

Sightlines

Environmental Stewardship:

Measure, Monitor, Benchmark

Hamilton College

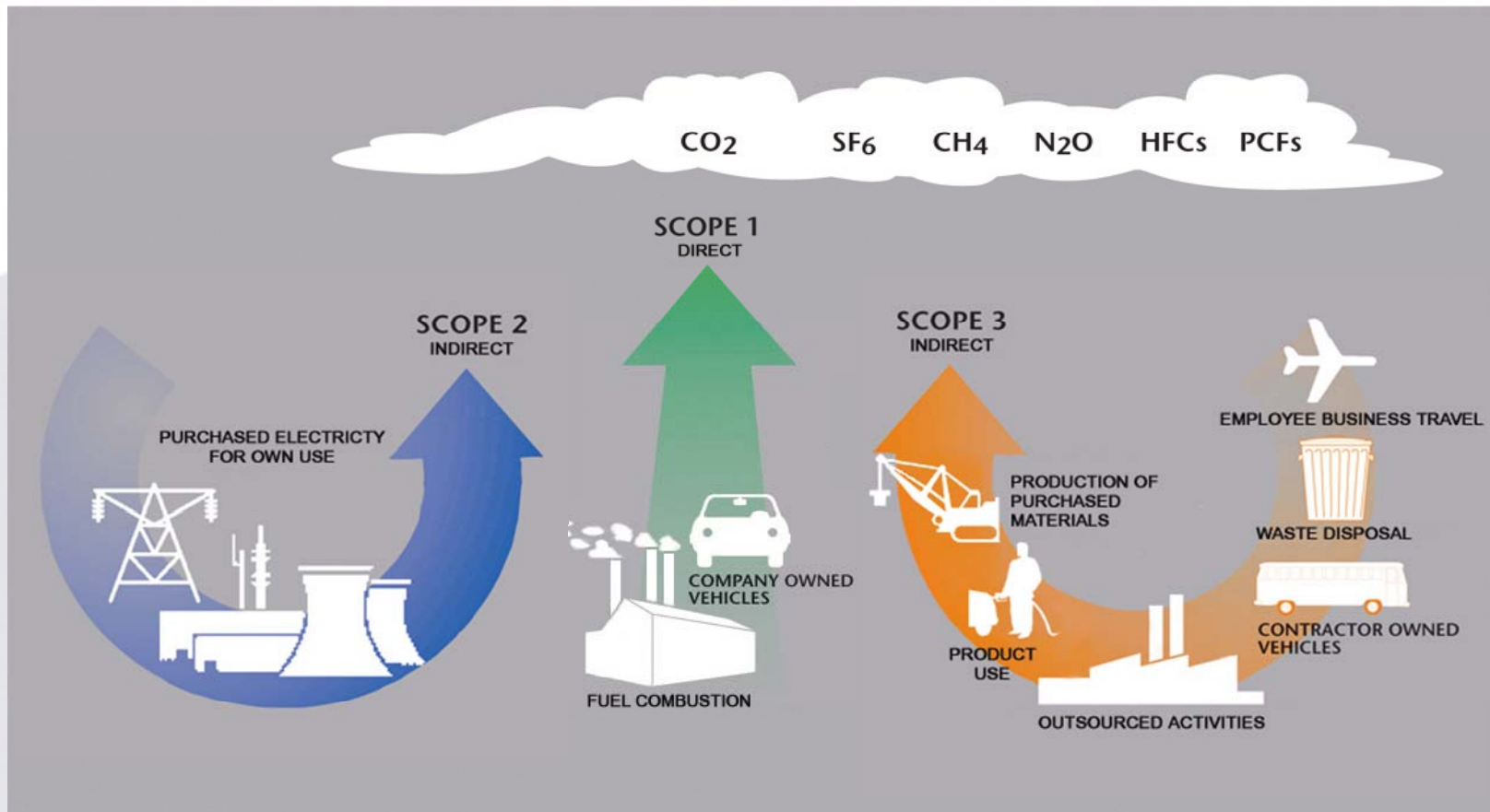
January 2009



Greenhouse Gas (GHG)
Emissions – A Common
Vocabulary

Simplifying the Types of GHG Emissions

All Expressed as Metric Tons of Carbon Dioxide



Scope 2: Emissions from utility production not at the institution

Scope 1: Emissions from the direct activities of the campus

Scope 3: Indirect emissions including transportation, waste disposal, etc.

Sightlines

GreenLine

Greenhouse Gas (GHG) Emissions at Hamilton College

Hamilton's Space and Population

Gross Square Footage

Total Campus GSF	1,846,425
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Student Population

Total FTE Enrollment	1,831
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Staff & Faculty Population

Faculty	236
Staff	496
Total Faculty & Staff	732

Carbon emissions at Hamilton College

Scope 1

- Natural Gas
- Distillate Oil
- Vehicle Fleet
- Fertilizer
- Refrigerants

Scope 2

- Purchased Electricity

Scope 3

- Faculty/Staff Commuting
- Air Travel
- Solid Waste

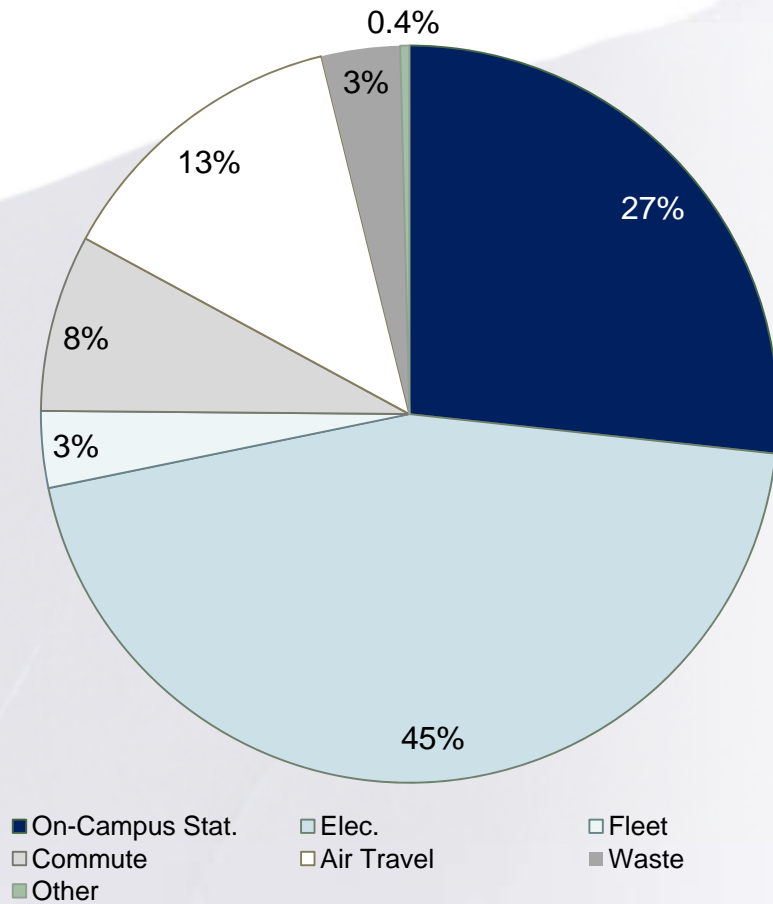
Offsets

- Renewable Energy Credits

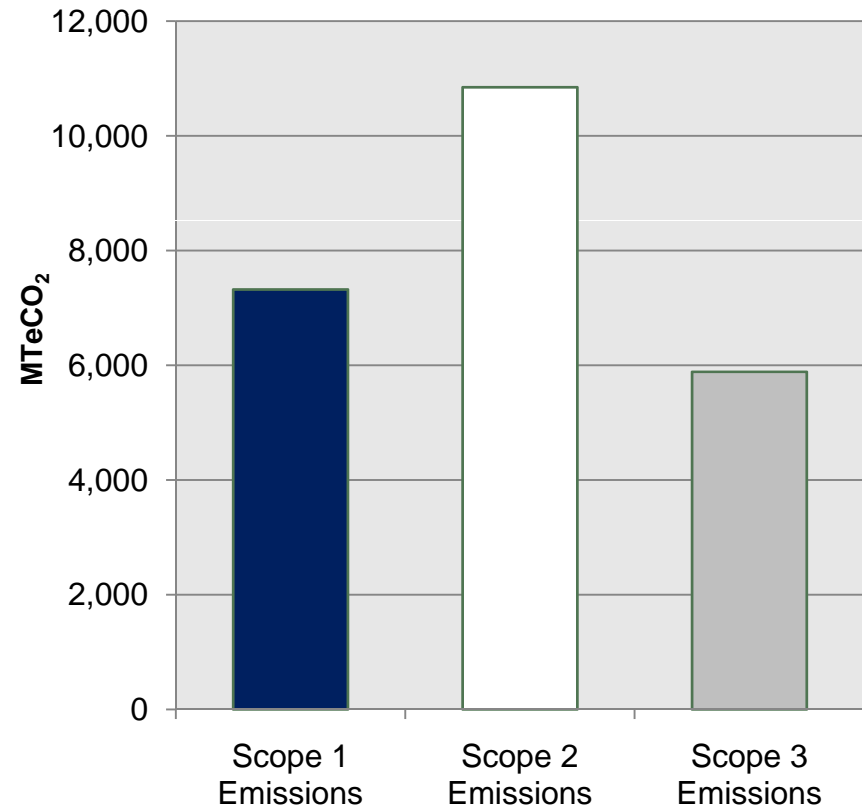
Total carbon emissions – without offsets

