Champlain College Greenhouse Gas Inventory FY2019

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)

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Included Emission Sources at Champlain College

Scope 1 – Direct

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

25%

Scope 2 – Upstream

- Electricity Purchased from the Regional Grid

26%

Scope 3 – Indirect

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

49%

Increasingly Difficult to Control and Mitigate These Sources of Emissions

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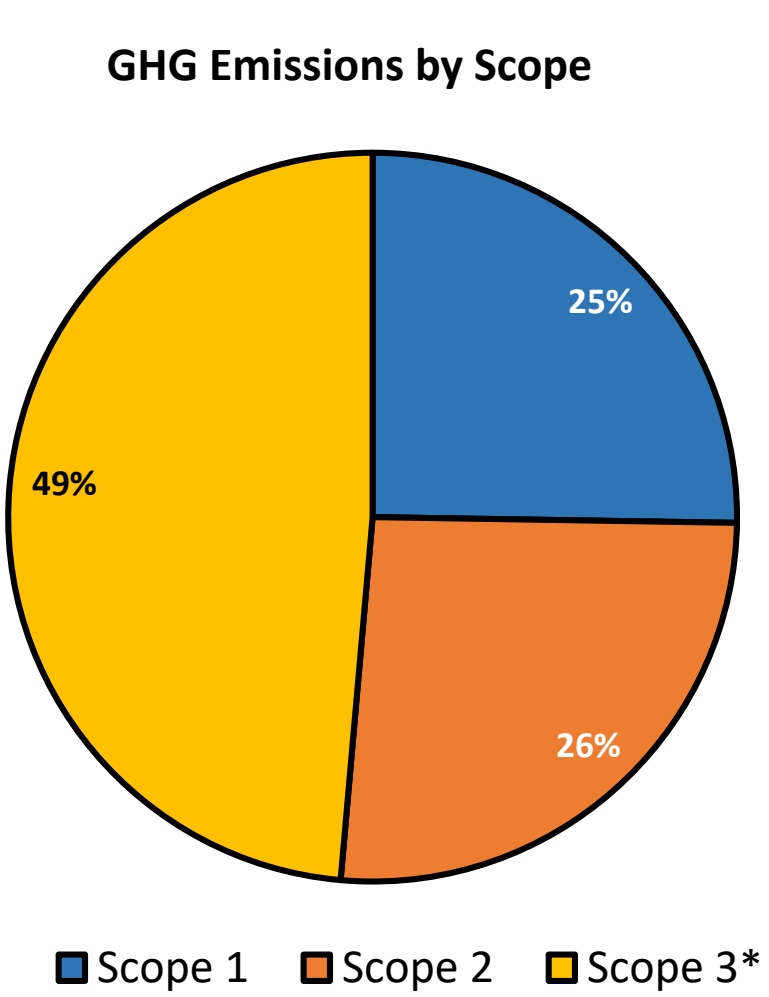
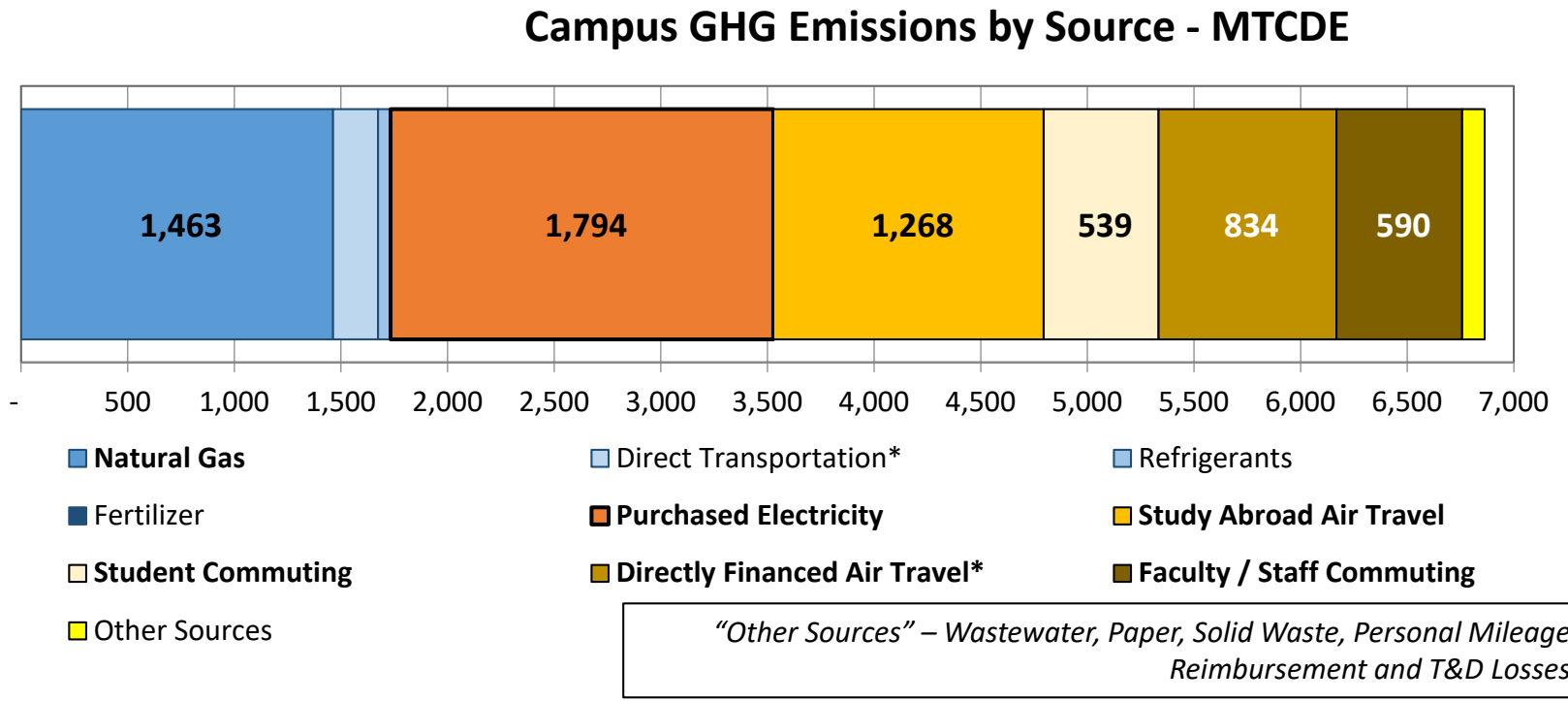
Summary of Champlain's GHG Emission Sources





"Other Sources" – Wastewater, Paper, Solid Waste, Personal Mileage Reimbursement and T&D Losses

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

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

*Only partial year data for Directly Financed Air Travel, doubling to estimate total mileage

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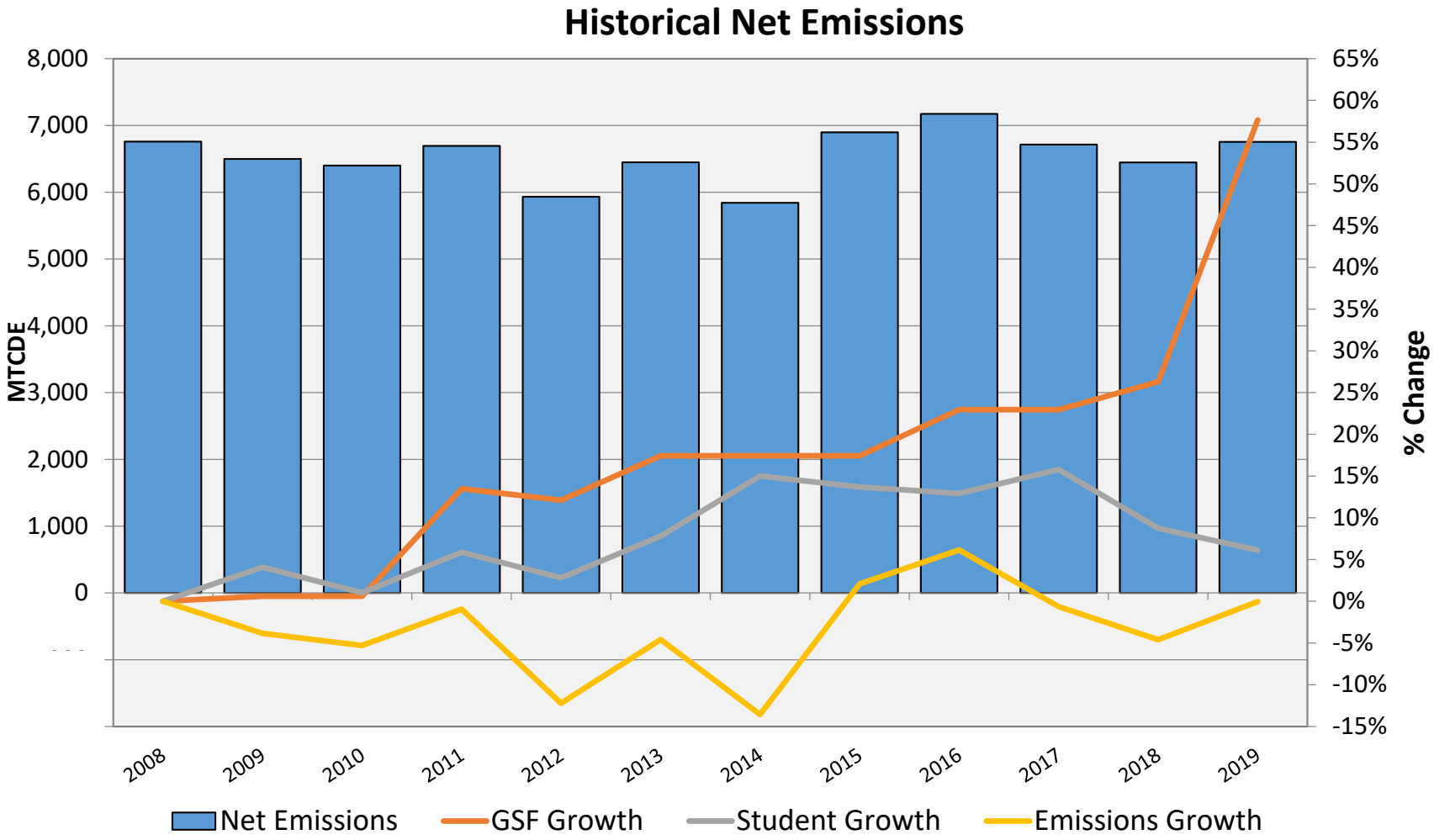
Emissions Flat Despite Growth in Space & FTEs



