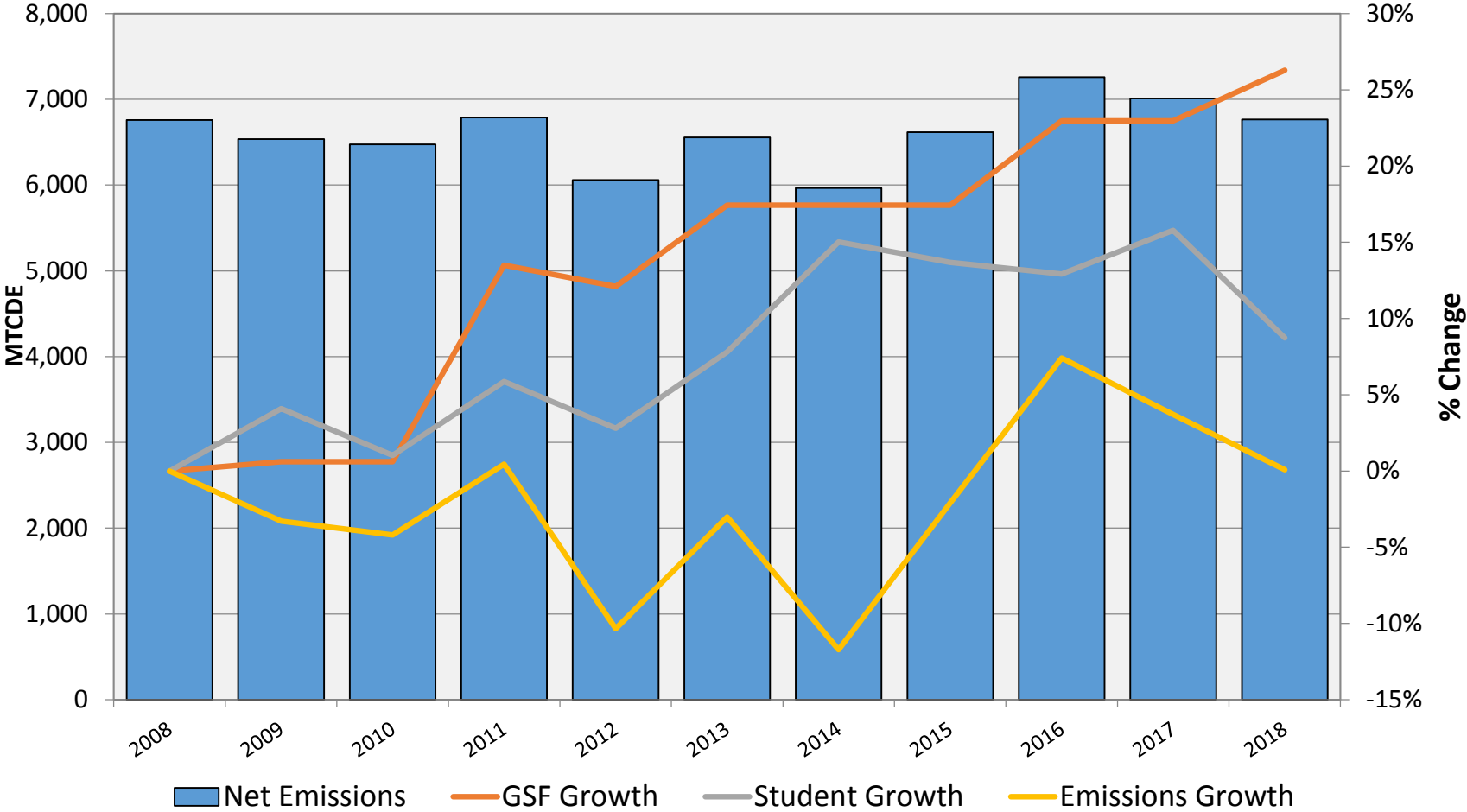
Champlain's plurality of emissions are from Scope 3 – Indirect to Campus Operations. This increases the difficulty of future reductions.

Emissions reduction efforts should prioritize major sources, those are bolded above

*Direct Transportation now includes diesel associated with campus shuttle, shifted from Scope 3 to Scope 1

Emissions Flat Despite Growth in Space & FTEs

Historical Net Emissions



Scopes 1 & 2 Increased by 5%
 Fleet gasoline emissions increased 17% year over year

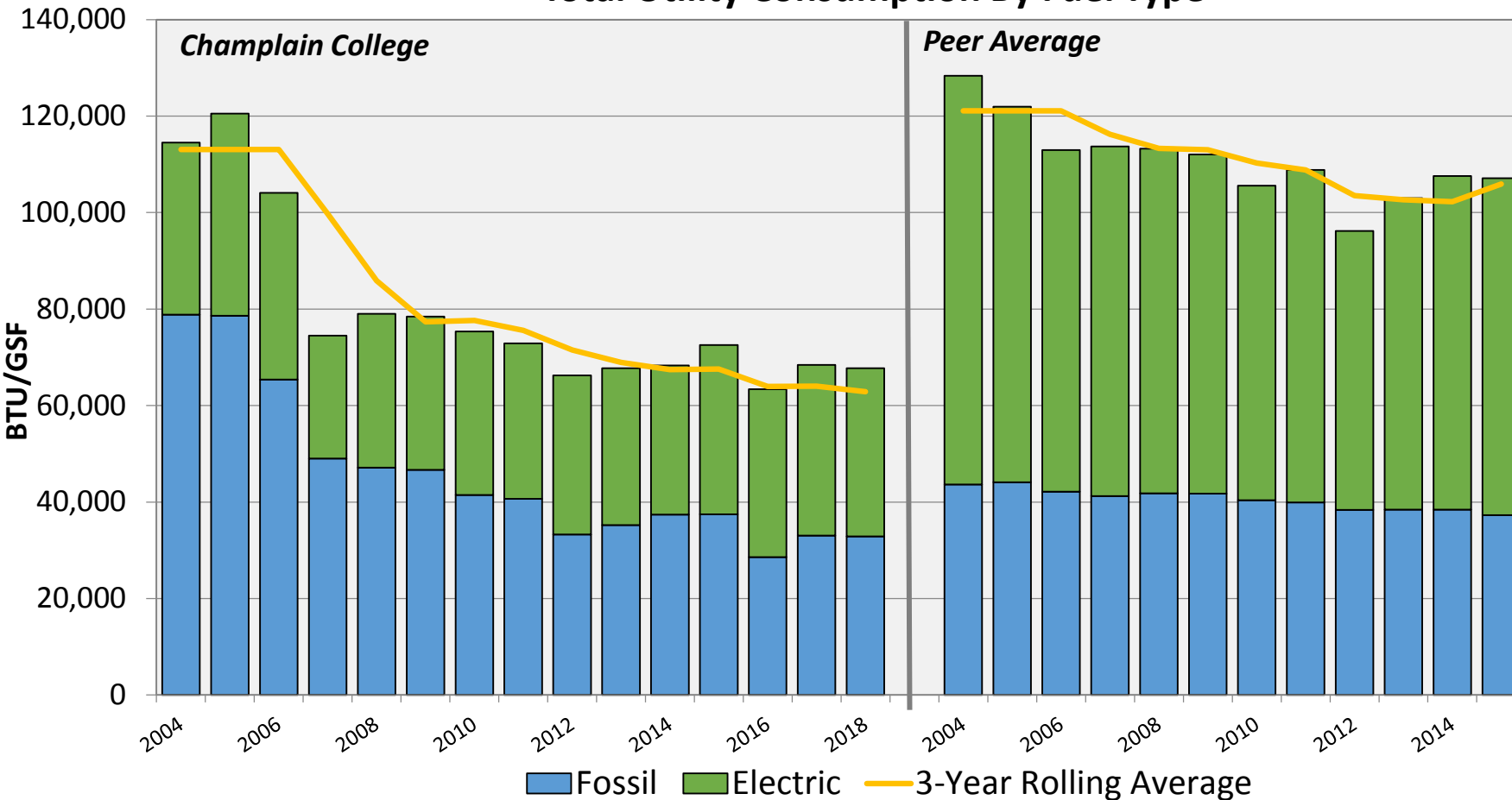
Scope 3 Decreased 11%
 After updating Study Abroad trips historically, total emissions dropped in FY18 year over year