24,056 MTeCO₂

Gross Carbon Emissions by Type



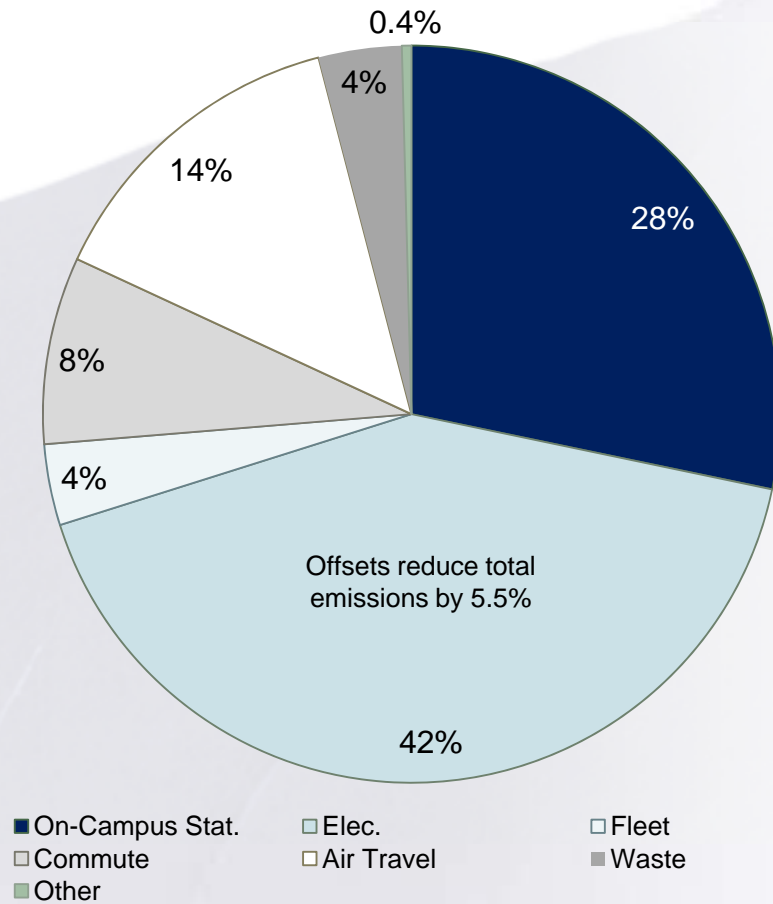
Gross Carbon Emissions by Scope



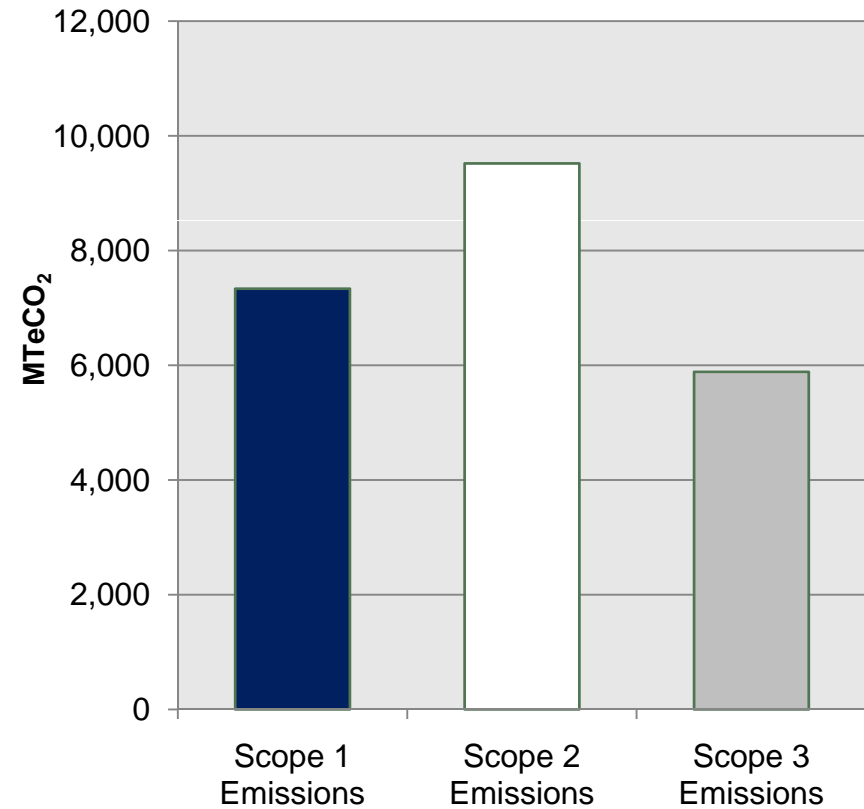
Total carbon emissions – including offsets