Scopes 1 & 2 Increased by 7%

Natural Gas usage increased 16% year over year, 75% of that increase is due to the addition of 194 St. Paul Street; RNG nets a 3% decrease in natural gas emissions

Scope 3 Increased 3%

Doubling the partial year data for Directly Financed Air Travel drives Scope 3 sources higher year over year

Using the doubled Directly Financed Air Travel data

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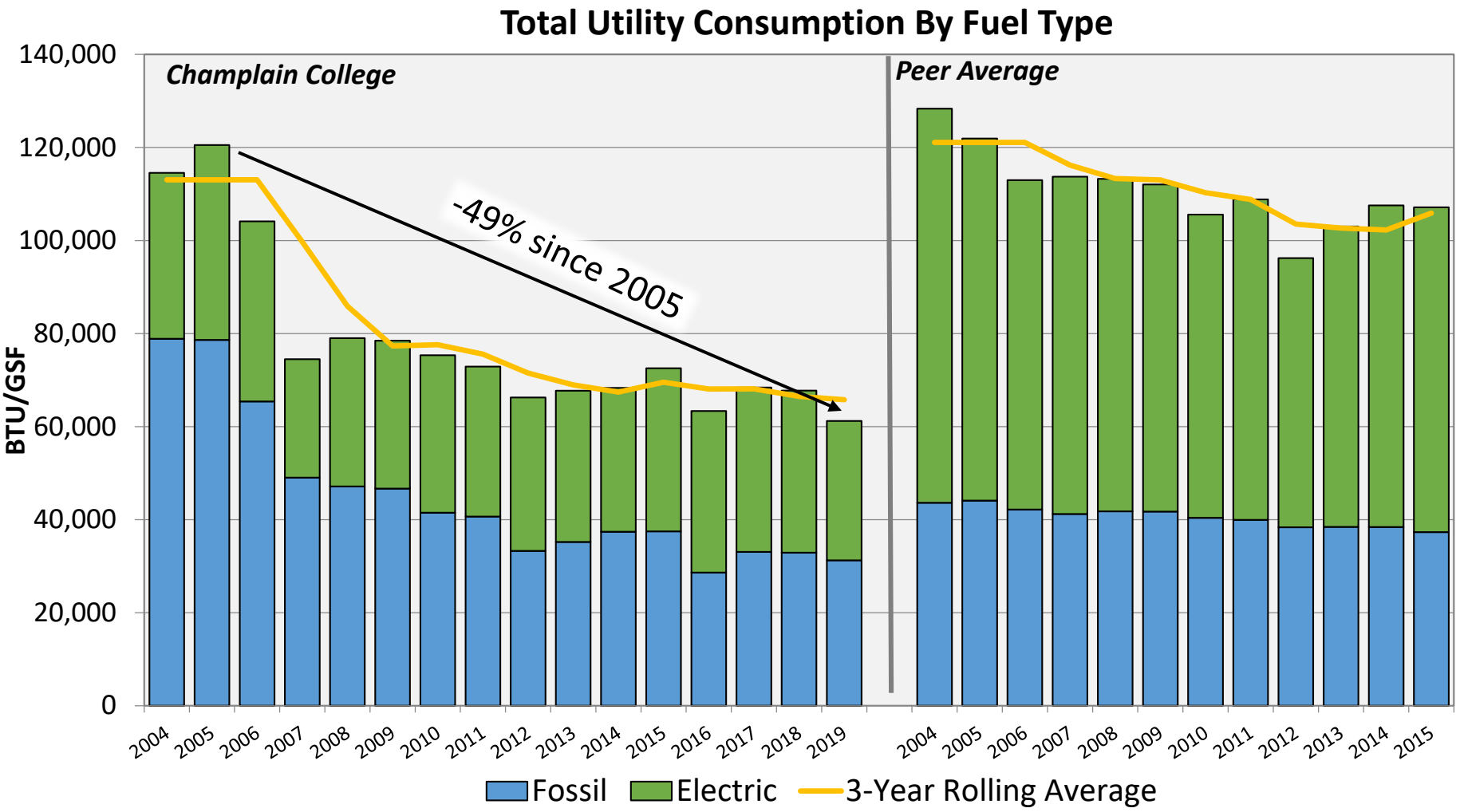
Energy Use Well Below Peers' Historical Performance



Gas – 19% Gross Increase
Residential: 33% net increase
Acad/Admin: 6% net Increase

Electricity – 7% Gross Increase
Residential: 25% net increase
Acad/Admin: 0% change

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

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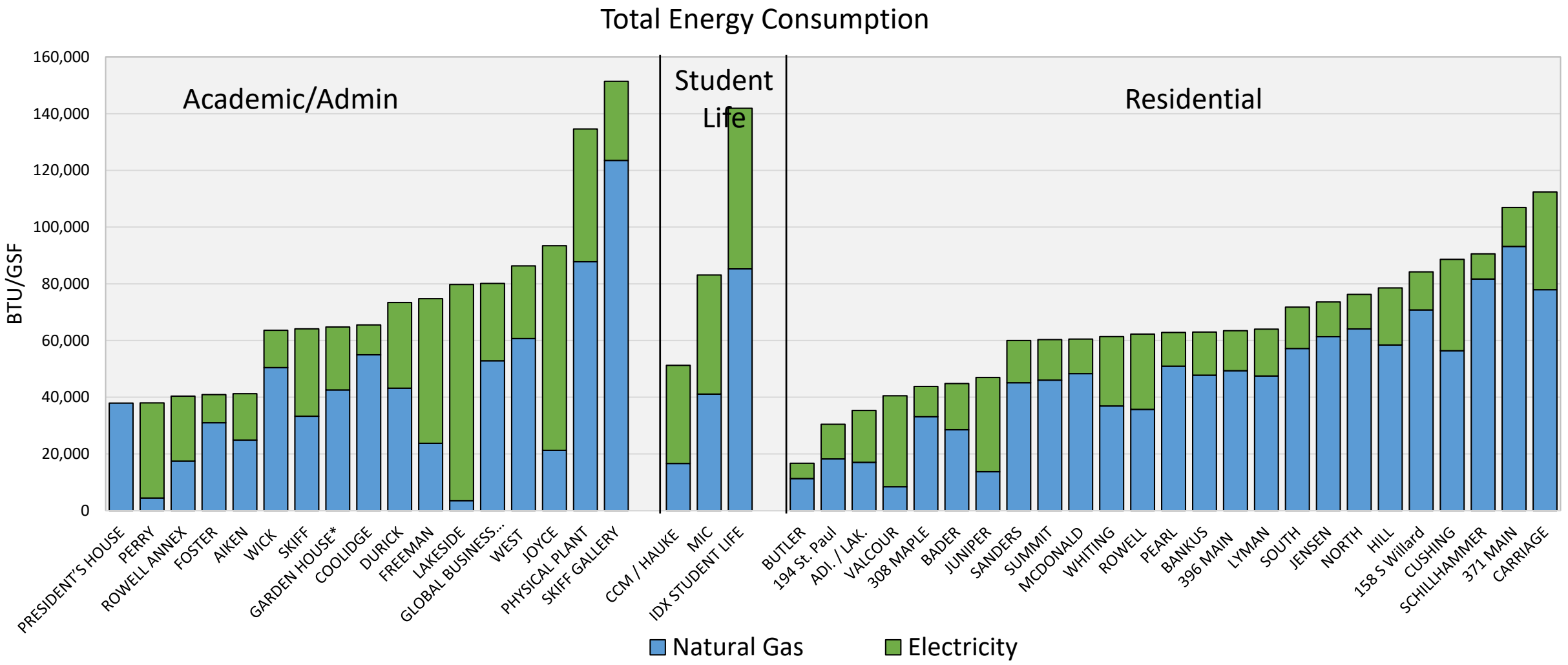
Energy Consumption by Building