194 St. Paul St. excluded from FY18 – no energy usage or Square Footage



Energy Use Well Below Peers' Historical Performance

Total Utility Consumption By Fuel Type



Gas – 2% Gross Increase
Residential: 1% net increase
Acad/Admin: 3% net Increase

Electricity – 1% Gross Increase
Residential: 2% net decrease
Acad/Admin: 3% net increase

Sustainability Peers: Bentley University, University of Vermont, Boston College, Babson College, Siena College, Wesleyan University, Carleton College, Hamilton College, Hampshire College

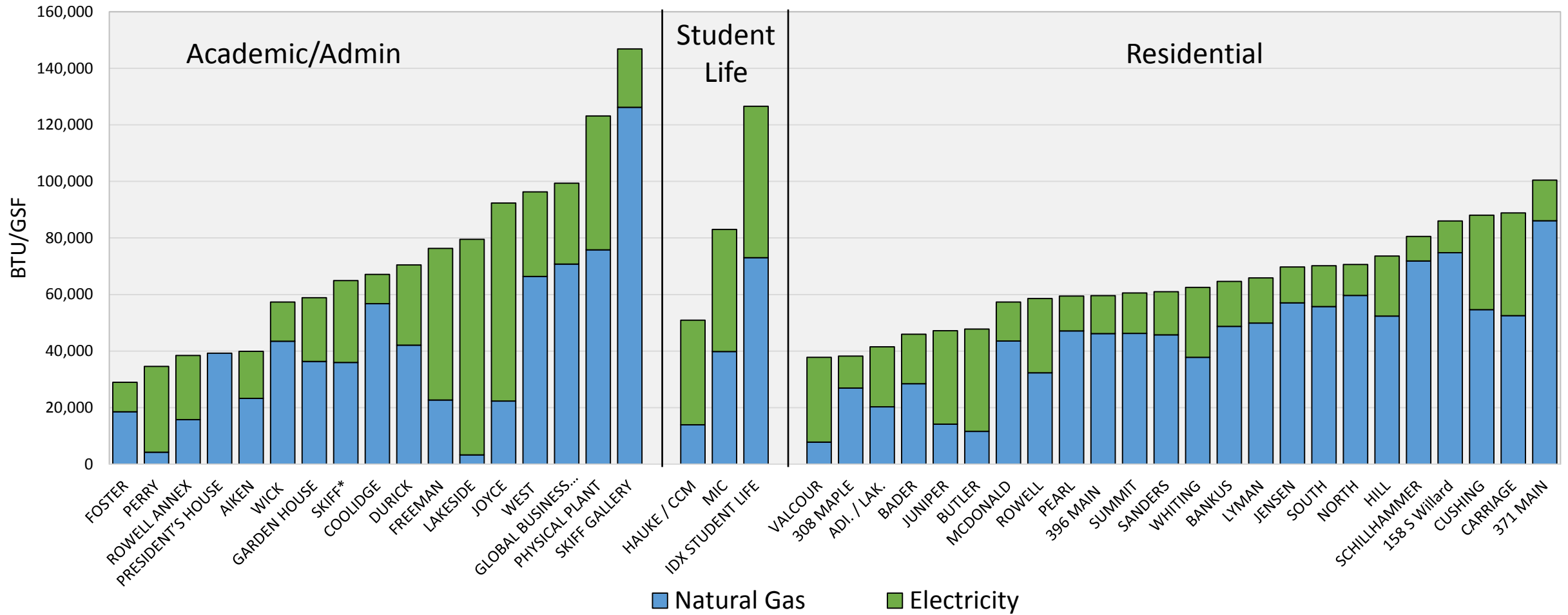
Data from Sightlines ROPA+ Presentation November 2016





Energy Consumption by Building

Total Energy Consumption

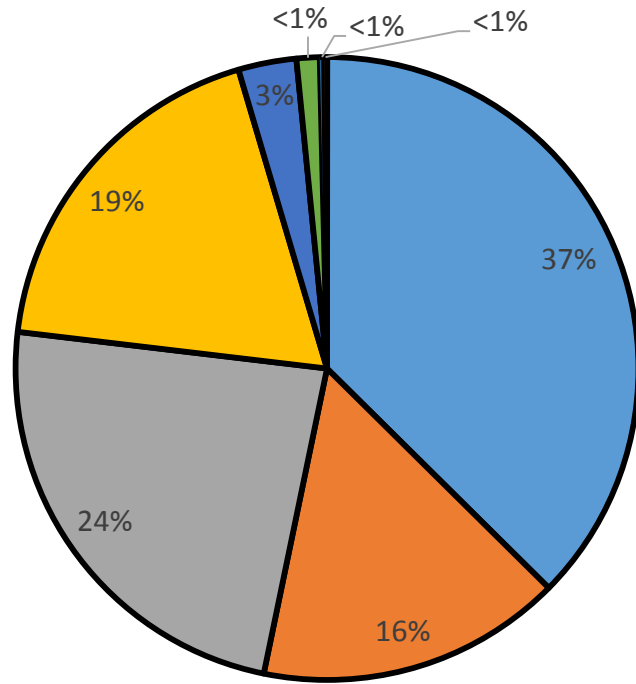


Natural Gas

Electricity

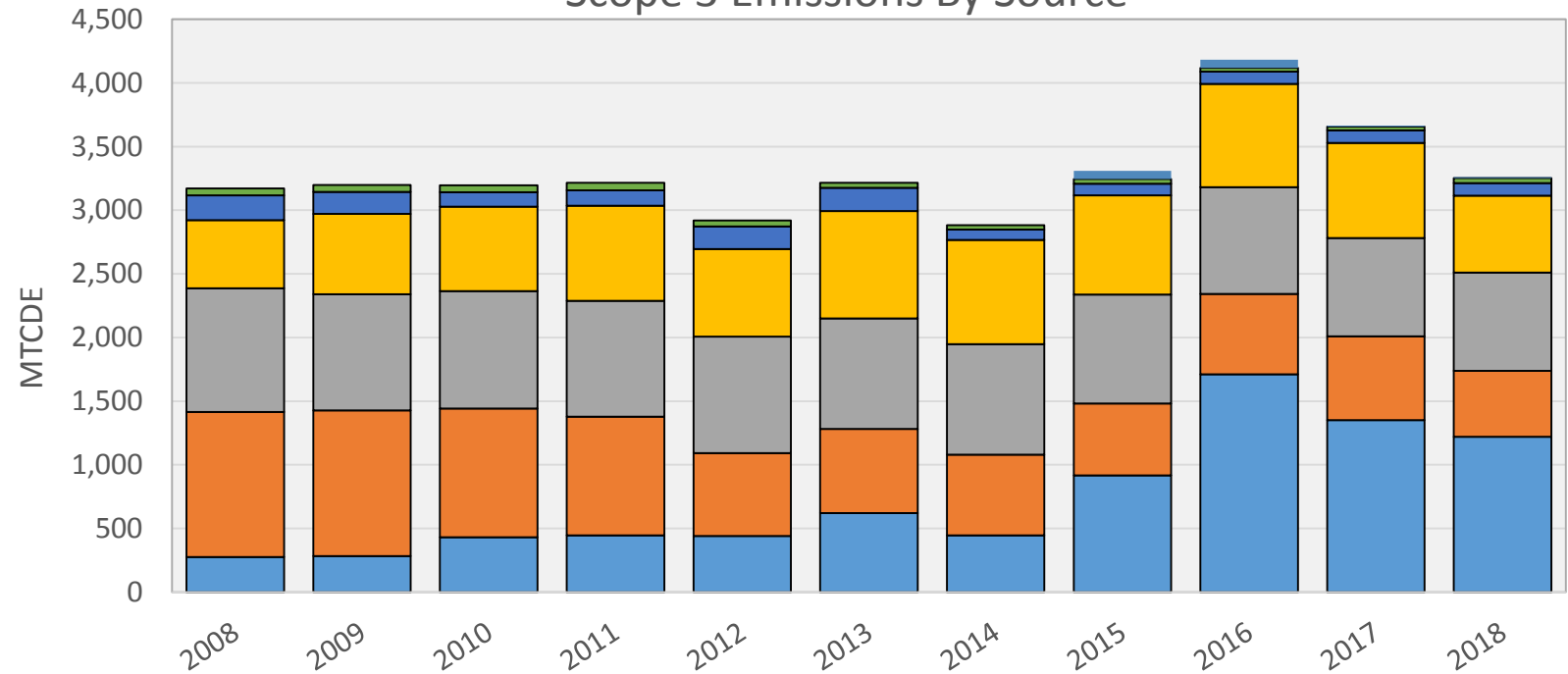
Air Travel & Commuting Are Top Four Scope 3 Sources