22,728 MTeCO₂

Net Carbon Emissions by Type

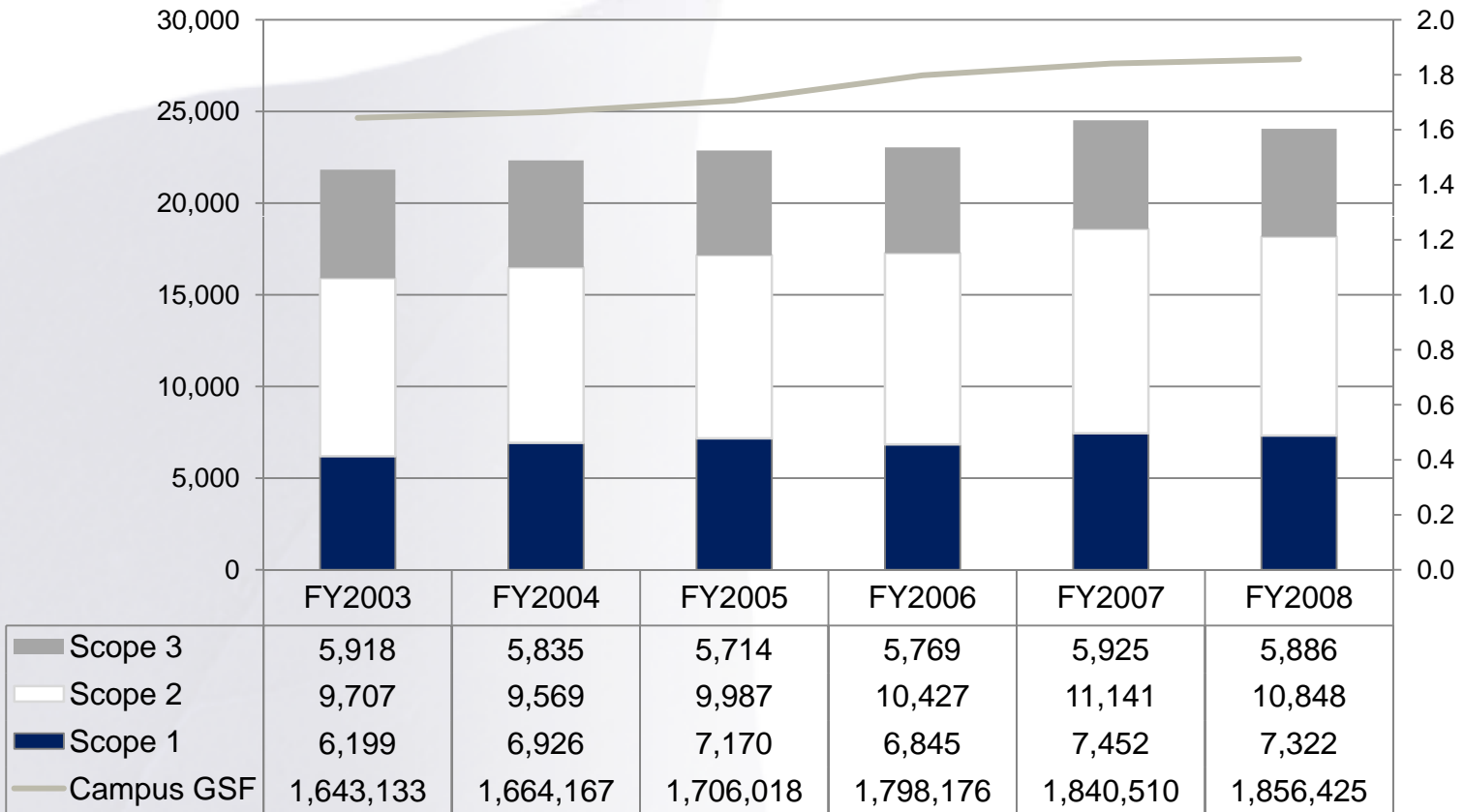


Net Carbon Emissions by Scope



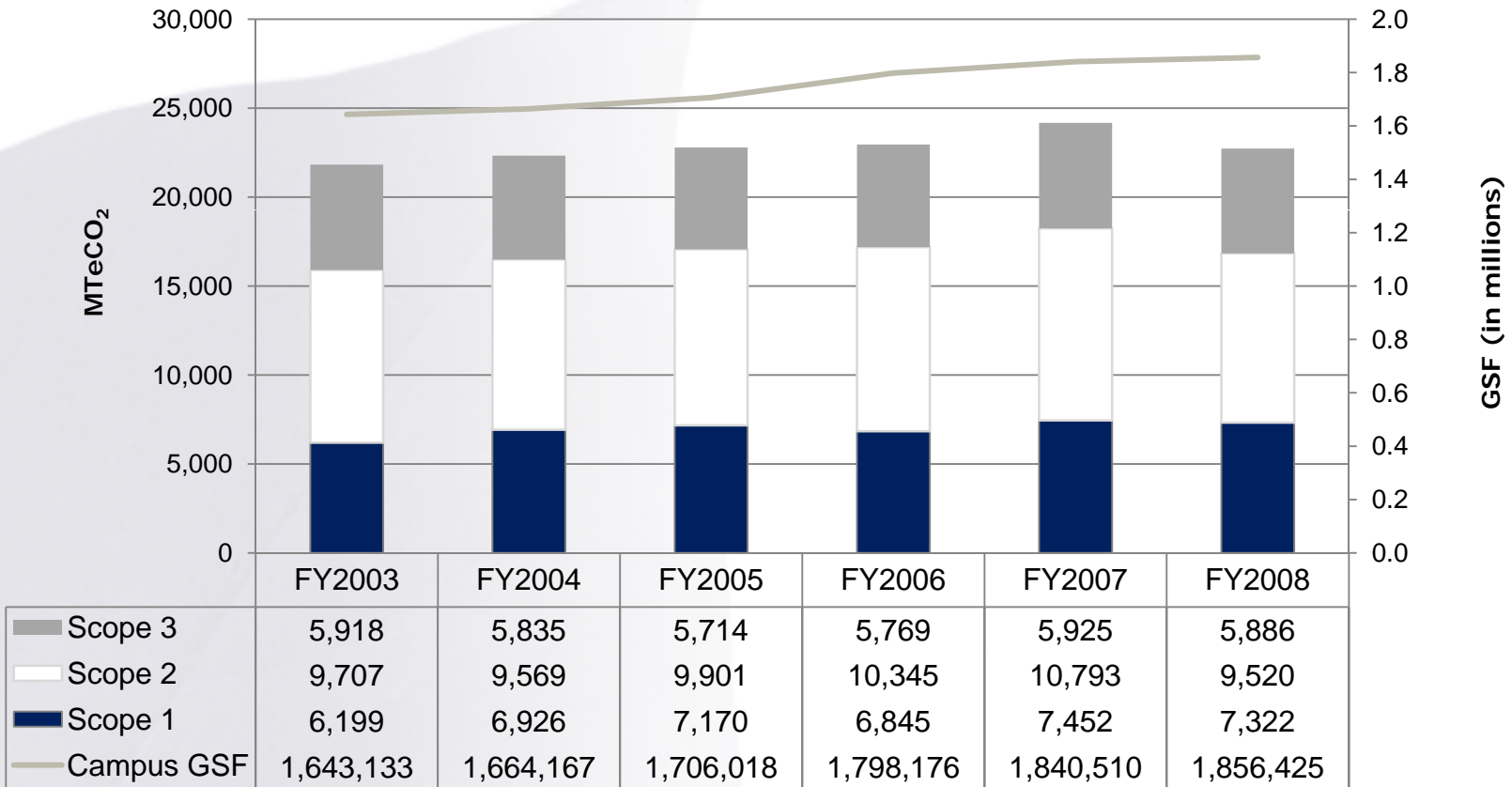
Longitudinal performance - gross

24,056 MTeCO₂ in FY2008



Longitudinal performance - net

22,728 MTeCO₂ in FY2008

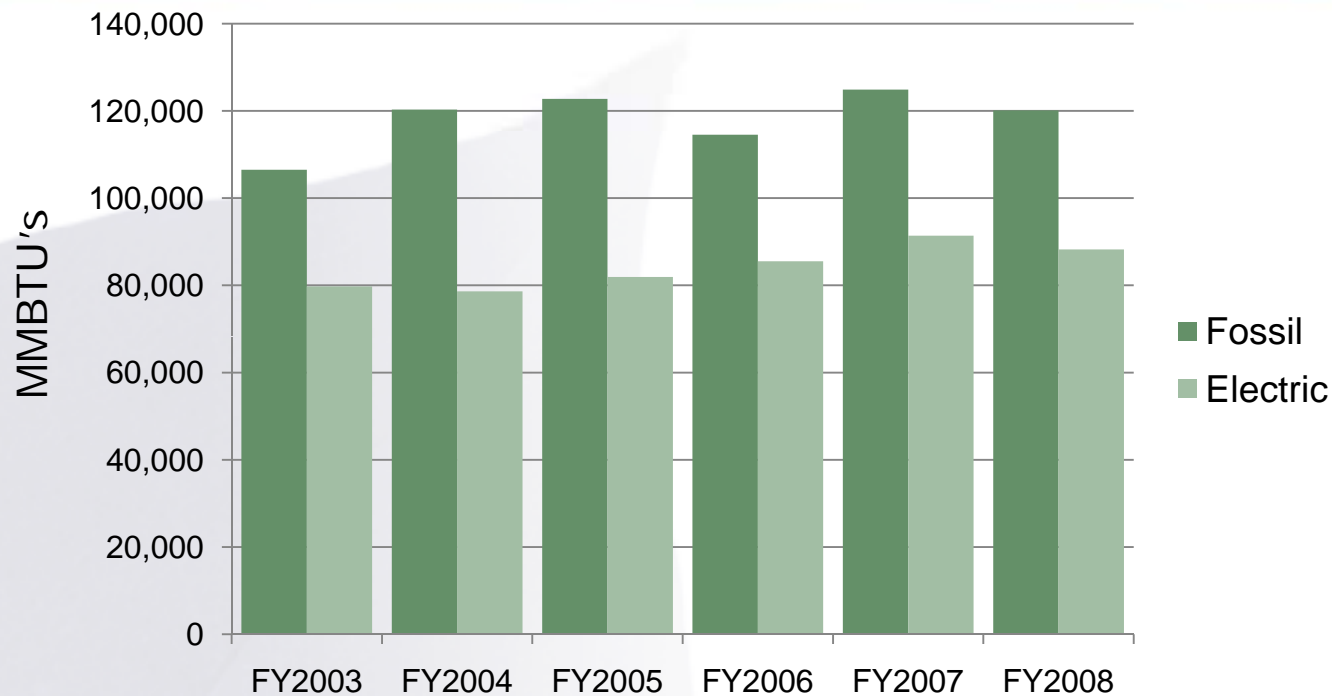


Air travel estimated for FY03-06

Utilities – The Major
Greenhouse Gas (GHG)
Contributor at Hamilton

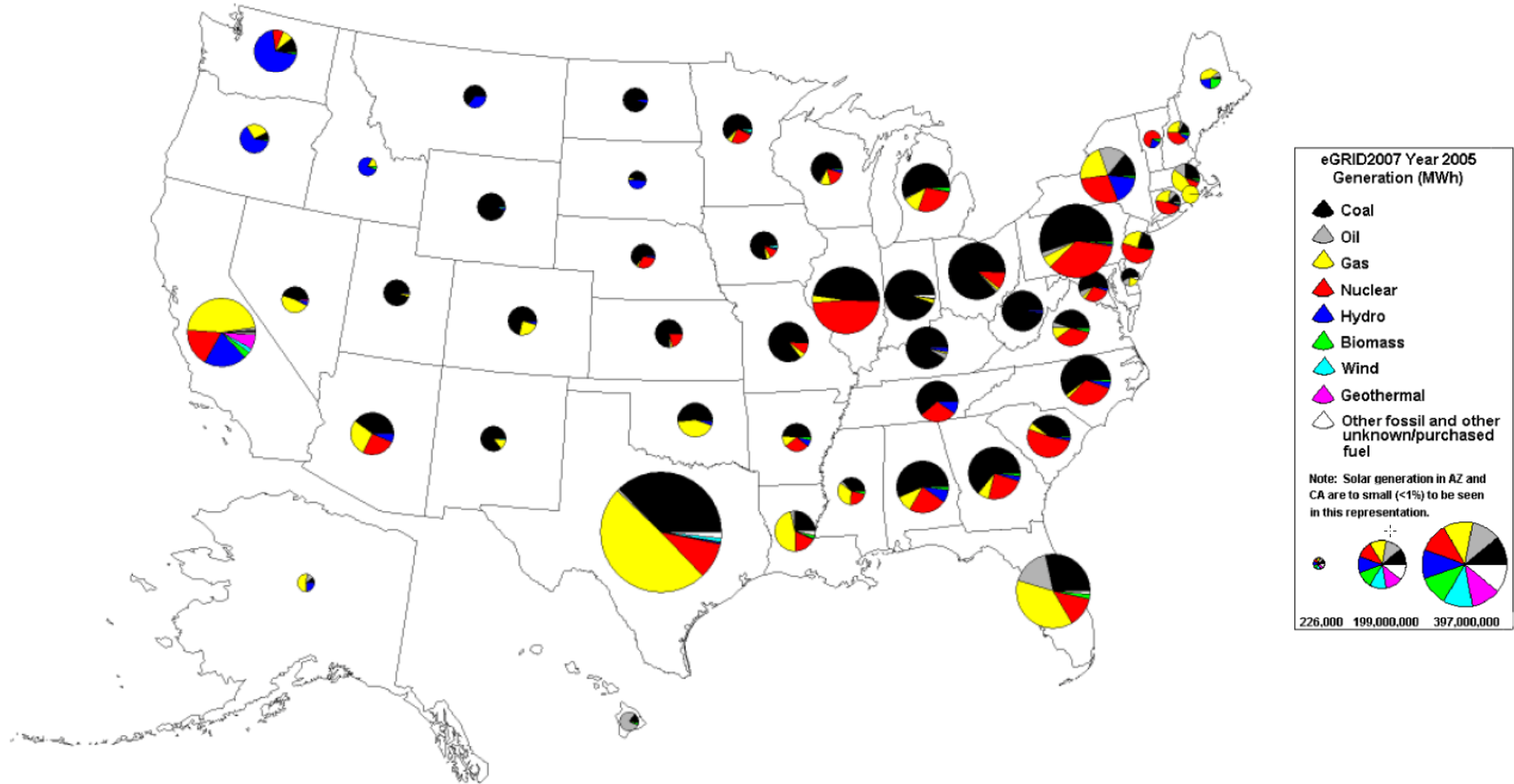
Steady energy consumption

Fossil – Scope 1; electricity – Scope 2

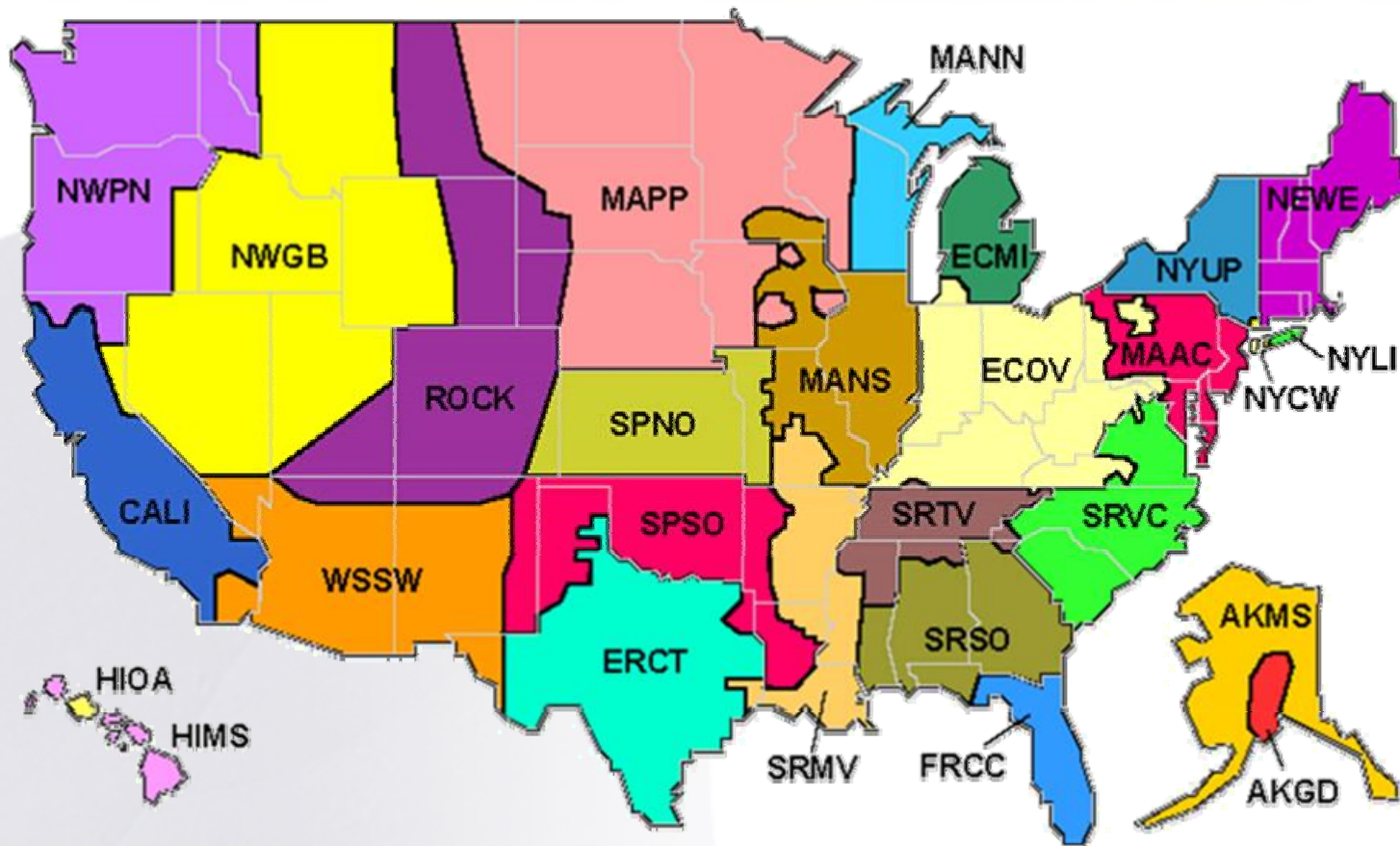


Natural Gas and Oil Total Carbon Emissions: 6,430 MTeCO₂ - 26% of '08 total
Electricity Total Carbon Emissions: 10,848 MTeCO₂ - 45% of '08 total