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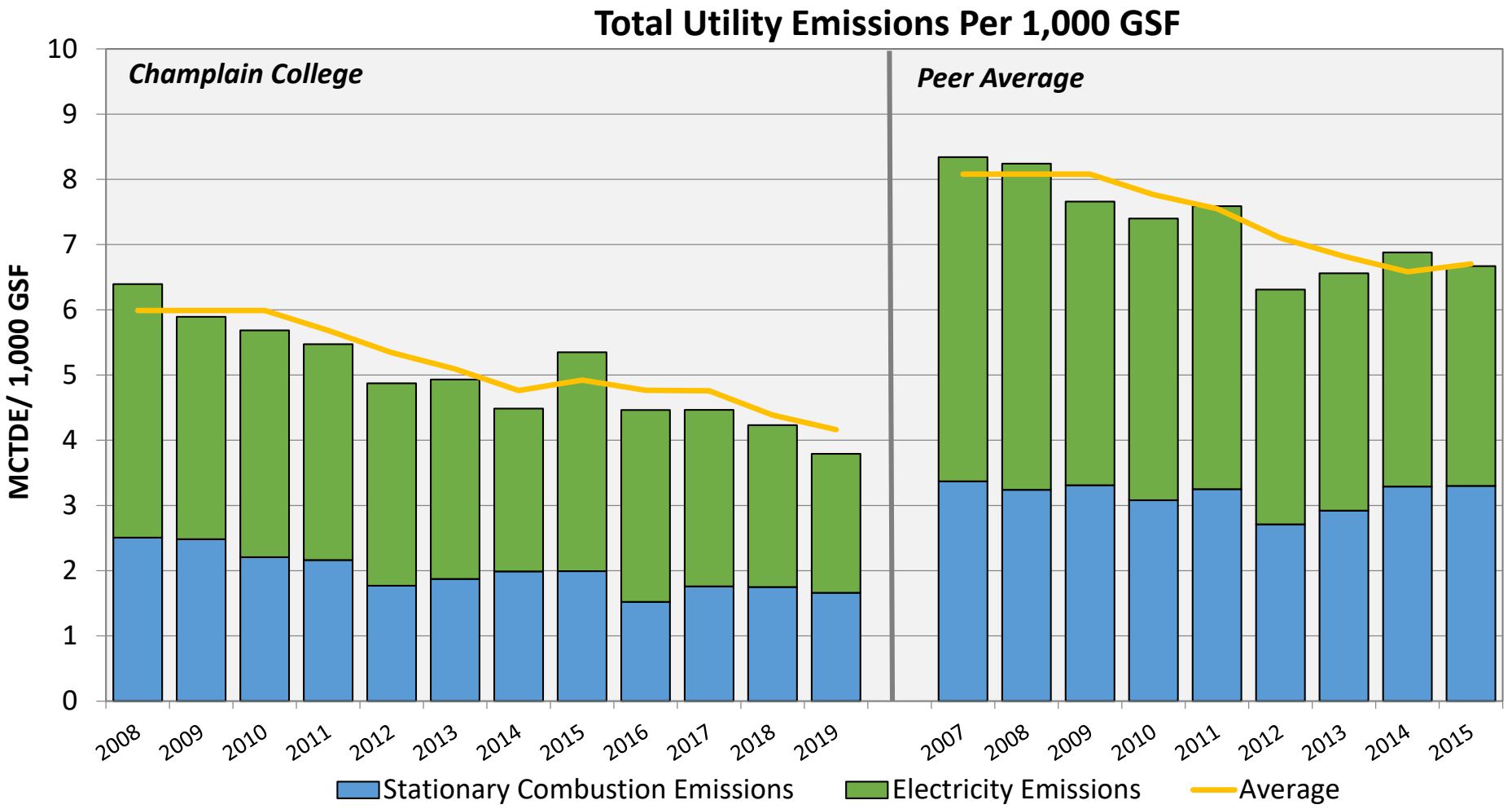
Like Consumption, Emissions Below Peers



Emissions per Square Foot drop 13% in FY19. This indicates that added Square Footage at 194 St. Paul Street is more energy efficient than rest of campus as a whole.

Champlain's gross utility emissions are 10% below 2008 levels, despite a 58% 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

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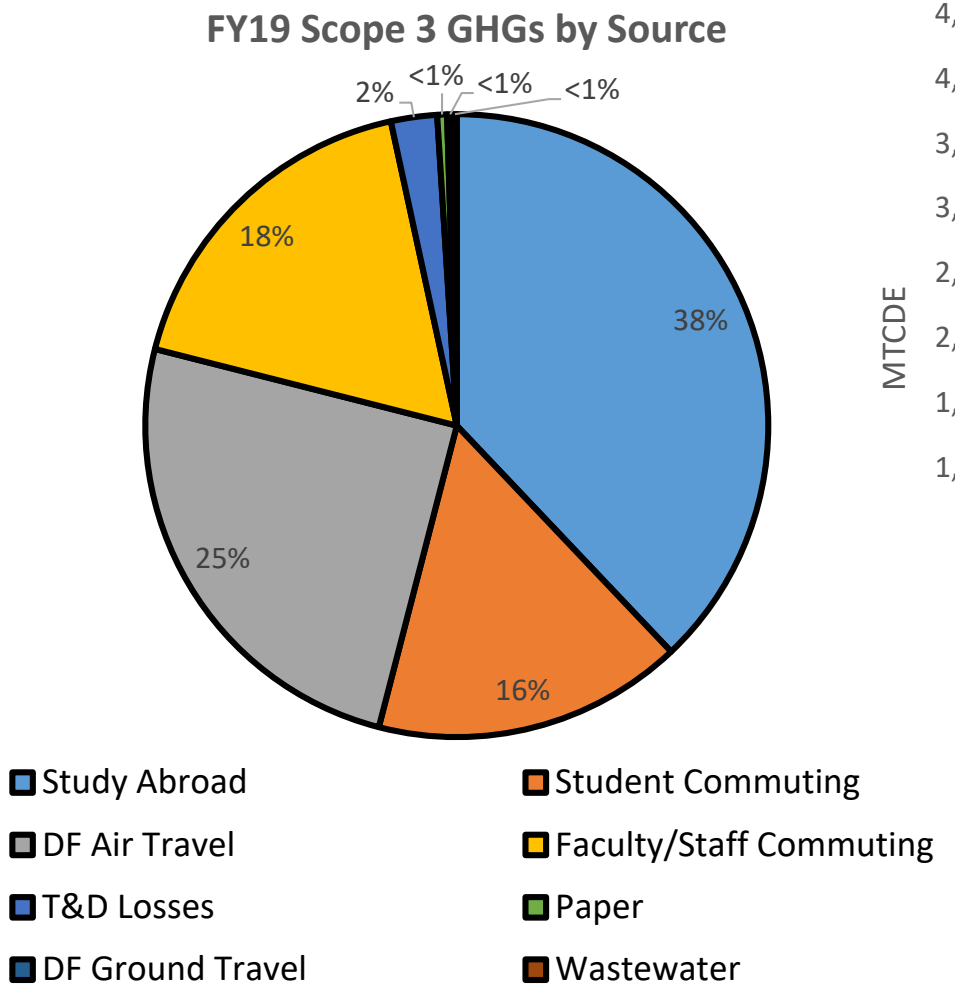
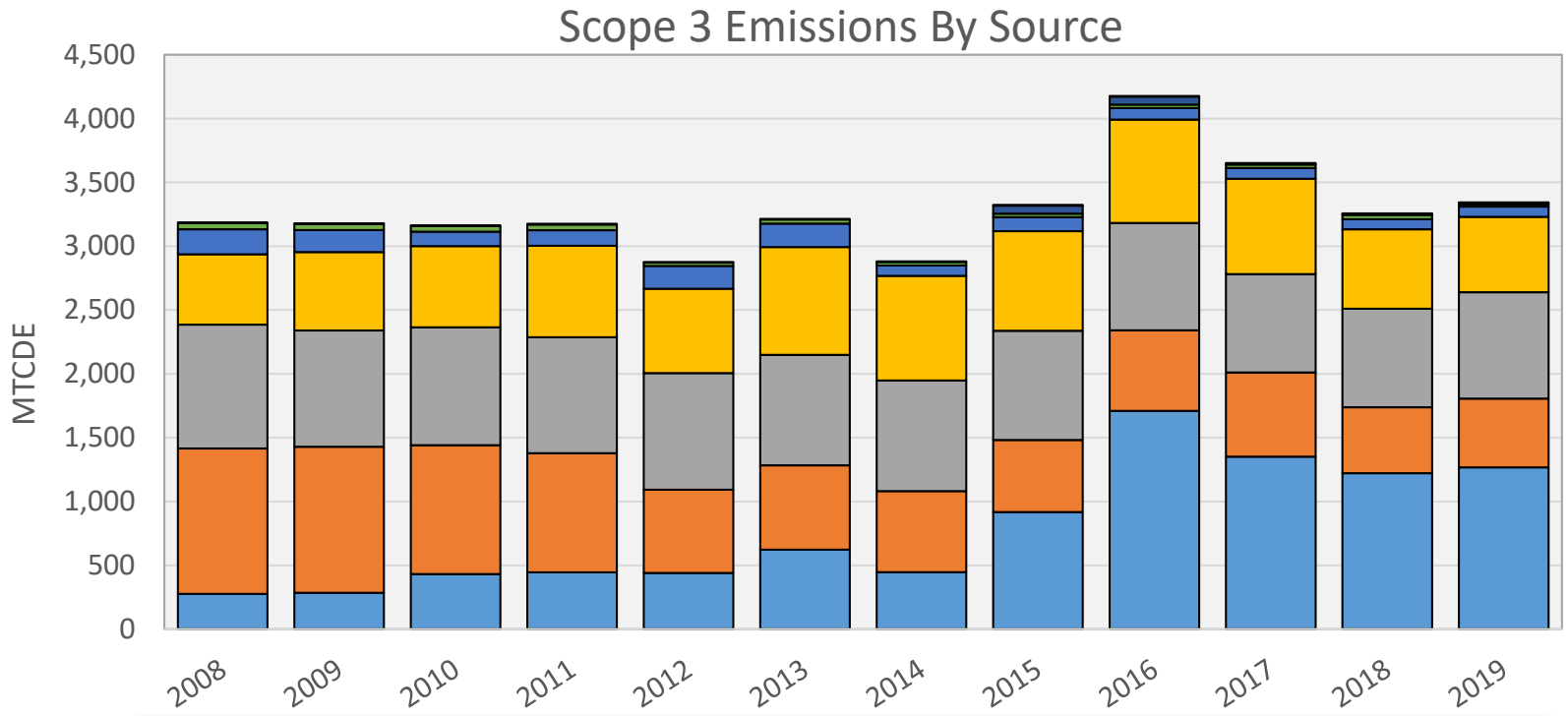
****T&D Losses included in Electricity Emissions bar***