FY18 Scope 3 GHGs by Source



- Study Abroad
- DF Air Travel
- T&D Losses
- DF Ground Travel
- Student Commuting
- Faculty/Staff Commuting
- Paper
- Wastewater

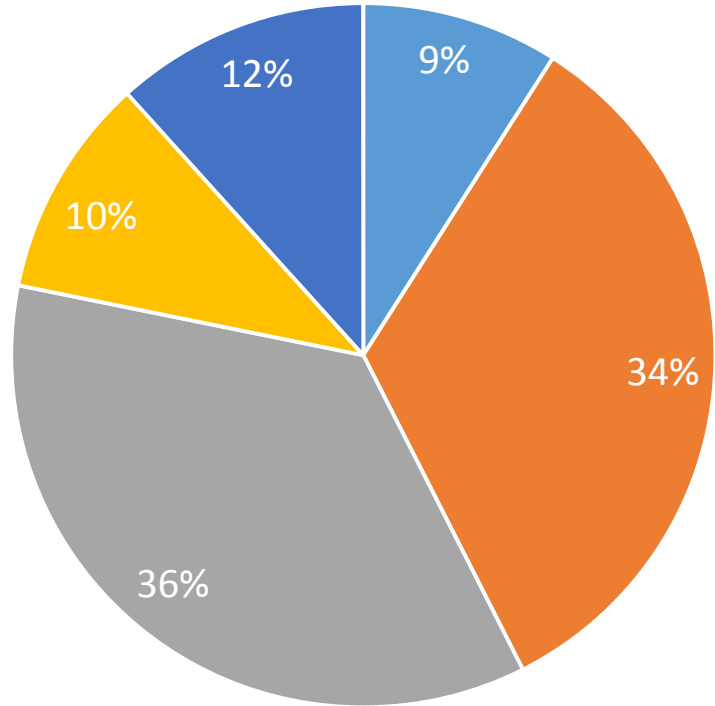
Scope 3 Emissions By Source



- **Study Abroad** – Substantial increase in Study Abroad in 2015 coincides with improved data collection for faculty-led course trips
- **Student Commuting** – New methodology shows near doubling of student % Drive Alone mode and reduced trip frequency; overall fewer commuter students reduces total contribution to campus emissions