National Electric Fuel Mix



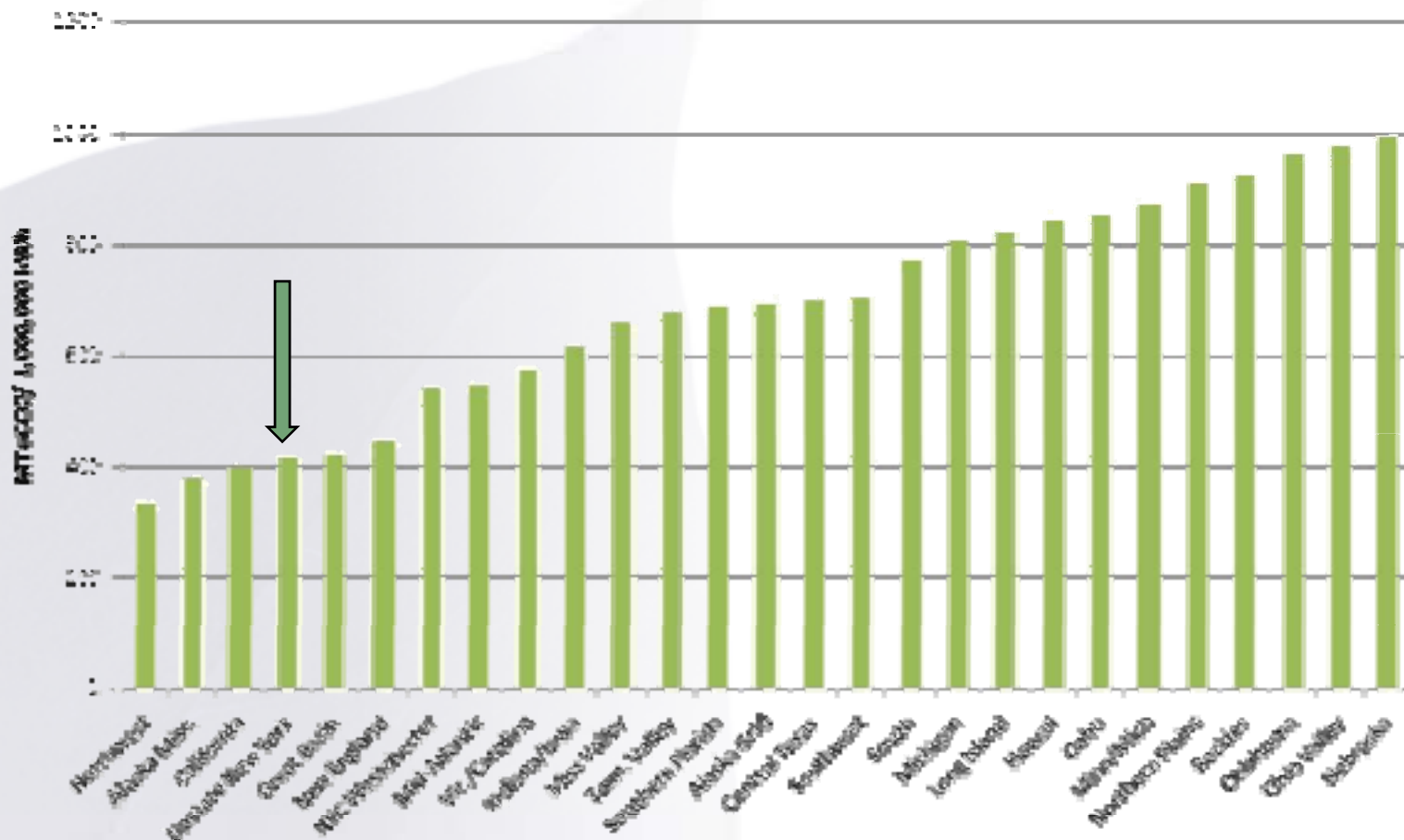
Carbon Emissions by Grid



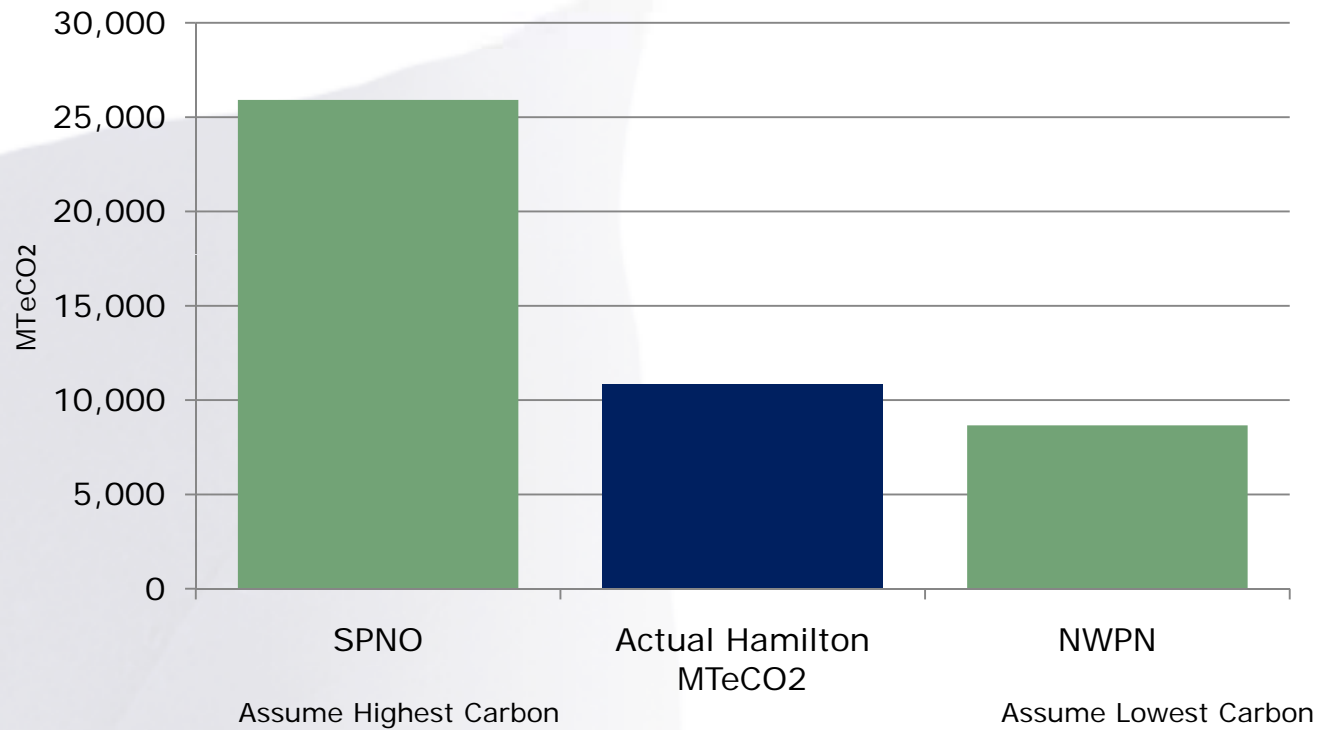
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Hamilton Benefits from a “Clean” Power Grid

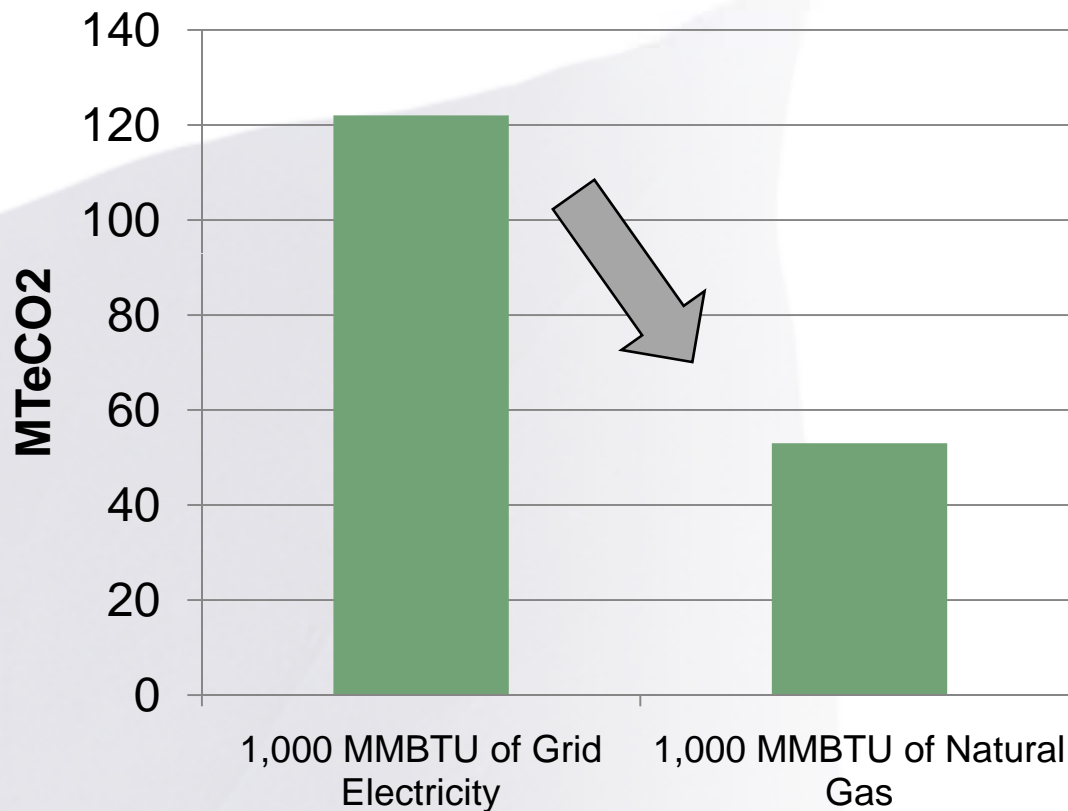
eCO2 Emissions by Power Grid Operator



Impact of Regional Fuel Mix for Hamilton



Natural Gas Conversions Could Have a Big Carbon Impact at Hamilton



- Assuming a one-to-one btu “swap”
- Converting electric systems to natural gas could reduce carbon emissions significantly