Air Travel & Commuting Are Top Four Scope 3 Sources





- **Scope 3 Emissions Stable -** Since 2008 total Scope 3 emissions have been virtually flat
- **Changing Composition of Scope 3 –** With more students living on campus, commuting emissions are dropping, while study abroad emissions have grown as Faculty-led courses are now captured in data

*Only partial year data for Directly Financed Air Travel, doubling to estimate total mileage

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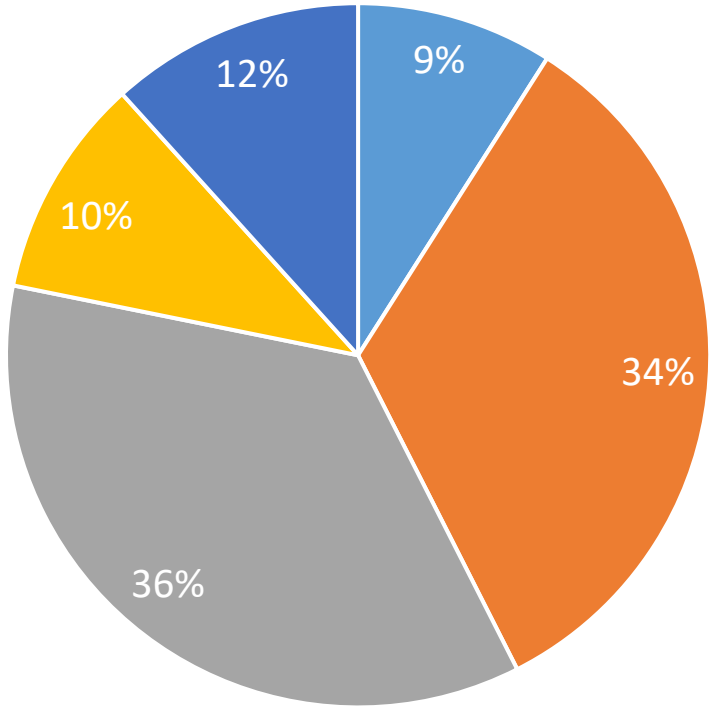
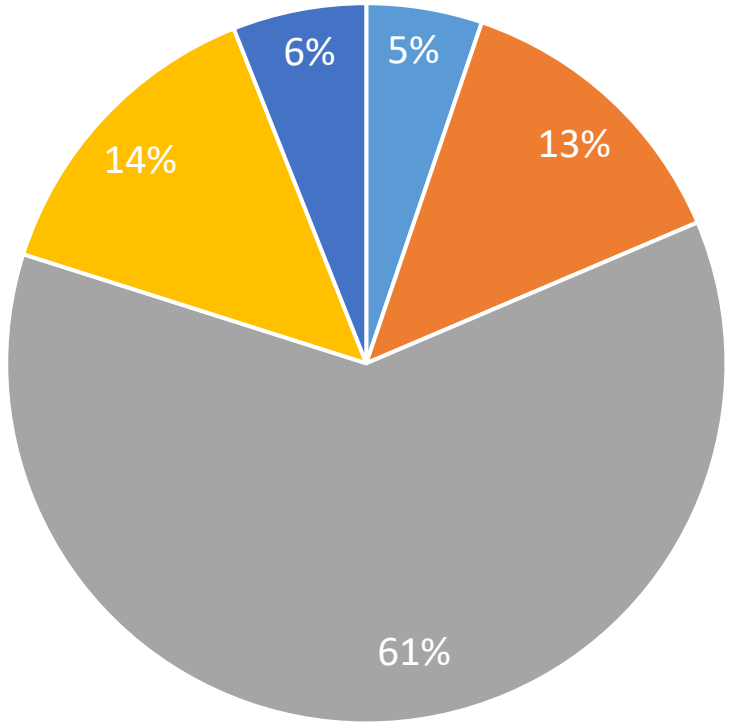
New Survey Method in 2018 Impacts Metrics