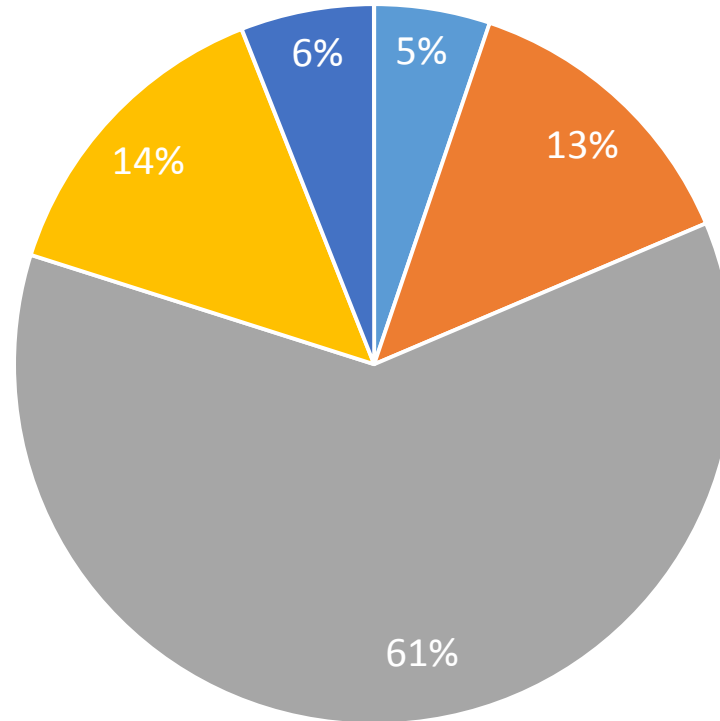
New Survey Method Impacts Metrics

Student Commuting Mode Splits - 2017

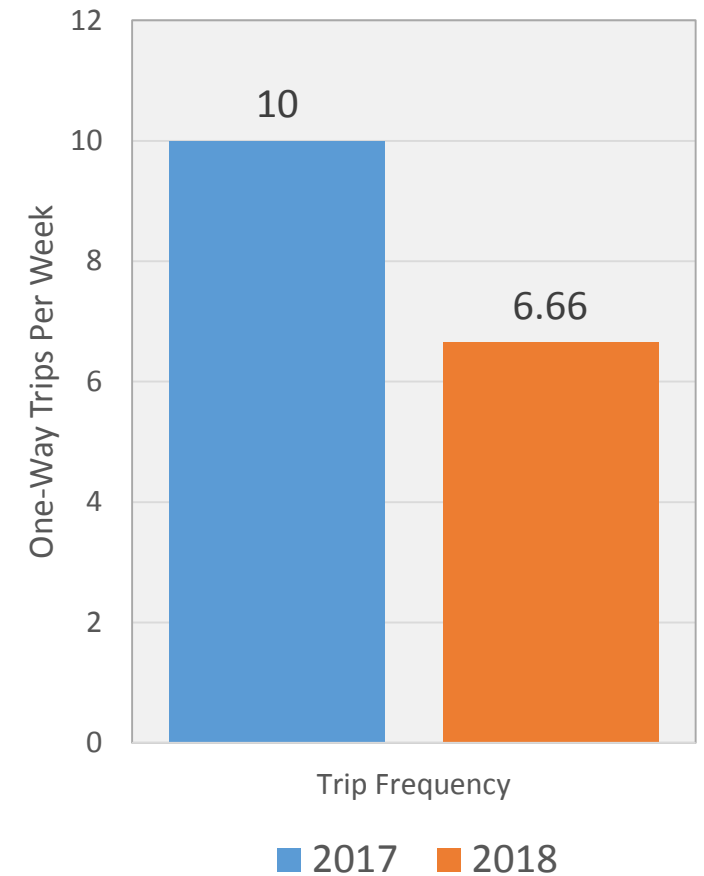


■ Bike ■ Walk ■ Drive Alone ■ Carpool ■ Bus

Student Commuting Mode Splits - 2018



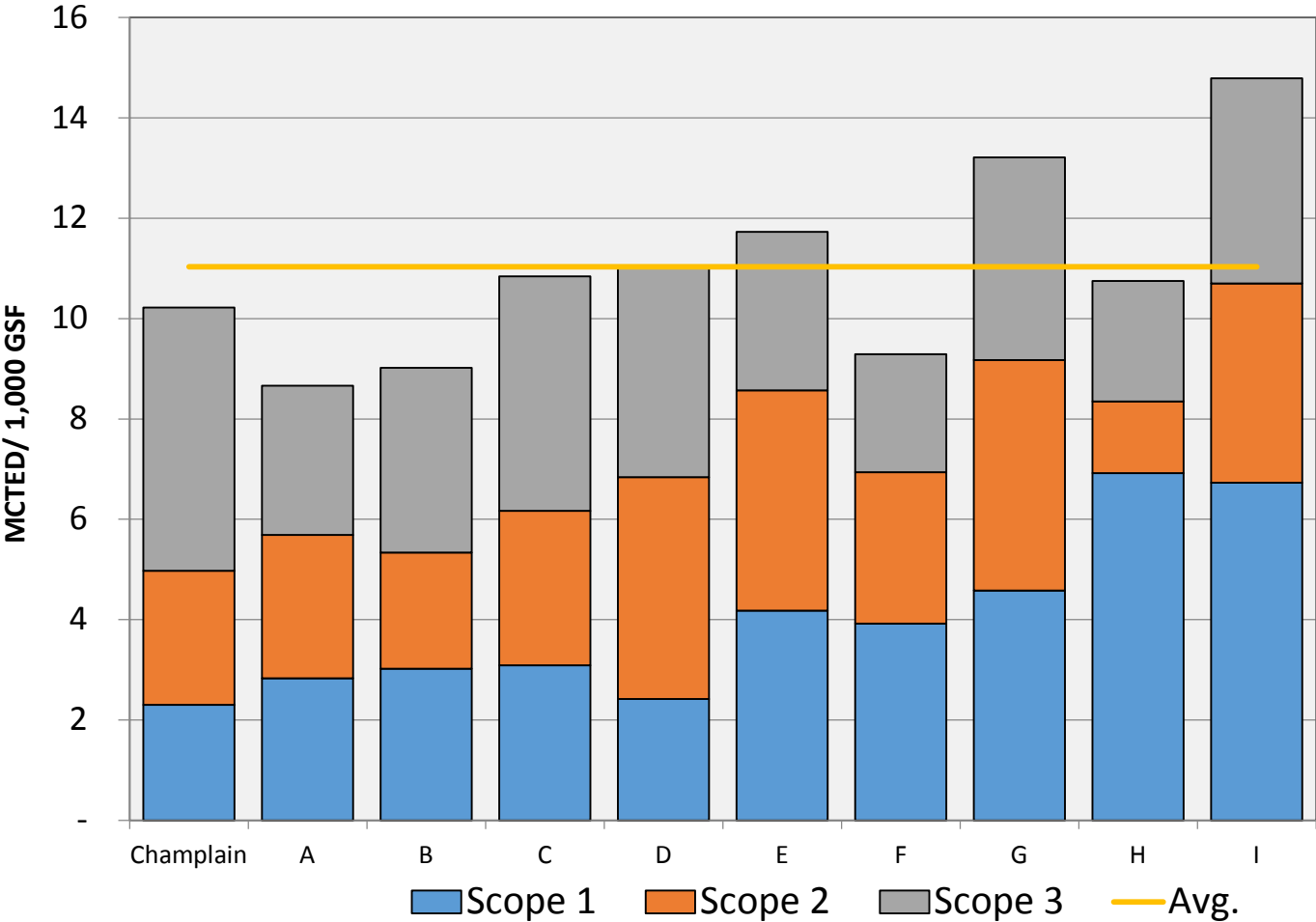
Student Commuting Trip Frequency



New modal distribution and trip frequency more closely aligns Champlain's student commuting habits with other higher education institutions

Benchmarking Campus Emissions to Peers

Gross Emissions per 1,000 Square Feet



Scope 1 & 2 emissions per GSF reflect the energy efficiency of campus buildings.

Scope 3 emissions per GSF (mainly study abroad, employee air travel and student commuting) are exaggerated due to Champlain’s much higher population density (i.e. more tailpipe emissions divided by less campus building space).

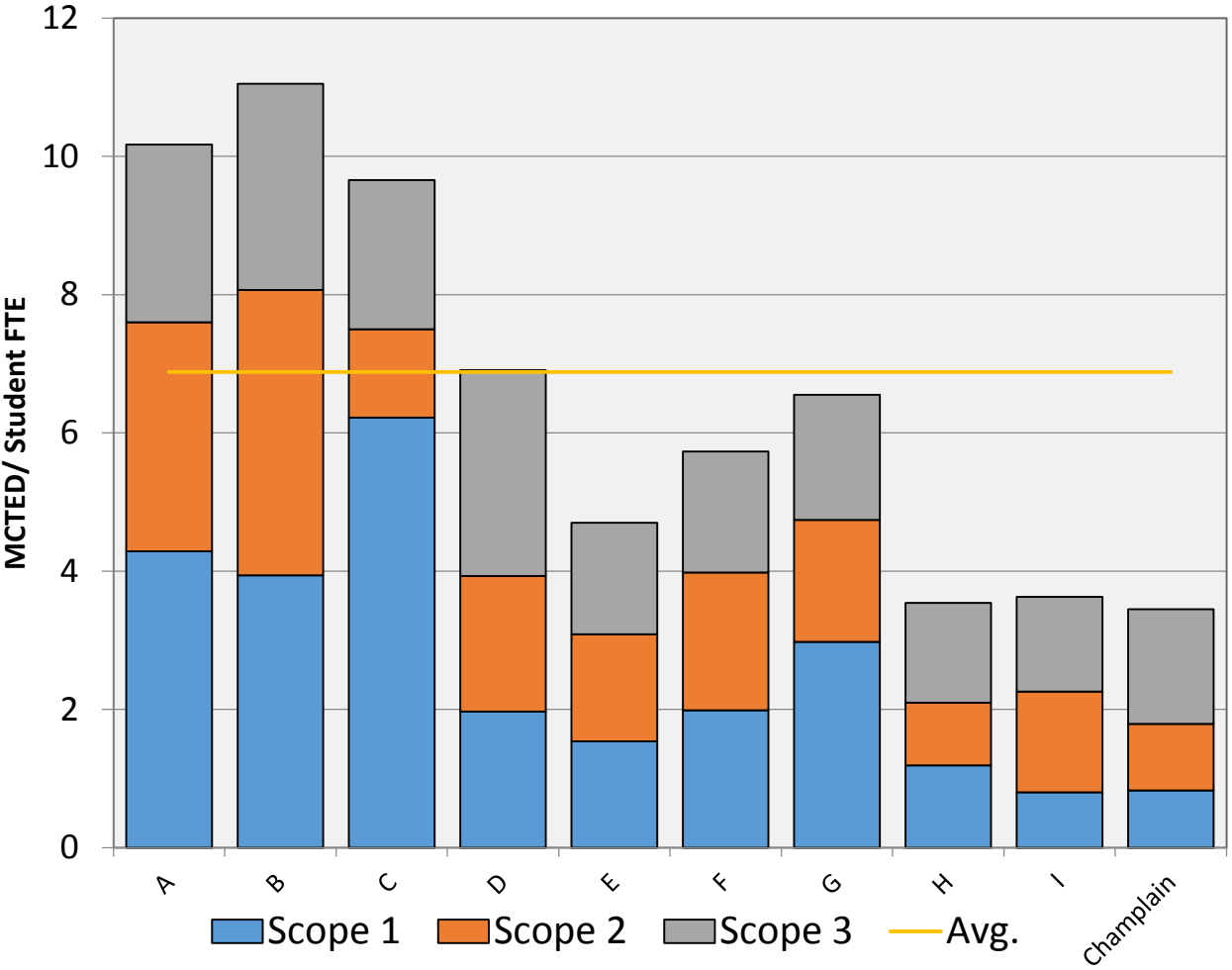
Sustainability Peers: Bentley University, University of Vermont, Boston College, Babson College, Siena College, Wesleyan University, Carleton College, Hamilton College, Hampshire College

Peer data from Sightlines ROPA+ Presentation November 2016



Benchmarking Campus Emissions to Peers

Gross Emissions per Student FTE



Despite increase in emissions per student, Champlain College’s educational model still generates approximately 50% less carbon emissions per student than the average peer institution.

Scope 3 emissions, on a per student basis, are now comparable to several peers. This is due to the increase in Study Abroad emissions.