Other Greenhouse Gas (GHG) Contributors at Hamilton

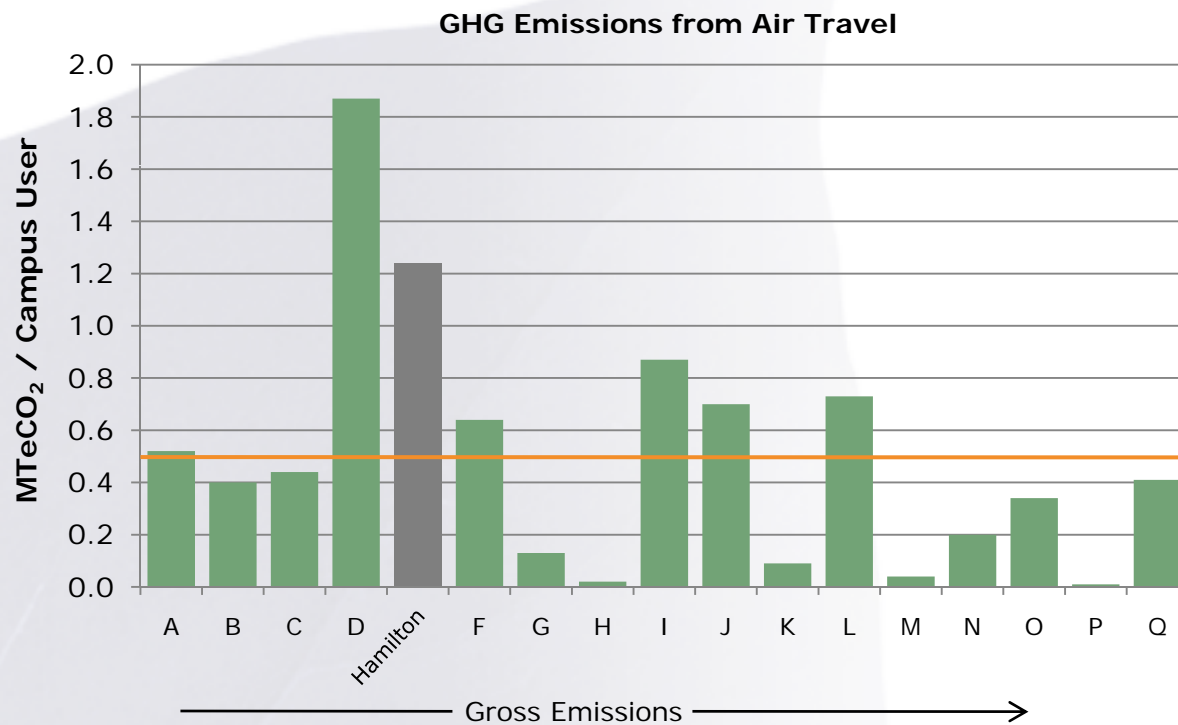
Study abroad and faculty research

Air Travel – Scope 3

Source	'08 Units	MTeCO ₂	% Total
Air Travel	Students: 3,235,280 miles Faculty: 869,400 miles	3,189	13%

Study abroad and faculty research

Air Travel – Scope 3



Institutions Shown
Babson College
Bentley University
Clemson University
Gallaudet University
Hampshire College
Le Moyne College
Loyola Marymount University
Pacific Lutheran University
Rowan University
Texas A&M University
University of Arkansas
University of Denver
University of Notre Dame
University of Portland
Virginia Commonwealth University
Wesleyan University

The logo for Sightlines, featuring the word "Sightlines" in a dark blue, sans-serif font. To the left of the text is a stylized graphic consisting of two thin, intersecting lines forming an 'X' shape.

Sightlines

The logo for GreenLine, featuring the word "GreenLine" in a bold, green, sans-serif font. To the left of the text is a stylized graphic consisting of two thin, intersecting lines forming an 'X' shape.

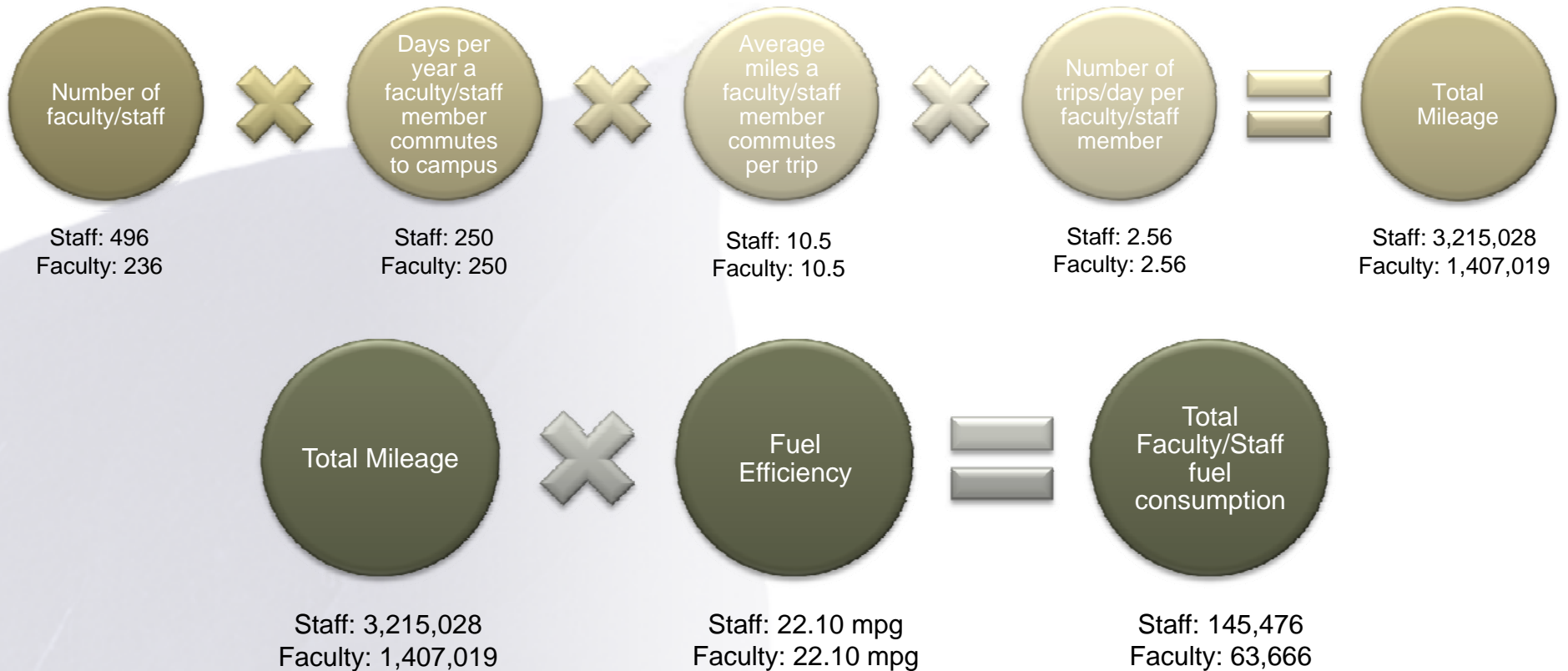
GreenLine

The background of the slide is a close-up photograph of a green leaf, showing its intricate vein structure. The leaf is partially obscured by a large, semi-transparent, light purple shape that tapers to a point on the right side. The overall composition is clean and modern, with a focus on natural elements.