Student Commuting Mode Splits - 2017

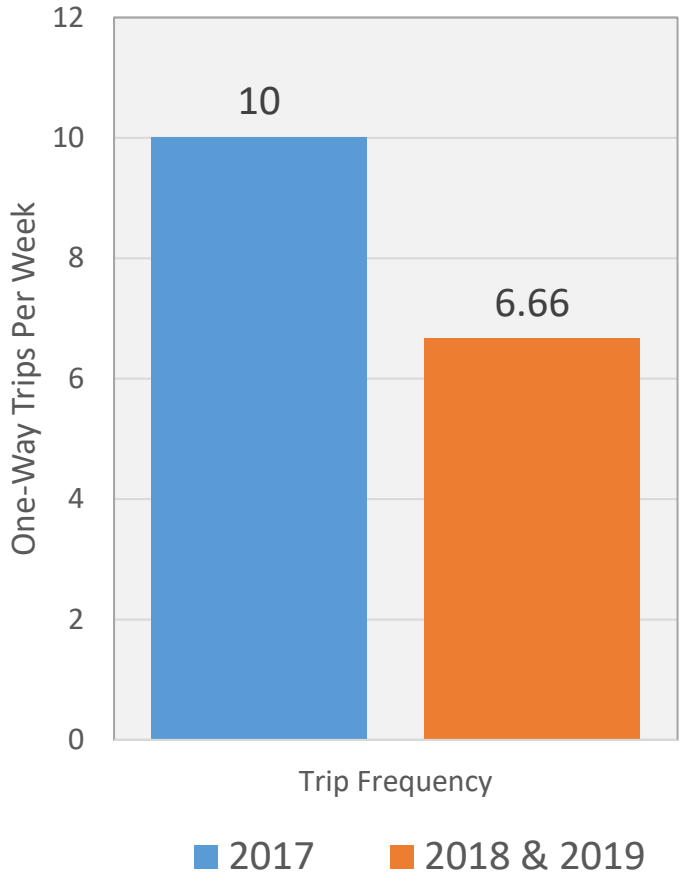


Student Commuting Mode Splits – 2018 & 2019



Bike Walk Drive Alone Carpool Bus

Student Commuting Trip Frequency



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

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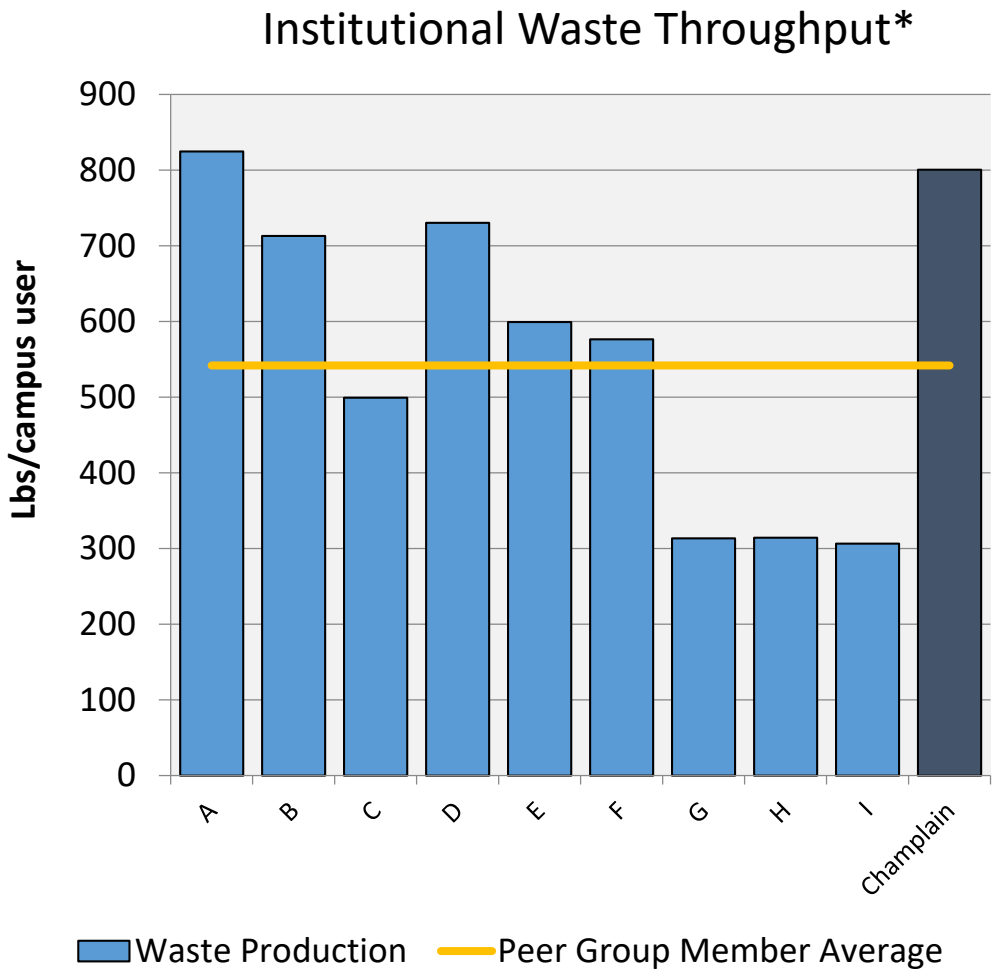
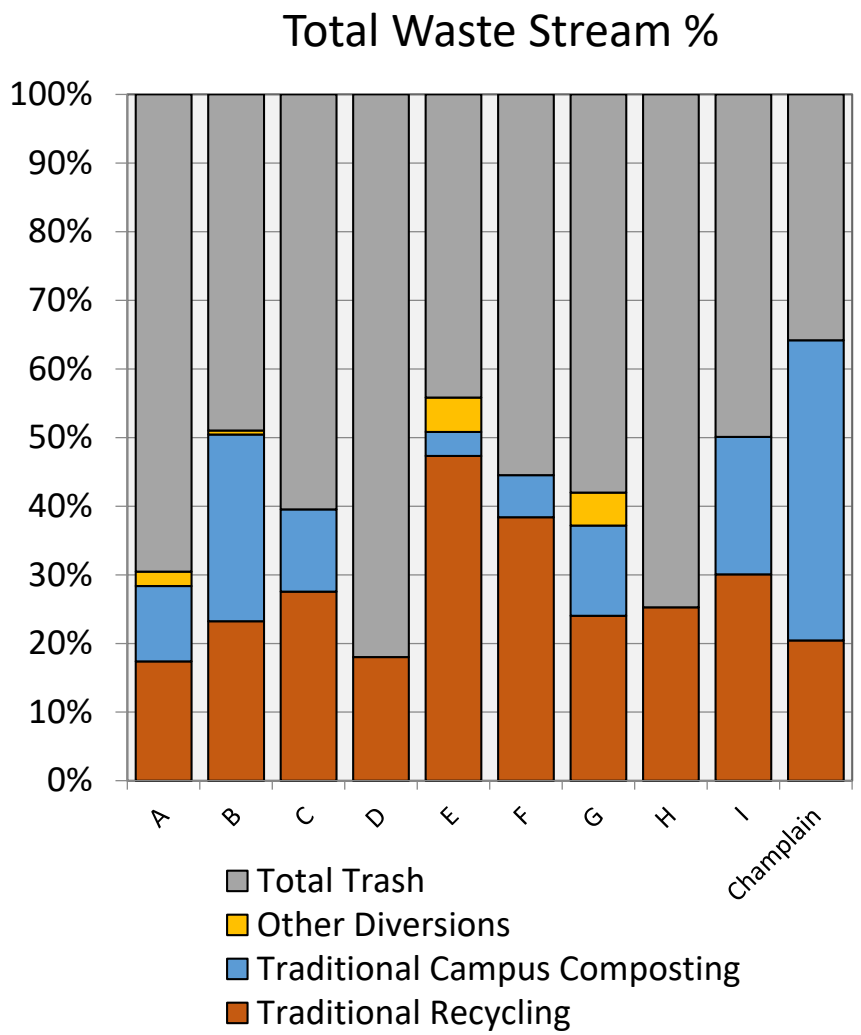
Generating More Waste, Diverting Much More





Compost levels consistent with to FY16 and FY18 levels following FY17 spike.

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

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

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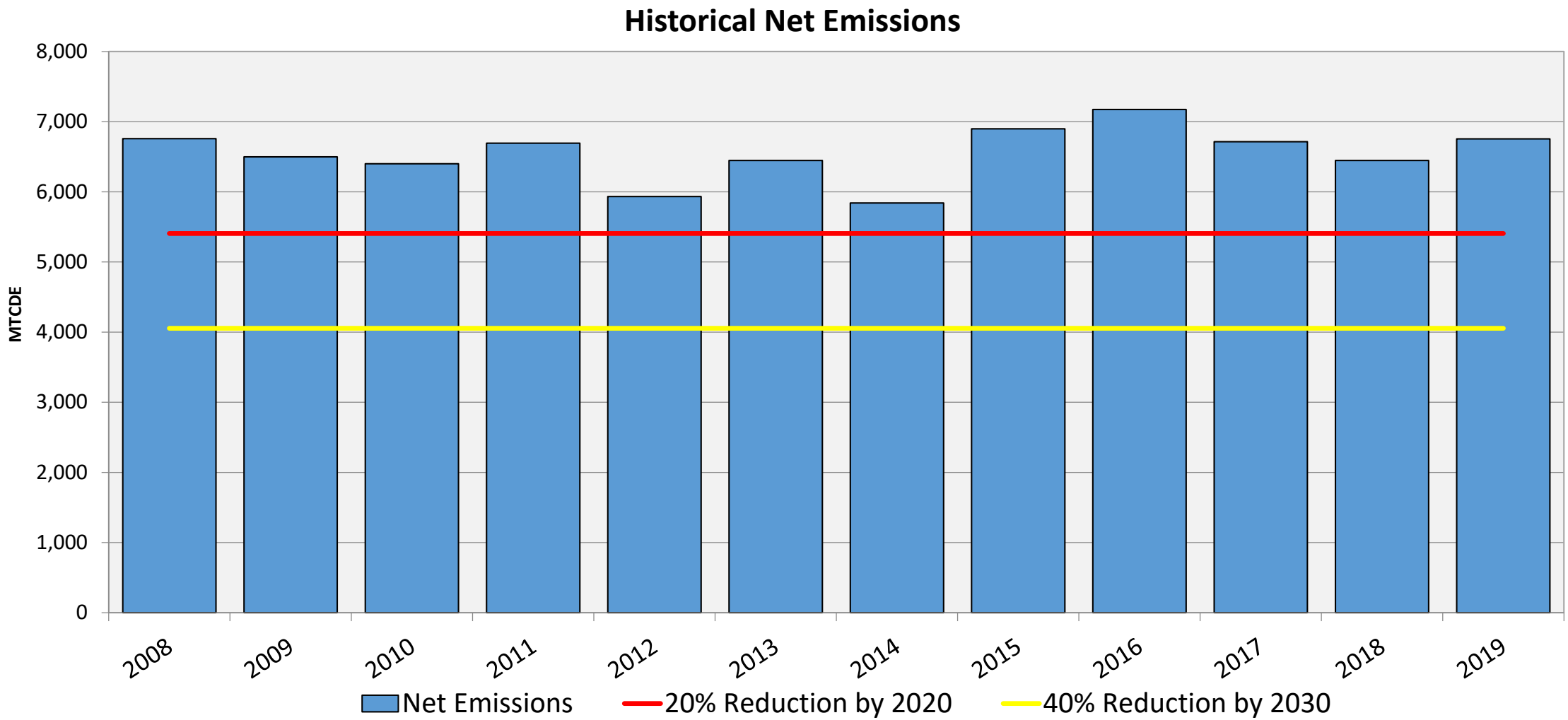
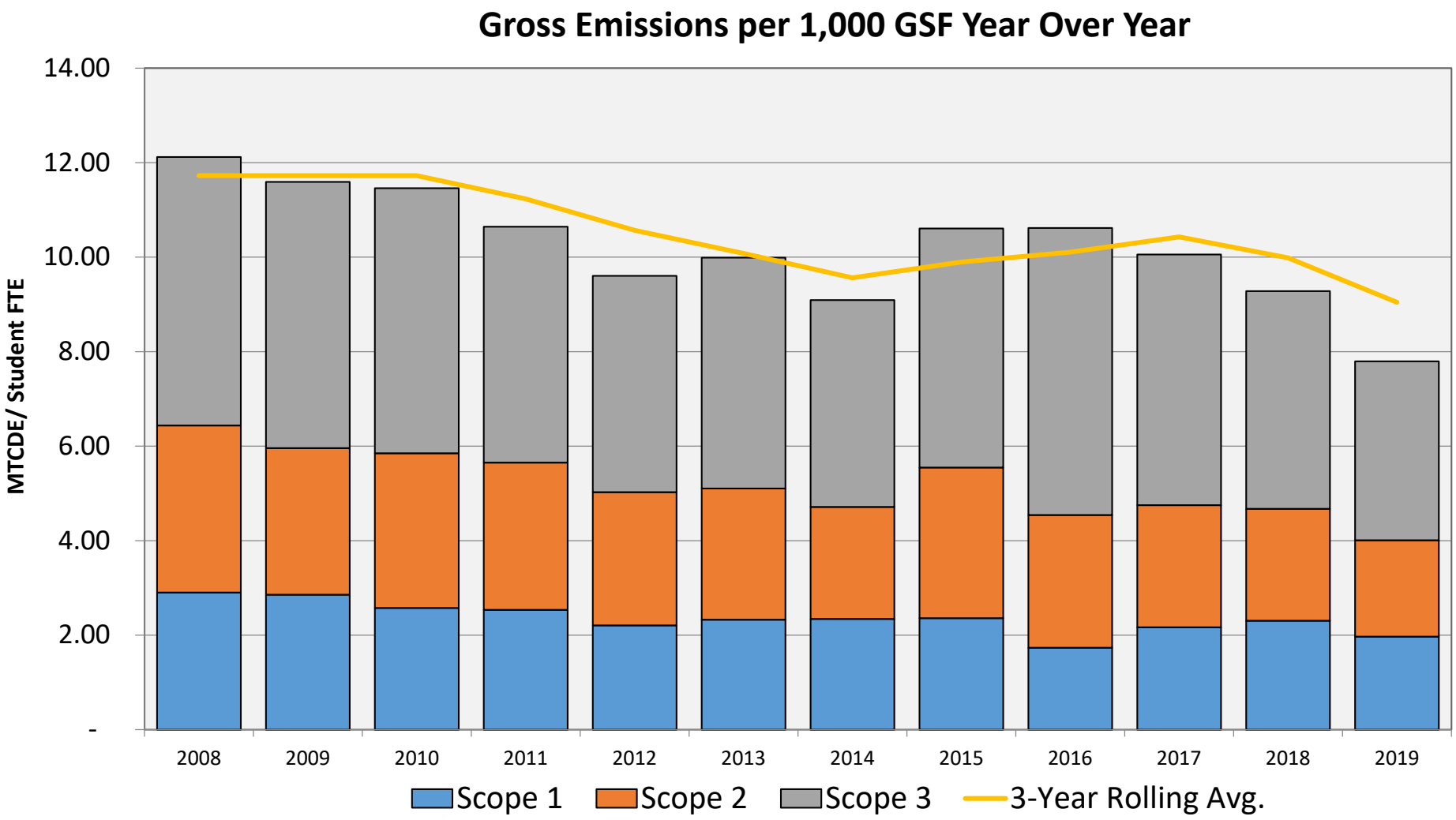
*Waste includes MSW, Recycling & Composting