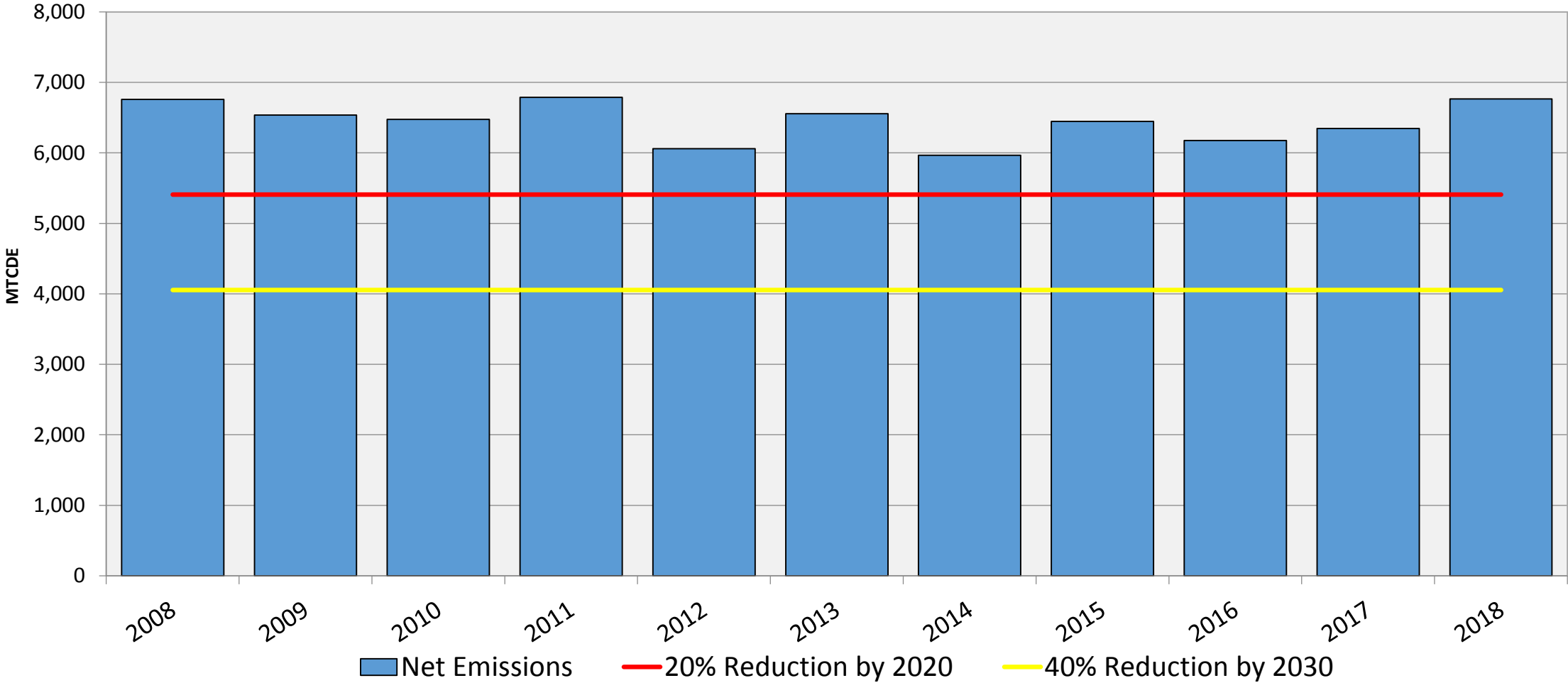
Sustainability Peers: Bentley University, University of Vermont, Boston College, Babson College, Siena College, Wesleyan University, Carleton College, Hamilton College, Hampshire College

Peer data from Sightlines ROPA+ Presentation November 2016



Net Emissions vs. Common Reduction Targets

Historical Net Emissions



Concluding Comments

- Champlain's emissions profile reflects a more energy efficient campus, with a higher population density, than the peer group used by Sightlines in 2016
 - This results in comparable performance on a per GSF basis and vastly superior performance on a per student basis
- Champlain has made strides to improve the accuracy of its carbon footprint by capturing the campus' directly financed air travel and refining the shuttle's emissions calculations and commuting survey methods. Other areas to focus on include:
 - **Boundary Definitions** – GSF and employee FTEs seems to have varying boundaries. Solidifying this methodology will make longitudinal analysis more accurate.
 - **Diesel Fuel** – Highly variable diesel fuel usage amounts
 - **Waste Generation and Diversion** - The current methodology assumes all containers are full, which likely overstates the waste generation of the campus as well as diversion levels.

Carbon Reduction Potential Next Steps

- Champlain should continue to reinvest in existing buildings to further reduce energy use
 - Overall, Champlain is among the most energy-efficient campuses I've worked with
 - Further reductions in energy consumption are likely to be incremental; LEDs, lighting controls, retro-commissioning and occupant engagement are likely areas of continued opportunity
- Given this fact, Champlain could explore virtual net metering and other ways of sourcing green power
 - Virtual net metering and other forms of power purchase agreements can help reduce campus electricity emissions while providing long-term budget certainty for electricity costs. While Burlington Electric uses a 100% carbon-free fuel mix, Scope 2 methodology is based on the broader New England regional electricity generation fuel mix
 - Consider the trade-offs associated with the bio-gas offering from [Vermont Gas](#) – increased price but reduced emissions. Few other “drop-in” alternatives exist for natural gas, limiting the College's options
- Scope 3 emissions will continue to be a challenge to mitigate – success in this area is more dependent on community engagement than engineering controls or facilities investments.
 - Study Abroad travel is the largest source and may represent an [offset opportunity](#)
 - Continue to address drive-alone commuting

The White House
Office of the Press Secretary
For Immediate Release

November 19, 2015

Fact Sheet: Ahead of the Conference on Climate Change, More than 200 Colleges and Universities Sign the American Campus Act on Climate Pledge to Demonstrate Support for Strong International Climate Action

President Laackman signed onto White House initiative [American Campuses Act on Climate Change](#) (December 2015)



President Laackman signed onto [We Are Still In](#) letter in support of the Paris Climate Accord (June 2017)

BURLINGTON
2030
DISTRICT®

Champlain became a member (Fall 2017)

What values, goals, and next steps might be included in the Champlain 2025 Strategic Plan?

[Inspiration from Middlebury](#)



Appendix I

- **Notes on changes to FY18 calculation methodologies**

- **Building Space**

- Excluding College-Owned Buildings: 270 S. Willard, 390 Maple, 436 Maple, 8 Browns Court, 10-12 Browns Court (as tenants pay utilities) and 194 St. Paul St. for FY18 as it was under construction.

- **Campus Shuttle**

- New SIMAP platform for GHG calculations does not allow for gallon data entry for Scope 3 transportation sources
- Entered all historical and current shuttle data into Scope 1 Direct Transportation: Diesel category
 - Amounts are entered separately from College-owned fleet diesel consumption