Other Greenhouse Gas (GHG) Emissions Sources

Faculty and staff commuting

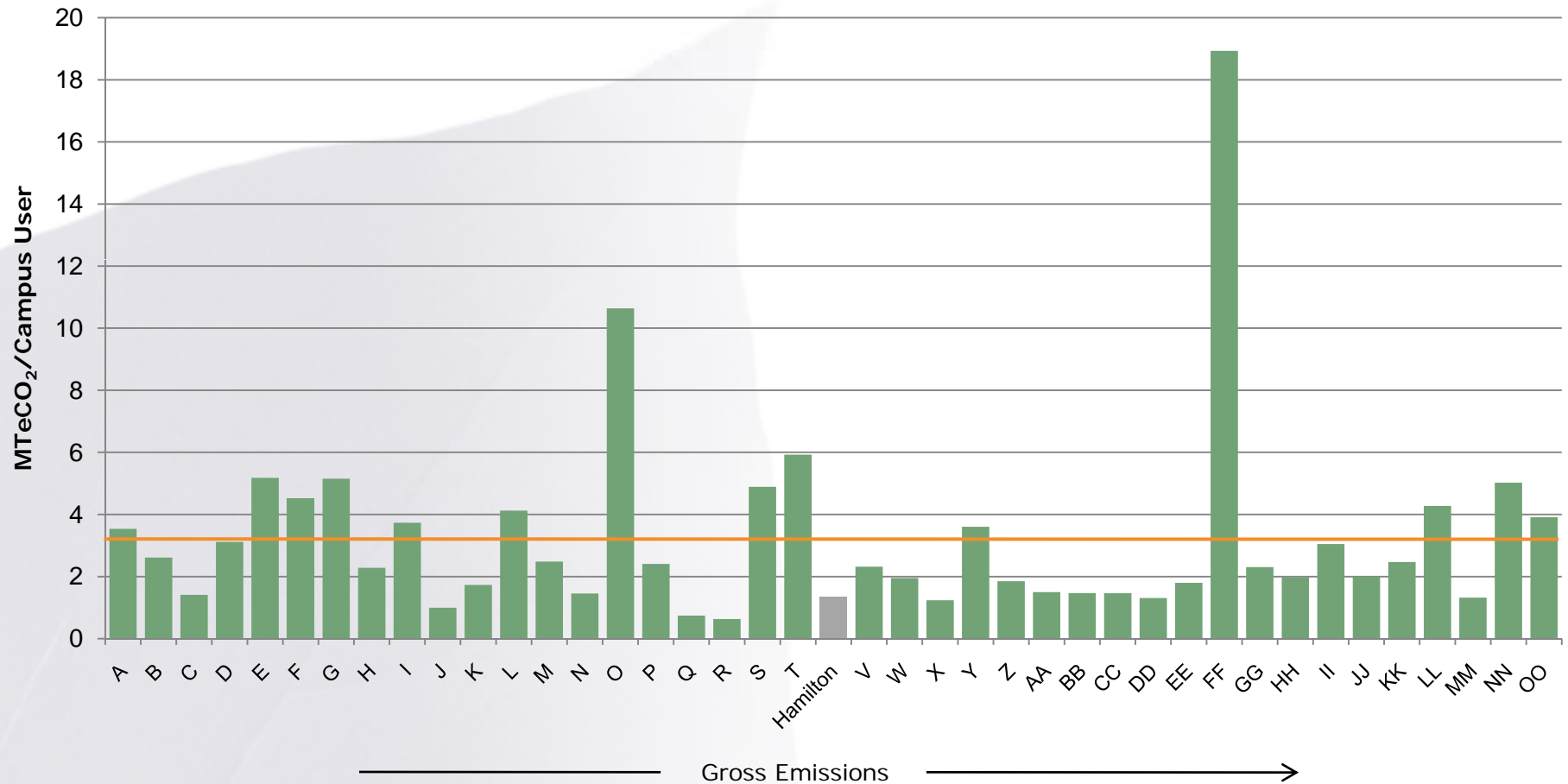
Scope 3



Faculty/Staff Total Carbon Emissions 1,869 MTeCO₂ – 8% of '08 Total

Commuting emissions vs. database

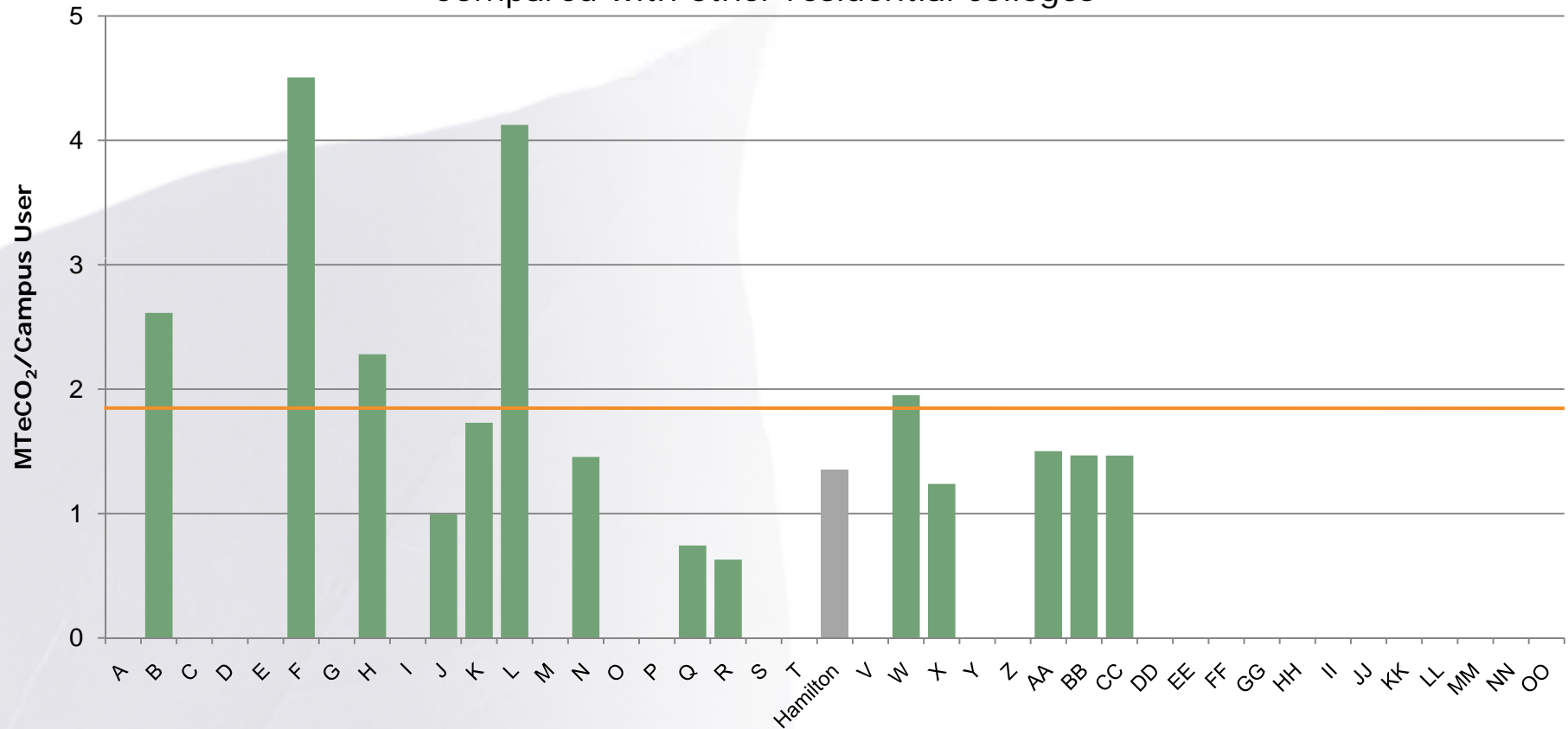
Residential campus reduces commuting miles



Commuting emissions vs. database

Residential campus reduces commuting miles

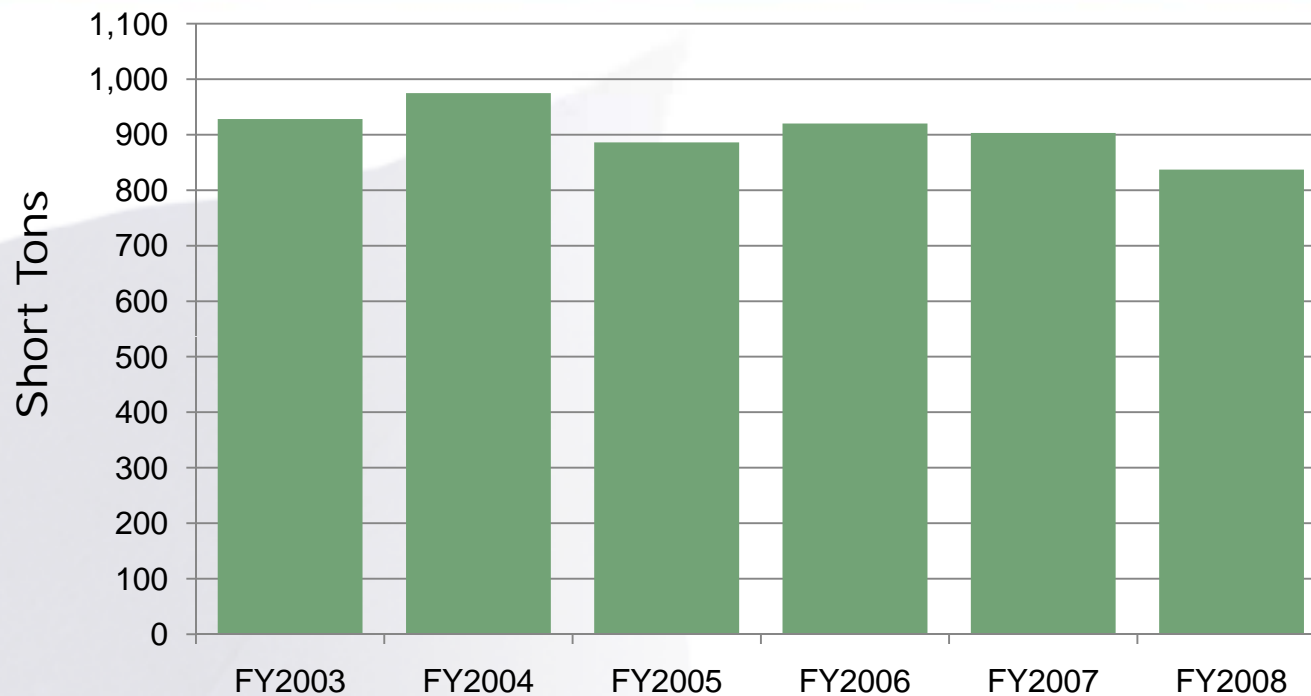
Compared with other residential colleges