Net Emissions vs. Common Reduction Targets

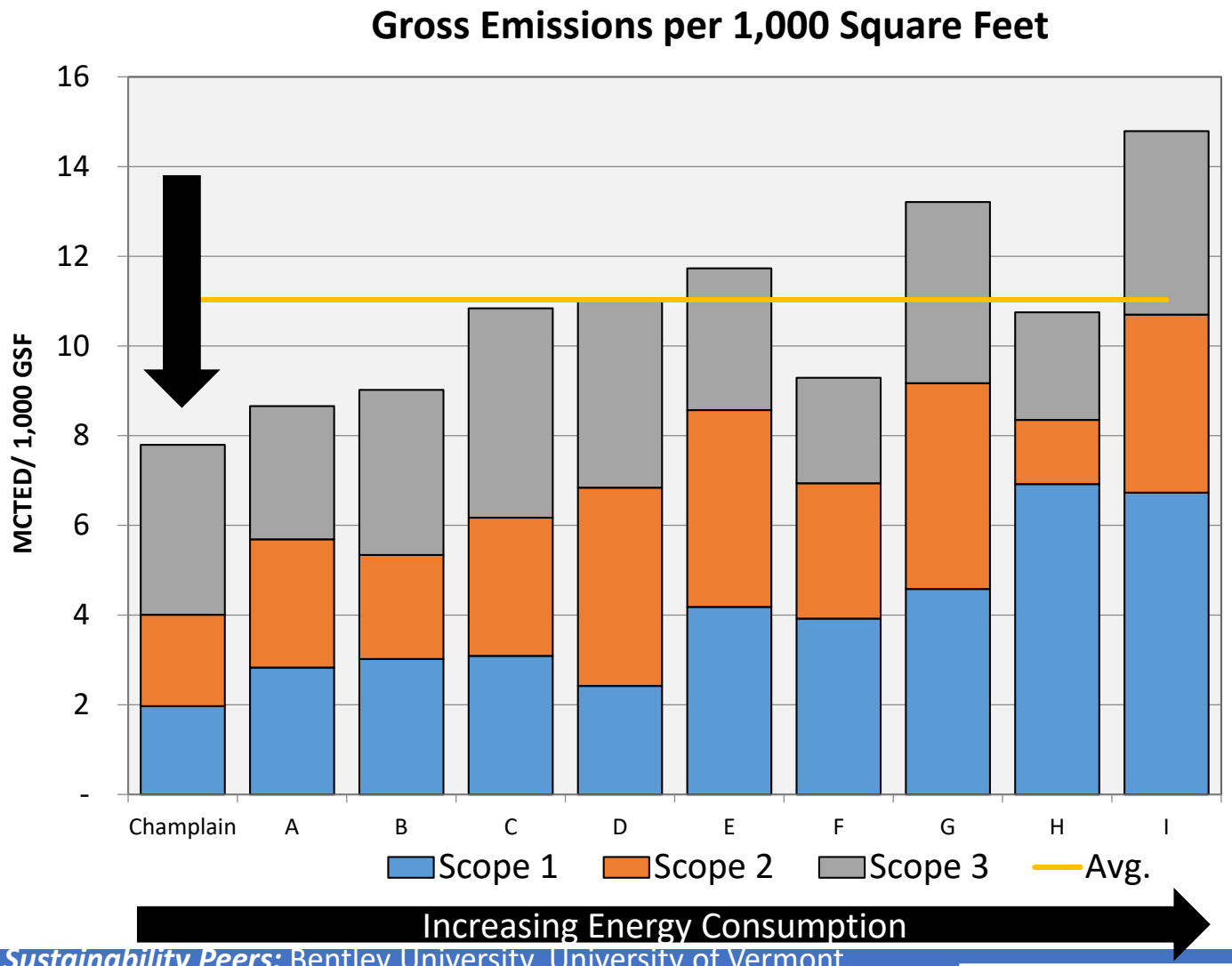


Tracking Campus Emissions per Square Foot



Additional square footage of 194 St. Paul Street pulls down normalized emissions metric.