Appendix I

- **Notes on changes to FY18 calculation methodologies**

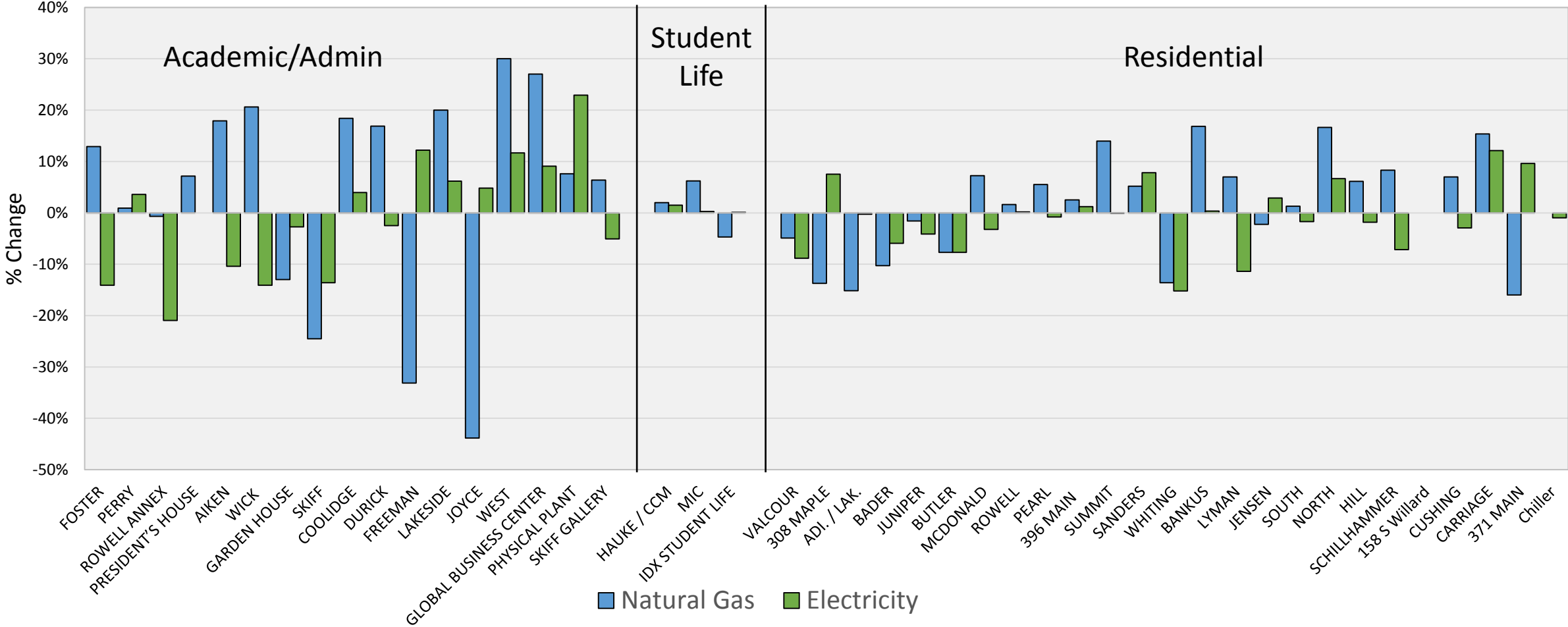
- Commuting

- New survey methodology provides more accurate modal distribution of commuters; resulted in increase in student drive alone commuting as % of total trips, but aligned Champlain with more common mode splits in higher education
- CATMA survey lets commuters select number of trips per week by mode; results show drive alone mode is used more frequently than previously calculated
- Trips per week for students dropped from an conservatively assumed amount of 10 trips (5 days per week) to an average of 6.66 trips (3.5 days per week)
- Employee trips per week dropped similarly from conservatively assumed 10 trips to 6.91 trips
 - This may be impacted by response distribution between faculty and staff – assuming staff are on campus more days per week than faculty

Additional slides from entire inventory presentation

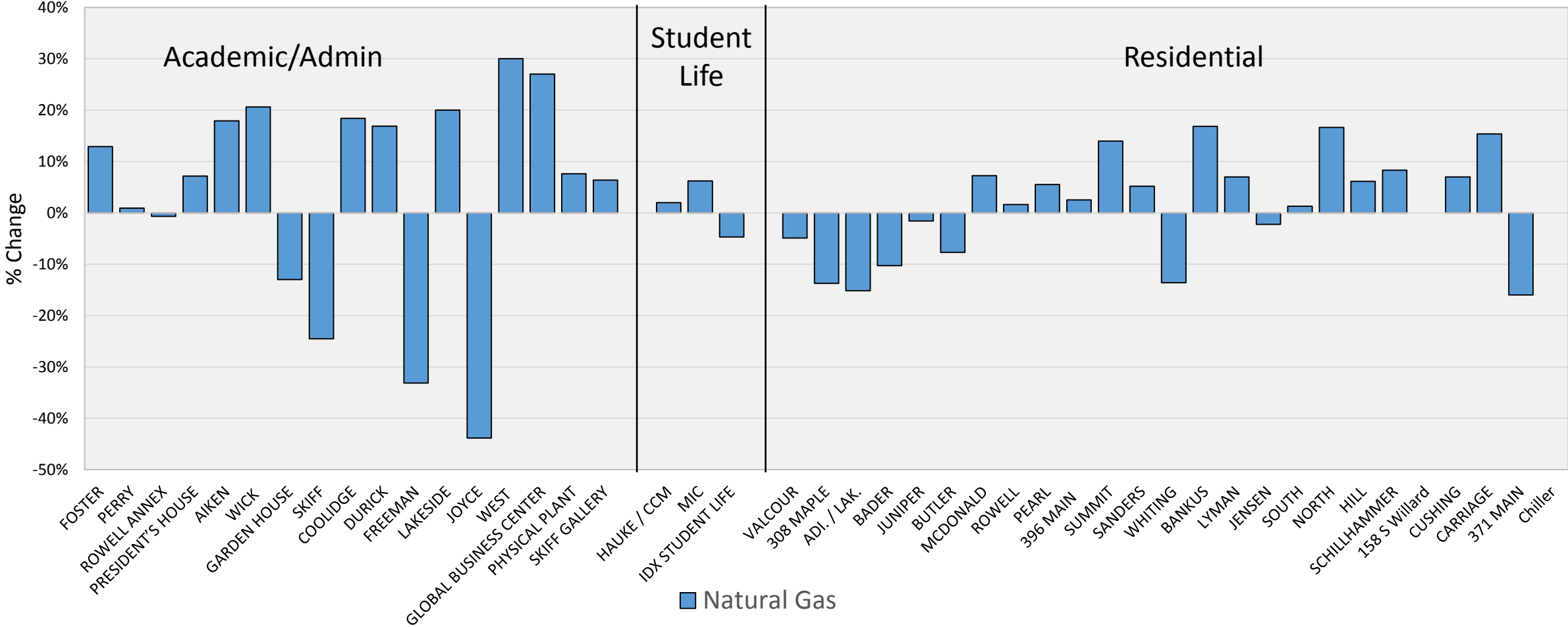
Energy Consumption % Change by Building

Total Energy Consumption Change Year Over Year



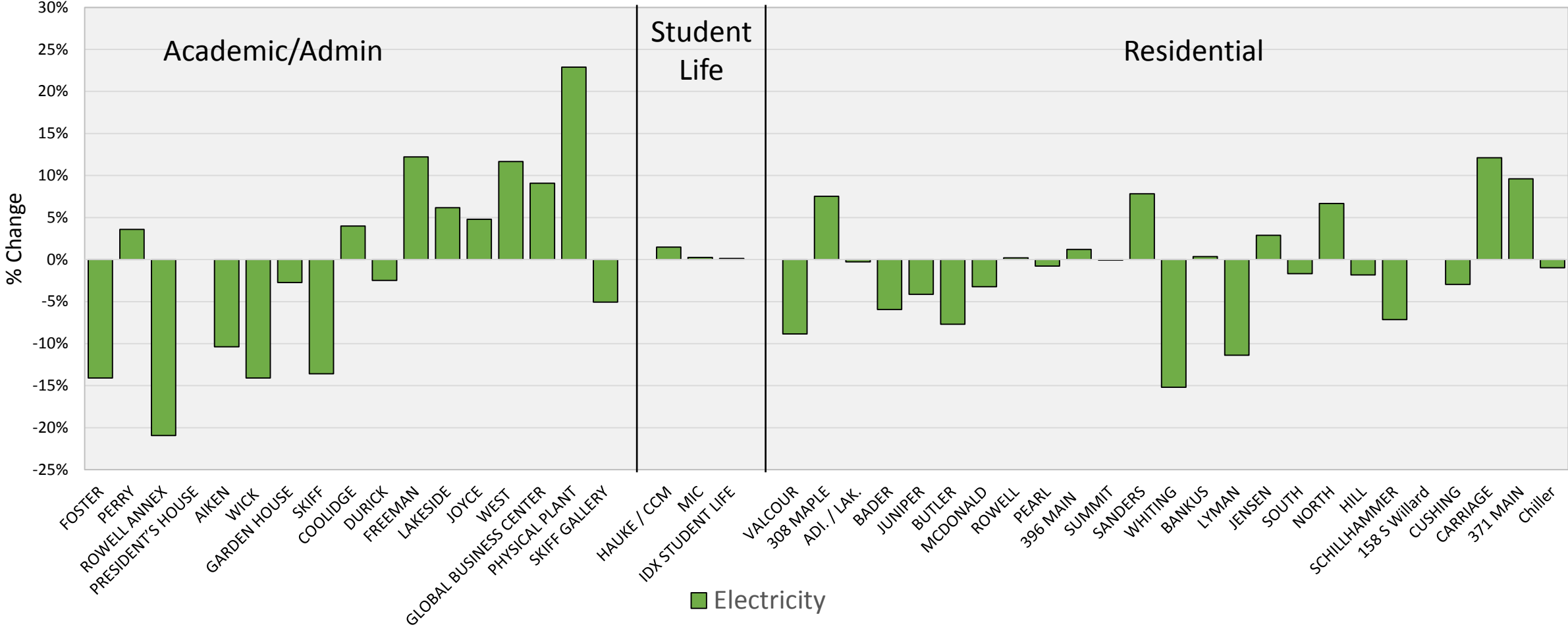
Natural Gas Consumption % Change by Building