Gross Emissions →

Decreasing solid waste

Solid waste – Scope 3

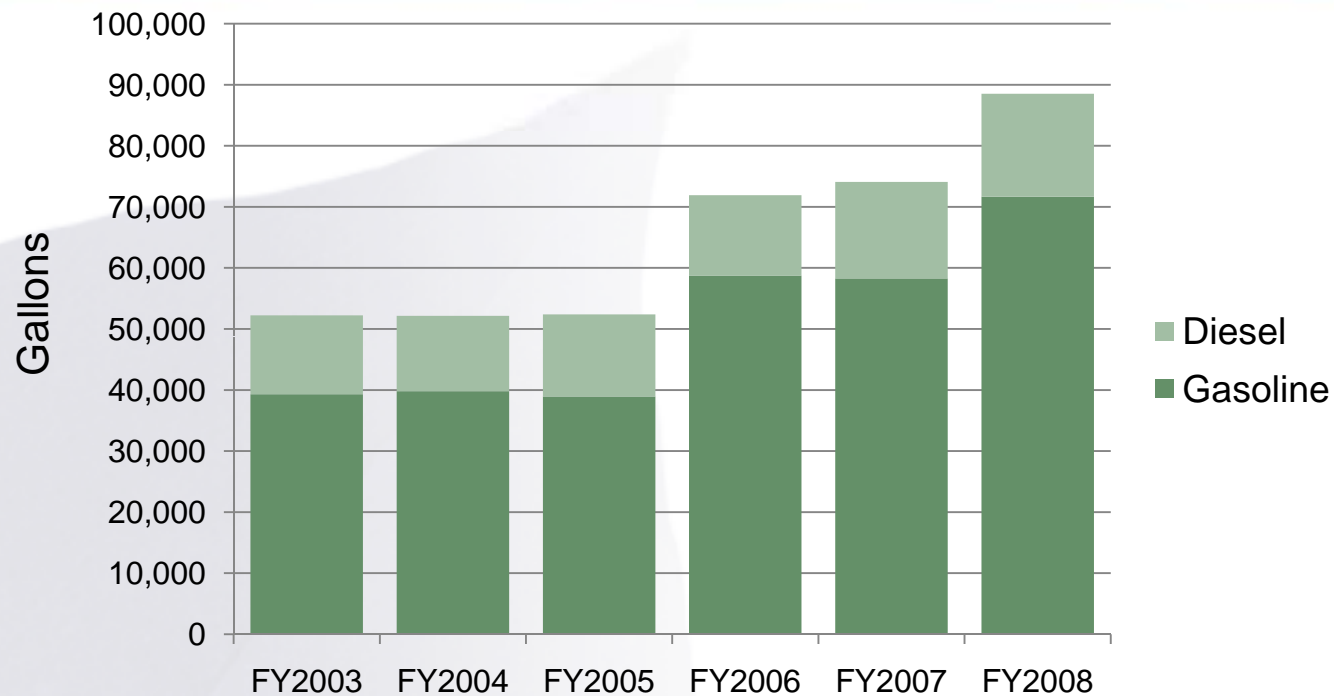


Natural Gas and Oil Total Carbon Emissions: 829 MTeCO₂ - 3% of '08 total

10% reduction since FY2003

Increasing vehicle fleet consumption

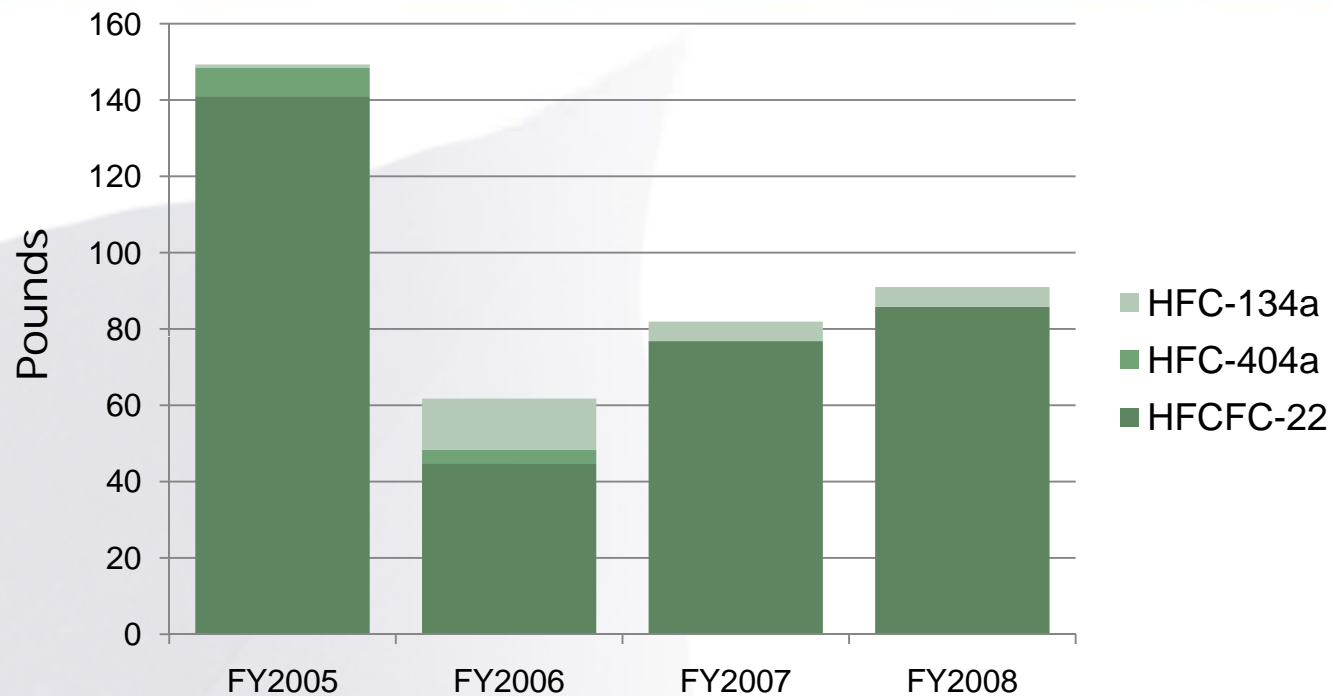
Fossil - Scope 1



Vehicle Fleet Carbon Emissions: 810 MTeCO₂ - 3% of '08 total

Increase in refrigerant loss since FY06

Refrigerants – Scope 1



Refrigerant Use: 69 MTeCO₂ - <1% of '08 total

Fertilizer application

Scope 1

Source	'08 Units	MTeCO ₂	% of Total
Fertilizers	3,149 lbs. Nitrogen	12	<1%

Offsets - Renewable Energy Credits

3,193,120 kWh of green power purchased

Offset	Amount	MTeCO ₂
REC	3,193,120	1,329

Comparing Greenhouse Gas (GHG) Emissions – Summary Benchmarks

Benchmark institutions

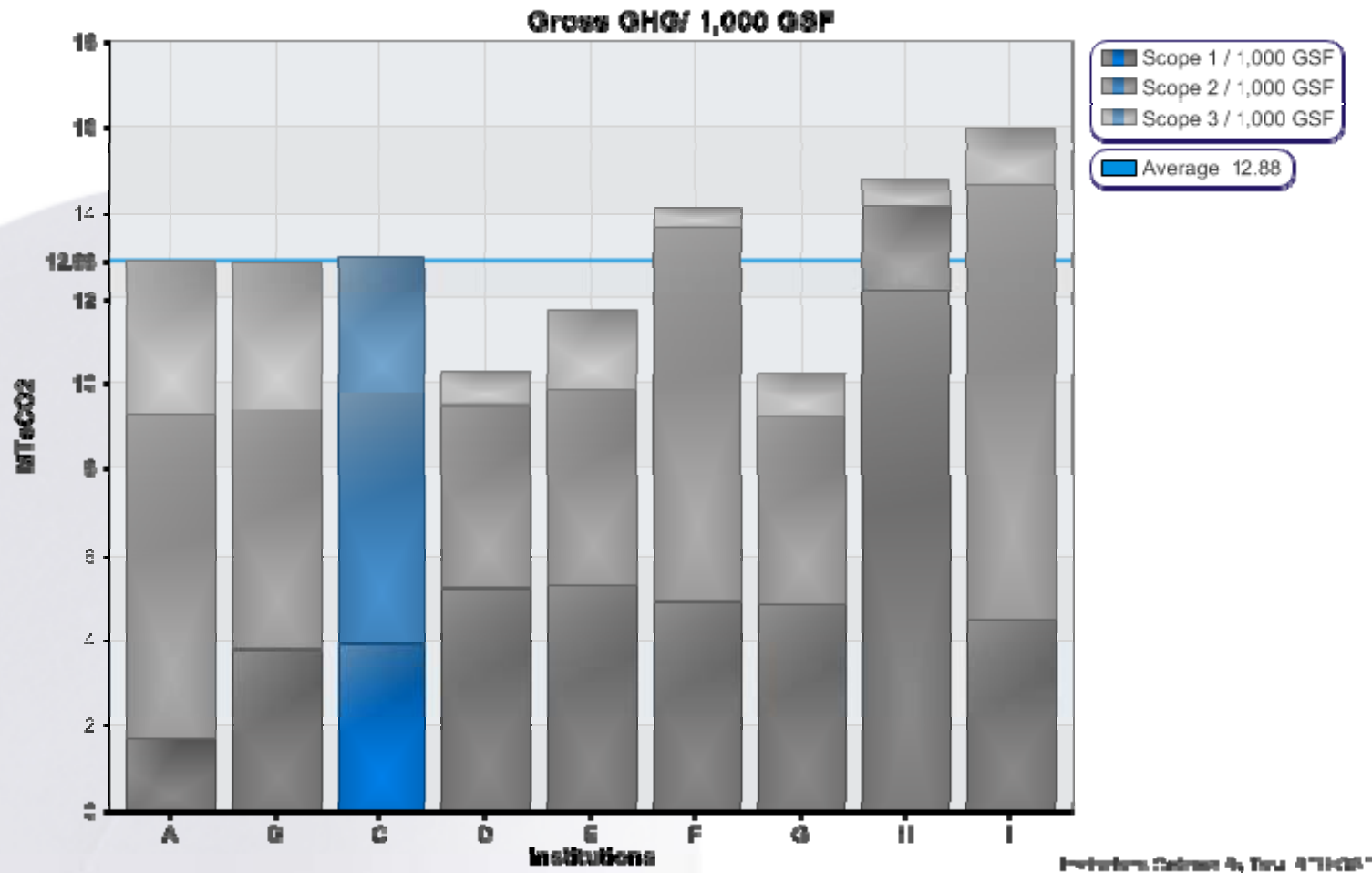
Institutions	Location
Babson College	Babson Park, MA
Bentley University	Waltham, MA
Bowdoin College	Brunswick, ME
Carleton College	Northfield, MN
Grinnell College	Grinnell, IA
St. Lawrence University	Canton, NY
Wesleyan University	New London, CT
Williams College	Williamstown, MA

GreenLine institutions nationwide

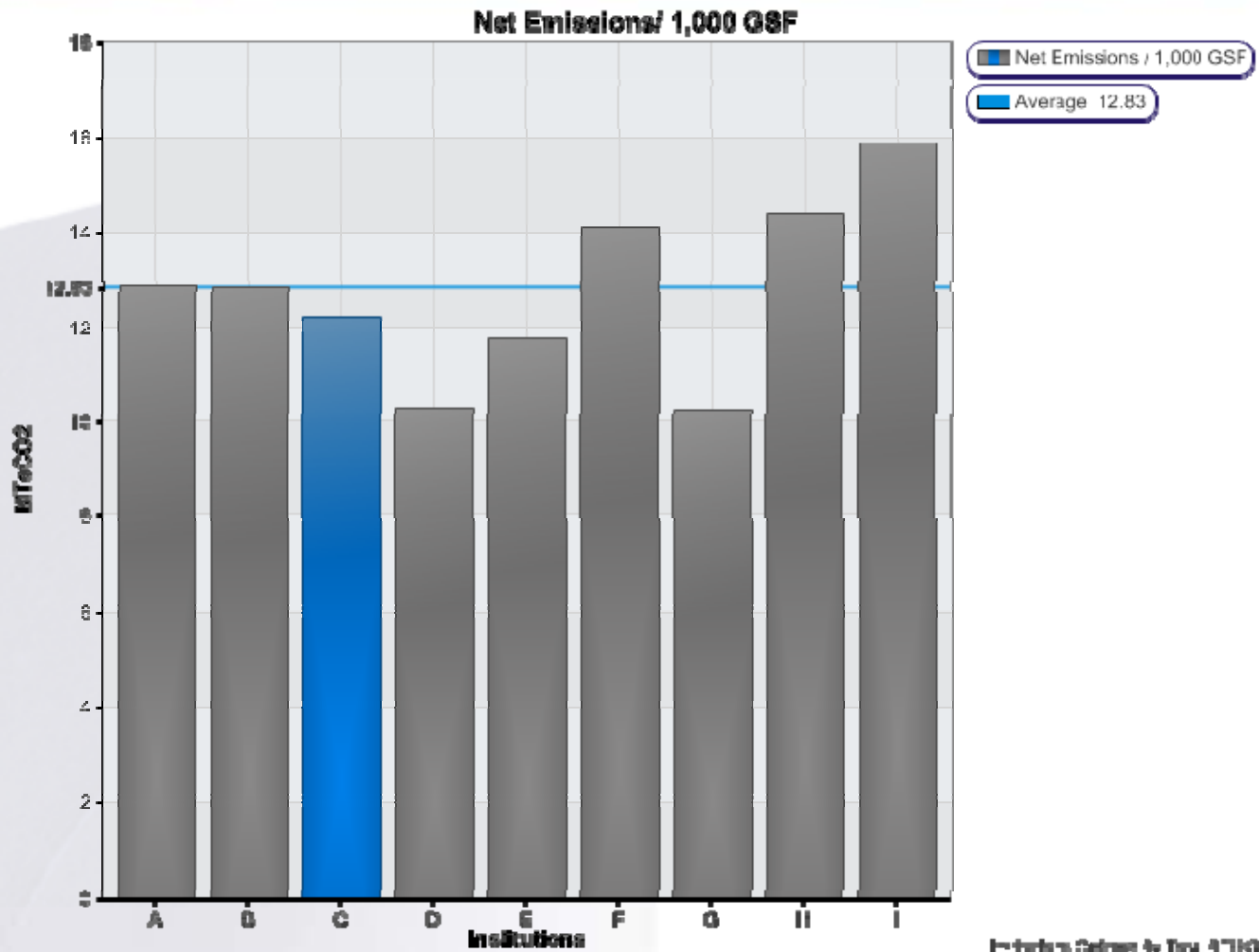
GreenLine Institutions
Babson College
Bentley University
Bowdoin College
Carleton College
Clemson University
Davidson College
Eckerd College
Fitchburg State College
Gallaudet University
Grinnell College
Hamilton College
Hampshire College
Lewis & Clark College
Loyola College in Maryland
Loyola Marymount University
Oregon Institute of Technology
Pacific Lutheran University
Portland State University
Rowan University

GreenLine Institutions
Santa Clara University
Seattle University
Southern Methodist University
St. Lawrence University
Texas A&M University
University of Arkansas
University of Denver
University of Maryland – College Park
University of Notre Dame
University of Oregon
University of Portland
University of Redlands
University of San Diego
University of Vermont
Virginia Commonwealth University
Washington and Lee University
Wesleyan University
Western Oregon University
Williams College