Benchmarking Campus Emissions to Peers



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

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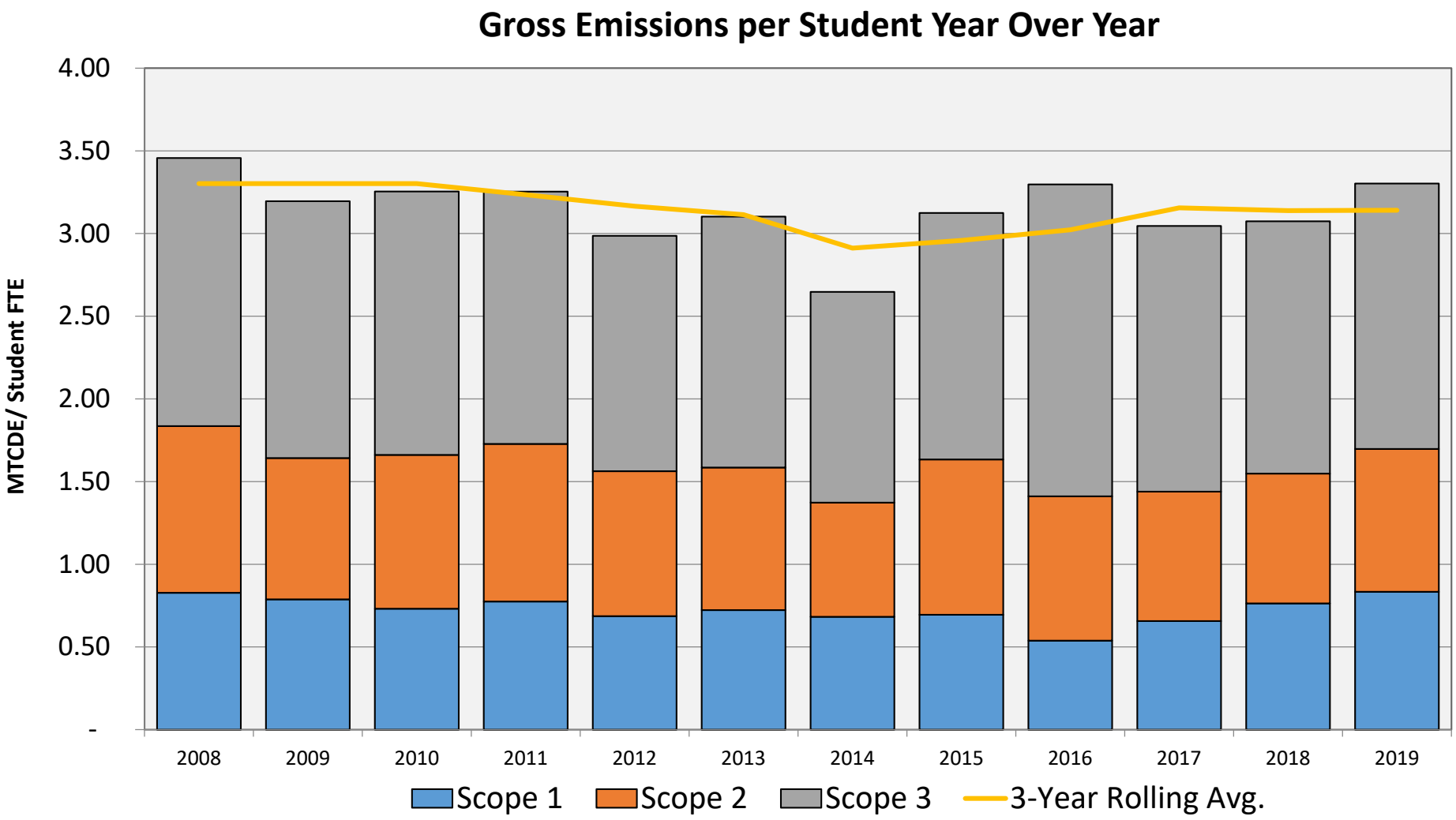
*Only partial year data for Directly Financed Air Travel, doubling to estimate total mileage

Tracking Campus Emissions per Student



Scope 1 & 2 emissions remain fairly stable over last 7 years.

Scope 3 emissions impacted by more commuter students despite lower overall enrollment numbers in FY19

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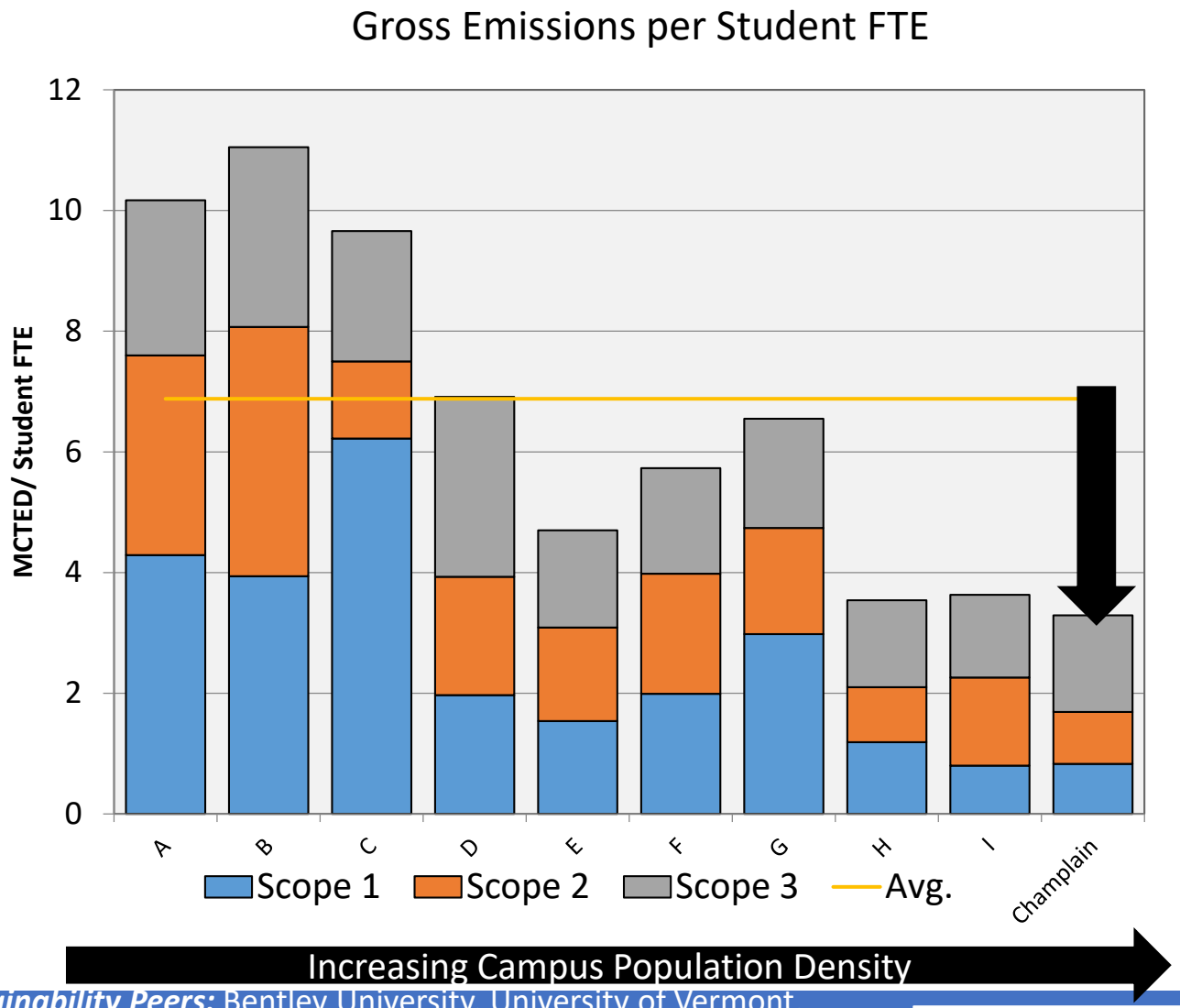
Benchmarking Campus Emissions to Peers



Despite continued physical growth and lower enrollment in 2019, Champlain College's educational model still generates approximately 50% less carbon emissions per student than the average peer institution.

Scope 1 & 2 emissions, on a per student basis, set the bar for excellence while Scope 3 emissions are comparable to several of the highest performing peers.

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

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Concluding Comments

- The addition of 194 St. Paul Street changed the profile in key ways most notably the additional natural gas and electricity usage the new facility created
  - Because this new facility is more energy efficient than the campus as a whole it improved Champlain's performance on a normalized basis while mitigating the negative impacts on gross emissions
  - Focused building renovations/replacements, targeting higher energy use facilities, can reduce campus' deferred maintenance backlog, improve building conditions, reduce energy costs and lower carbon emissions

- Declining total enrollment and marginal change in student commuter count, in the context of a new residential facility, is concerning. This confluence of factors results in 2019 closing with more utility emissions, slightly more student commuting emissions and fewer student FTEs to be divided by.

- Champlain continues its dominant performance in normalized emissions benchmarks relative to the Sightlines peer group for FY16. However, the lack of substantive gross reductions since 2008 raises concerns about the ability for the College to achieve substantial reductions moving forward.

Carbon Reduction 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 should 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 for Scope 1
- 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 largest source and may represent an engagement & offset opportunity
  - Wesleyan is considering utilizing project clearinghouses like Urban Offsets to neutralize its air travel emissions

What might our future bring?

We purpose:

A Climate Action Plan for Champlain College that takes us to carbon neutrality by 2030, guided by the values of the 2025 framework.