Natural Gas Consumption Change Year Over Year

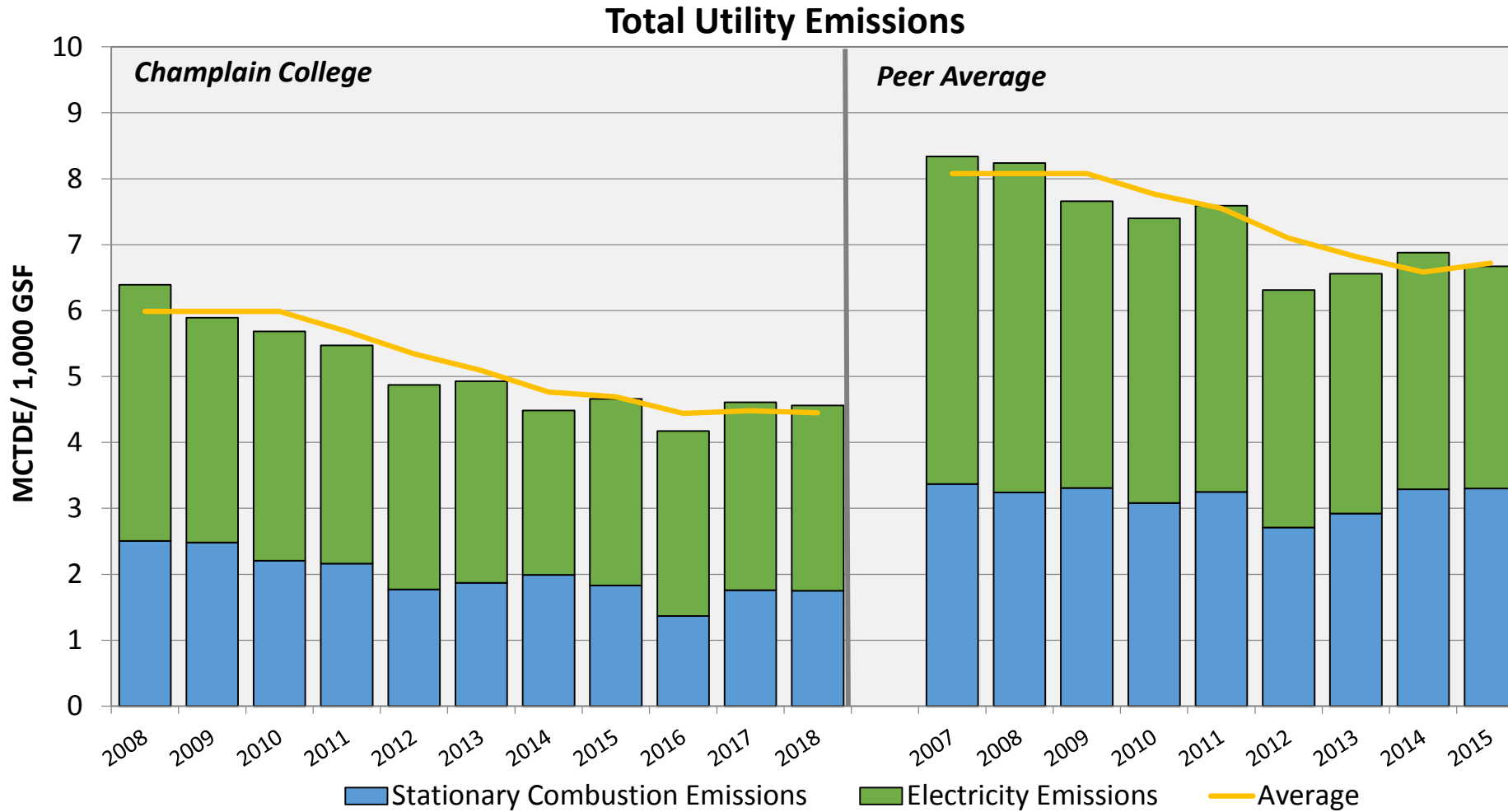


Electricity Consumption % Change by Building

Electricity Consumption Change Year Over Year



Like Consumption, Emissions Below Peers



Emissions per Square Foot drop slightly in FY18. Oftentimes this metric shows increases in efficiency, despite growth in gross emissions.

Champlain's gross utility emissions are below 2008 levels, despite a 36% increase in students and a 26% increase in building space since then.

Sustainability Peers: Bentley University, University of Vermont, Boston College, Babson College, Siena College, Wesleyan University, Carleton College, Hamilton College, Hampshire College

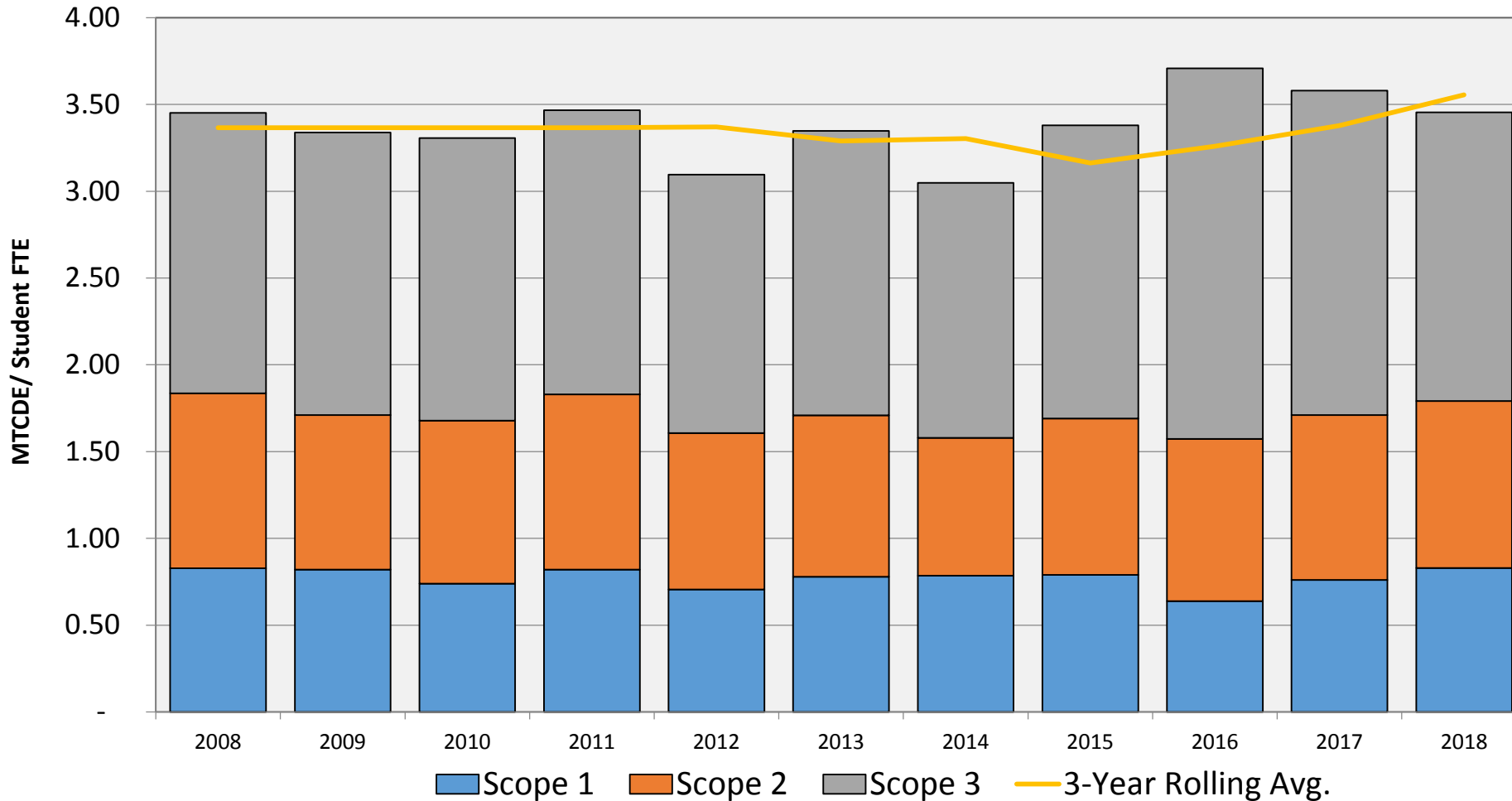
Data from Sightlines ROPA+ Presentation November 2016