Average Emissions per 1,000 GSF v. Peers



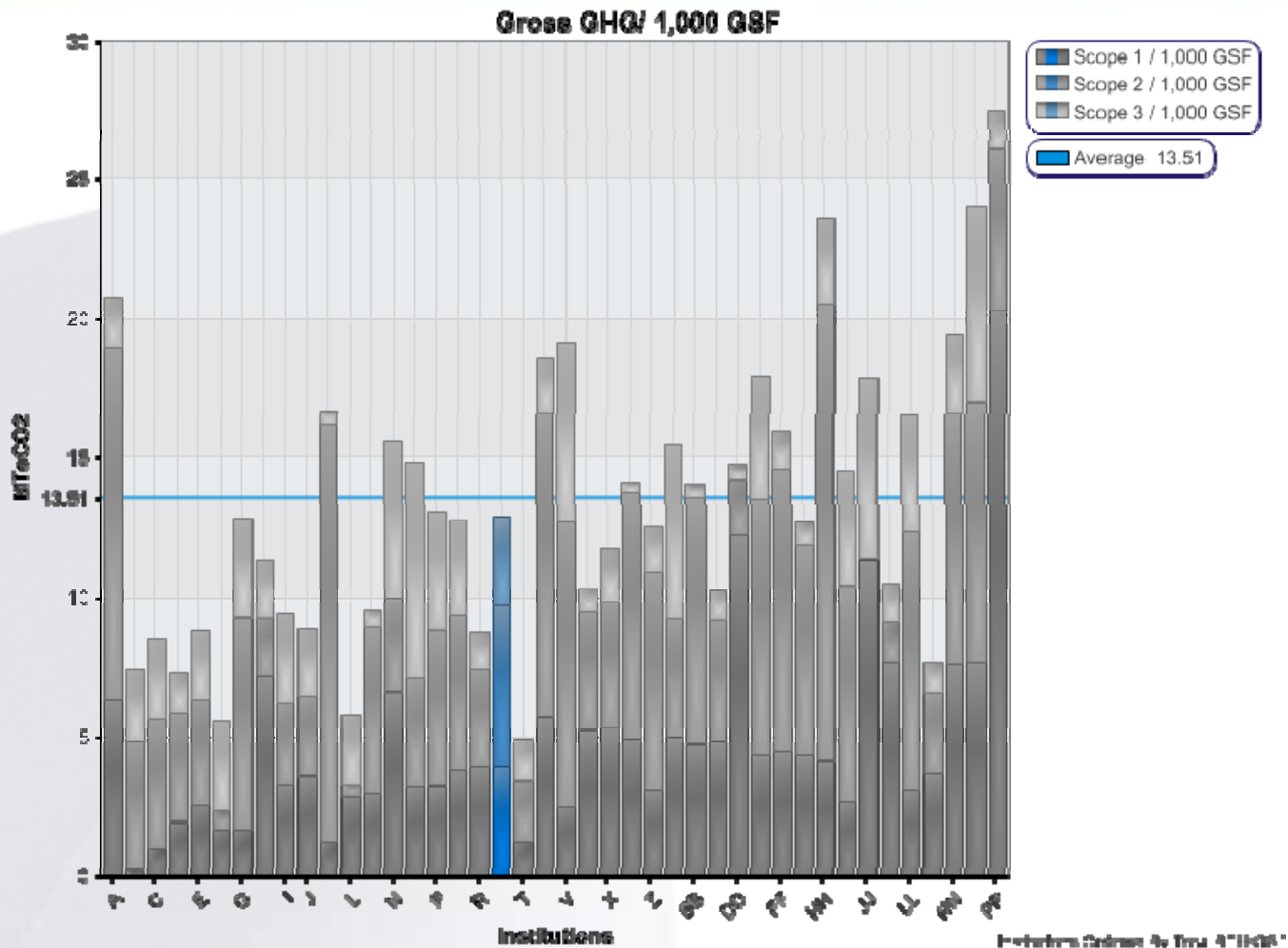
Offsets Put Emissions Below Average



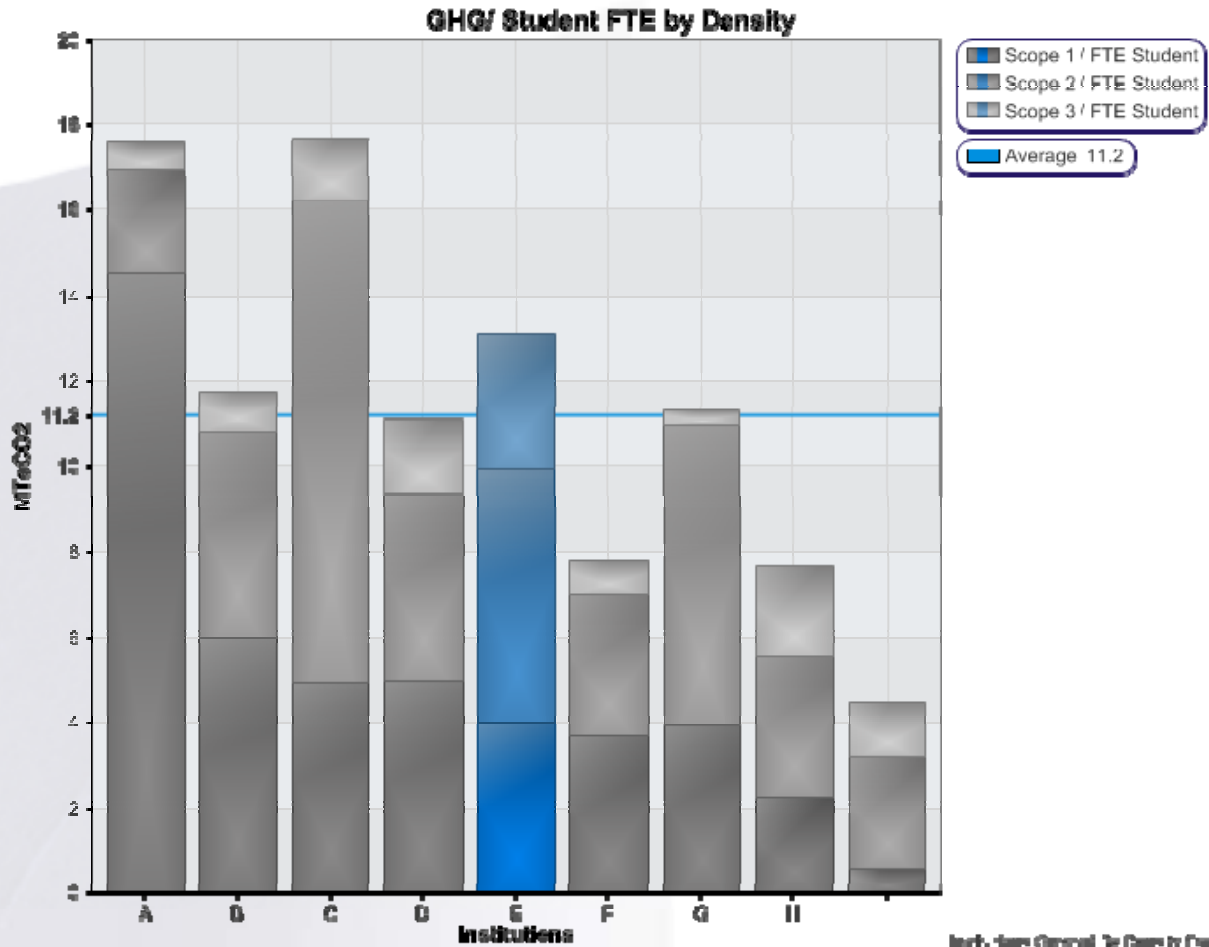
Information compiled by Sightlines

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Nationwide – Hamilton is Also Below Average

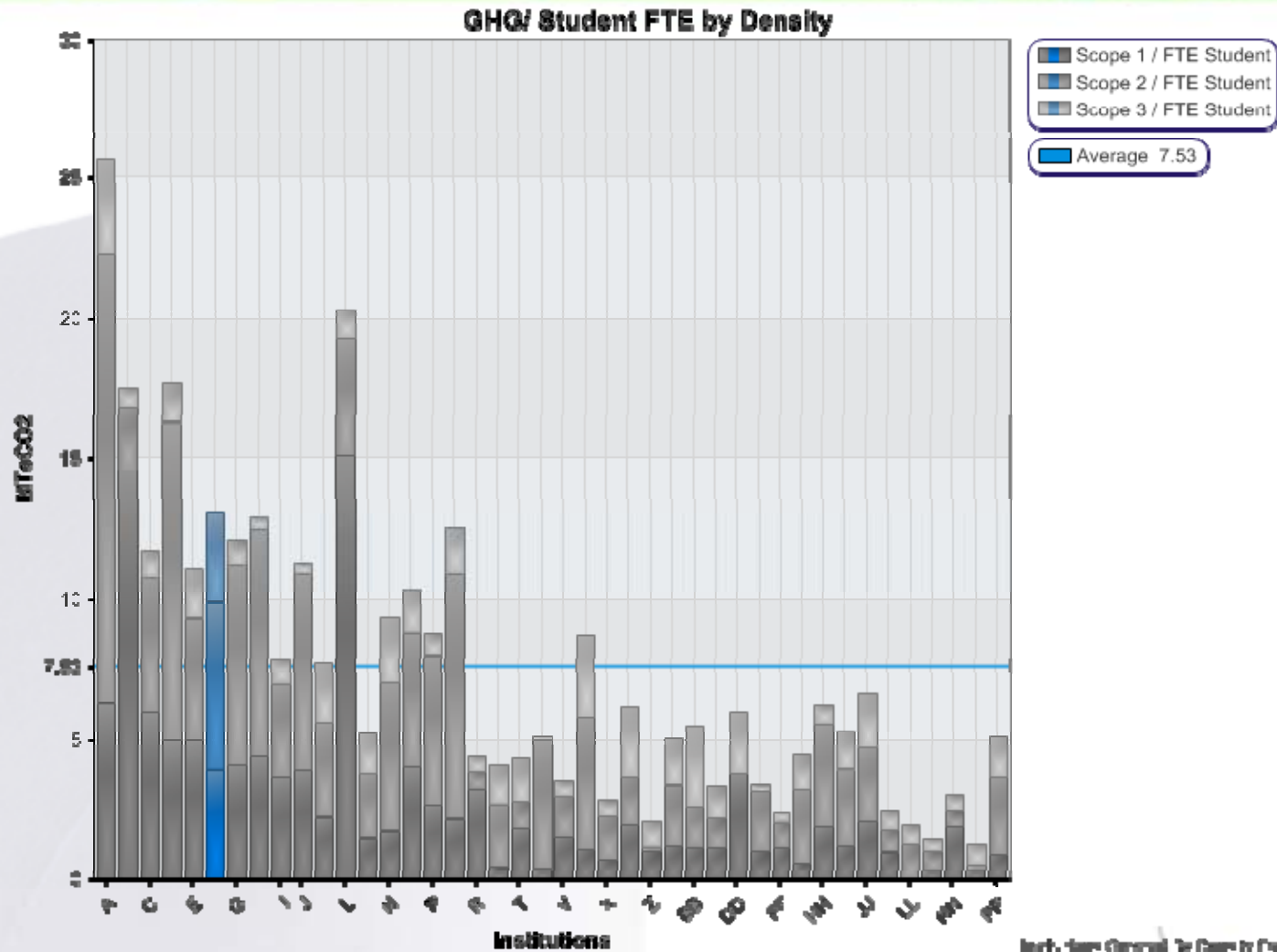


Emissions per student FTE is a Function of Density



Source: Data Generated by Sightlines by Campus

Schools Like Hamilton are Less Dense than Others



Concluding thoughts

- FY2008 saw a 2% reduction in gross carbon emissions from an all-time high in FY2007.
 - Hamilton benefits from a “clean” electric grid, but could benefit from reduced electric consumption.
 - Converting from electric to fossil in campus buildings could have substantial carbon payback.
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- Gross emissions track very closely with campus growth. Addition of new space should be coordinated with sustainability initiatives.
 - Tracking student miles traveled between home and school would give a more complete picture of the transportation element of the emissions study.