Appendix I

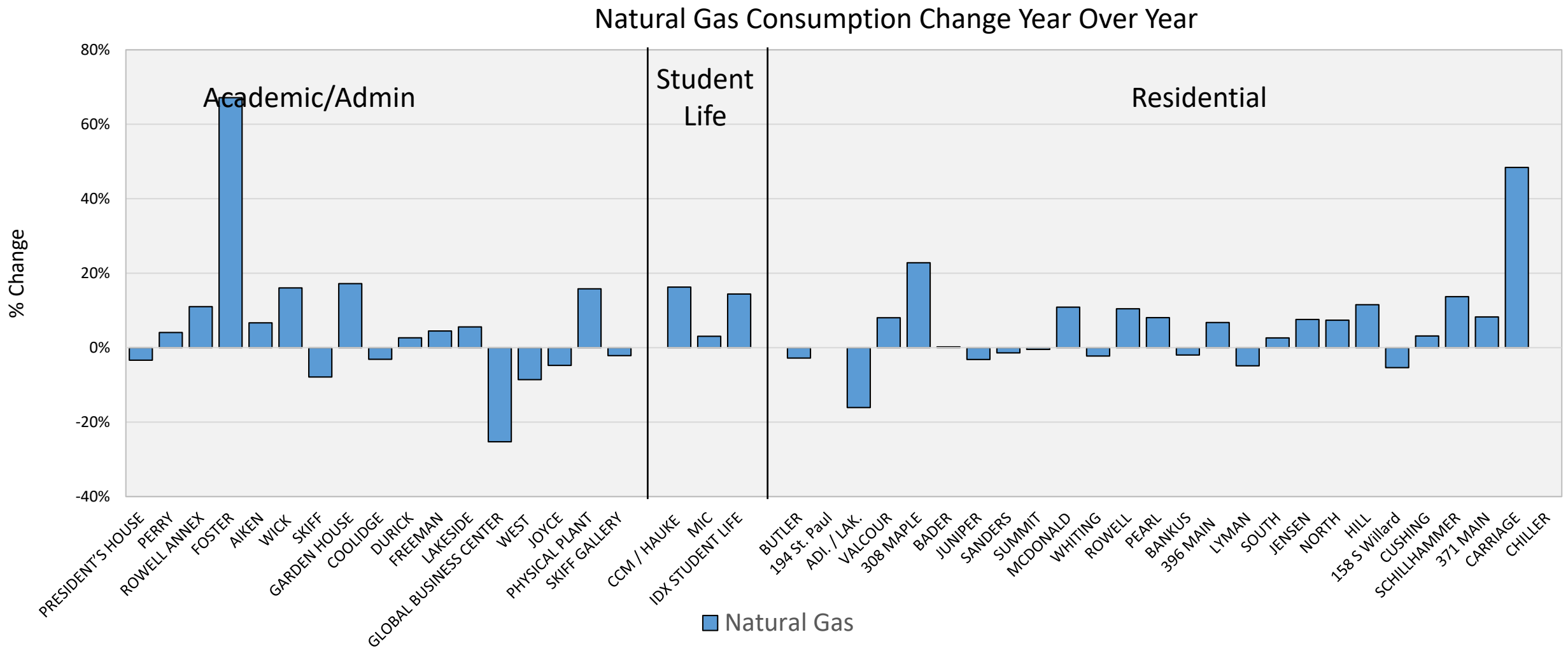
- **Notes on changes to FY19 calculation methodologies**
  - Building Space
    - Excluding College-Owned Buildings: 270 S. Willard, 390 Maple, 436 Maple, 8 Browns Court, 10-12 Browns Court (as tenants pay utilities)
    - 194 St. Paul St. was excluded for FY18 as it was under construction, but included in FY19
  - 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
  - Directly Financed Air Travel
    - Only partial year data available due to new financial system mid-year, doubling to estimate total mileage

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

Natural Gas Consumption % Change by Building



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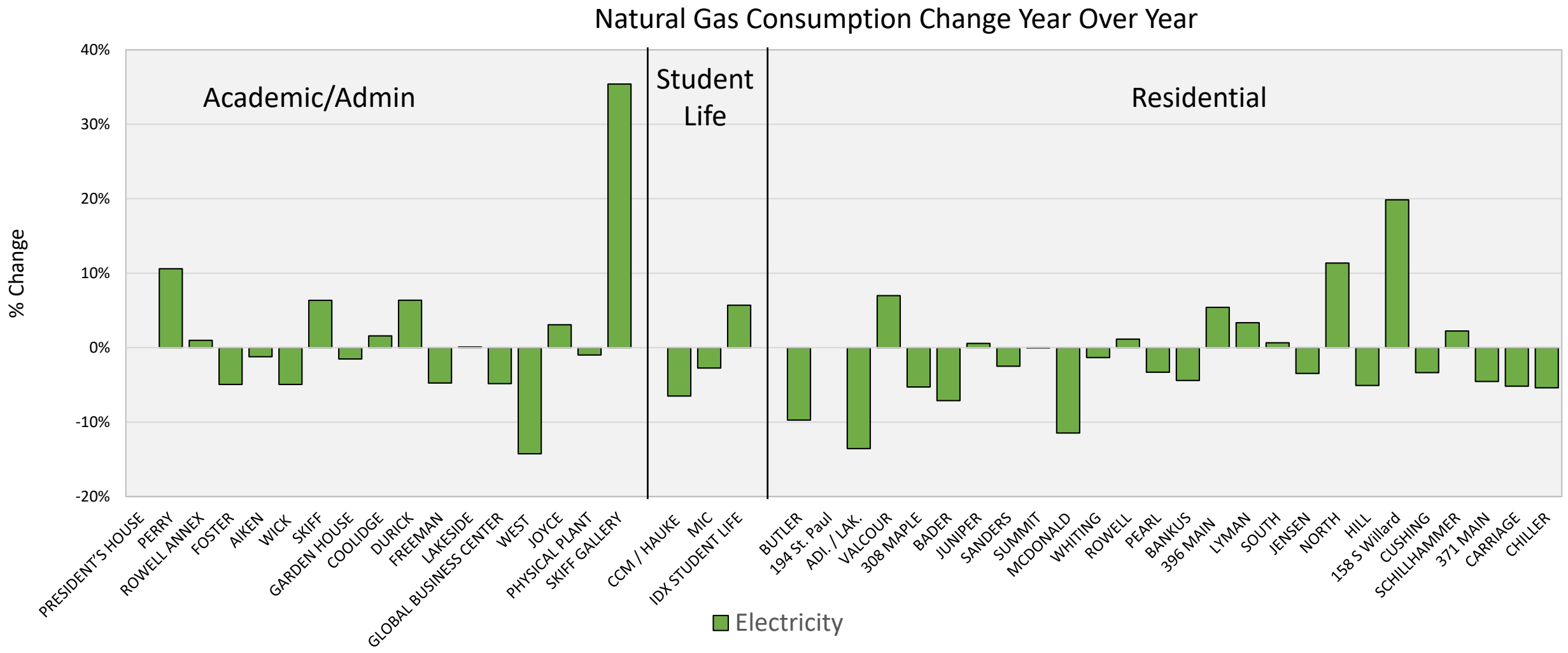
Natural Gas Consumption % Change by Building



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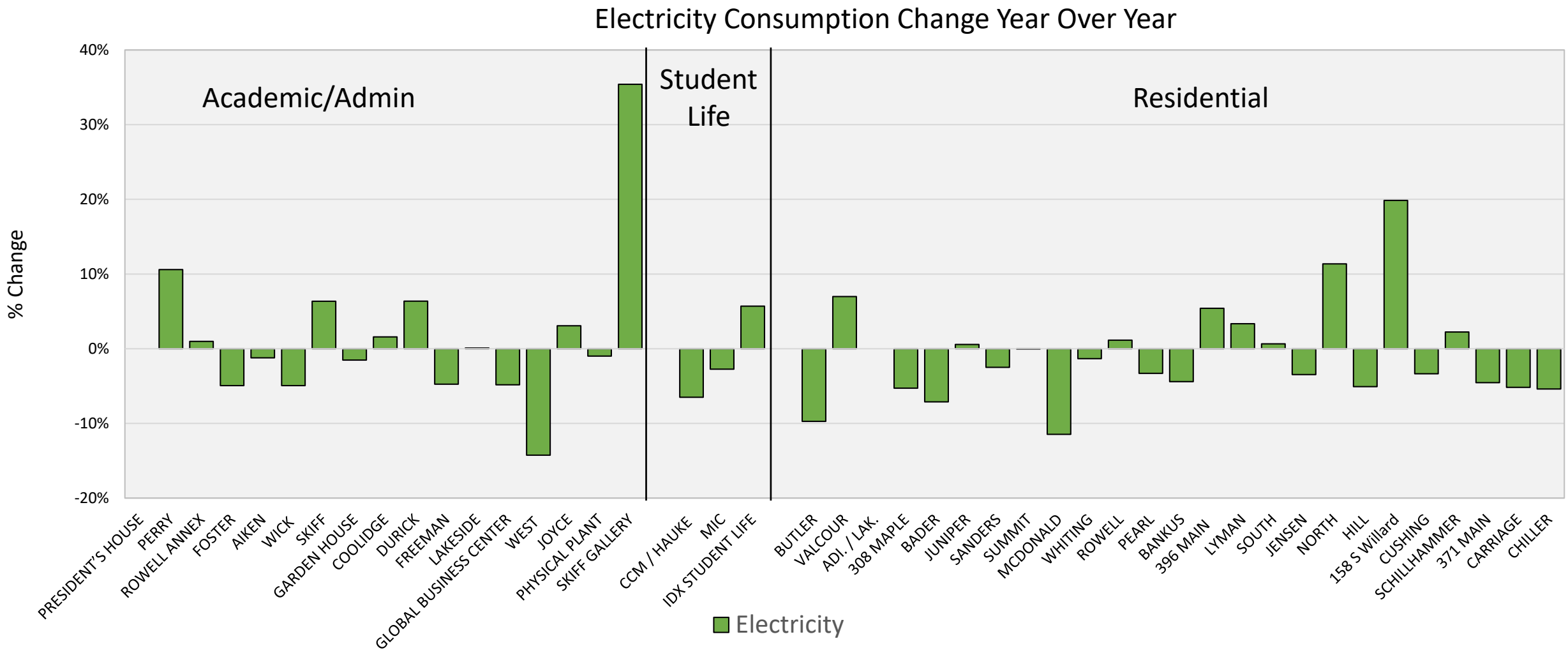
Electricity Consumption % Change by Building



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