**T&D Losses included in Electricity Emissions bar*

Tracking Campus Emissions per Student

Gross Emissions per Student FTE Year Over Year

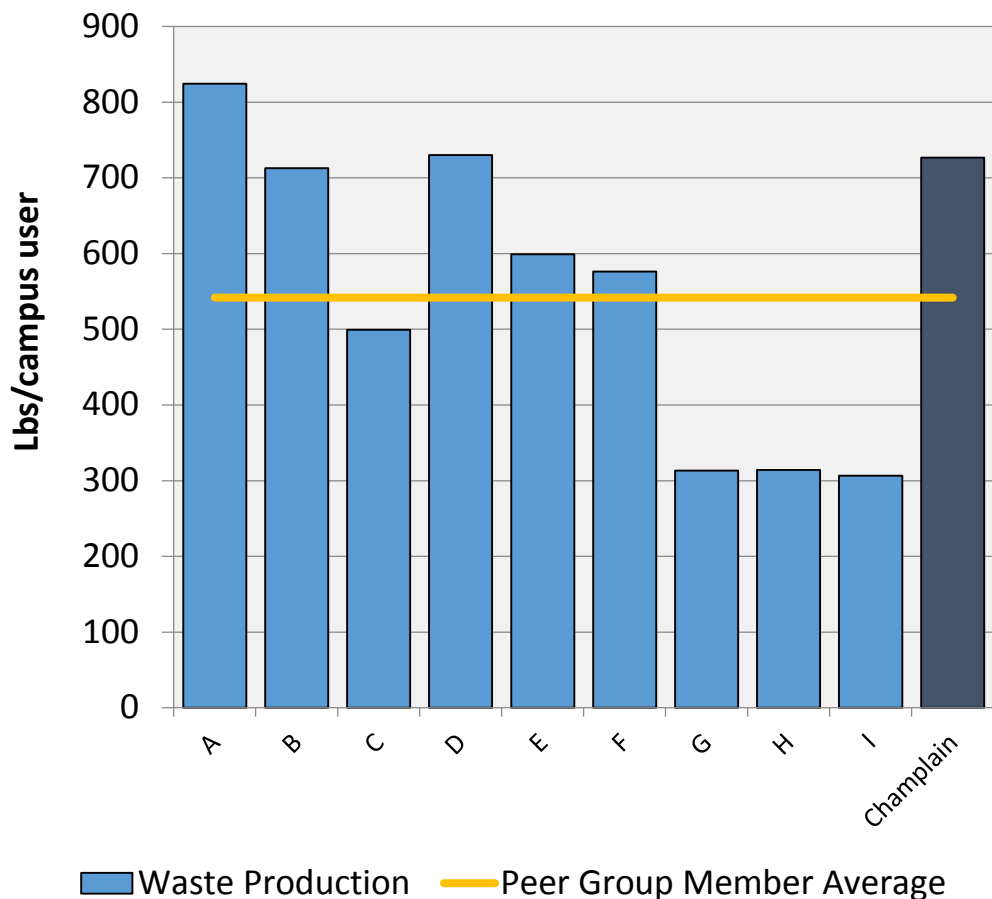


Scope 1 & 2 emissions similar to previous year.

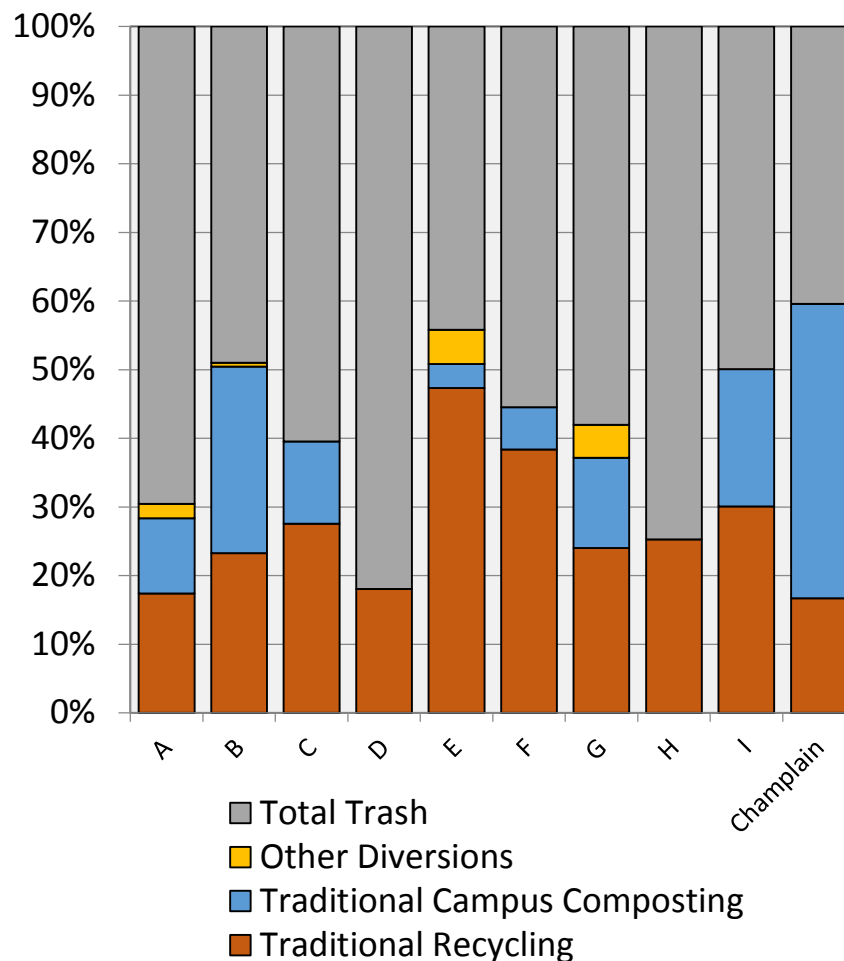
Increases in Scope 3 emissions starting in 2015 due to increased study abroad travel accounting. Emissions drop in 2018 due to lower study abroad mileage and commuting emissions

Generating More Waste, Diverting Much More

Institutional Waste Throughput*



Total Waste Stream %



Compost levels reverted to FY16 levels following FY17 spike, reducing waste throughput per person.

Highest diversion rate amongst peer campuses. Dramatically higher composting rate vs. peers.