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Sightlines

Go-Green Measurement & Analysis:

Measure, Monitor, Benchmark

Millersville University

May 10, 2010

Sightlines Profile

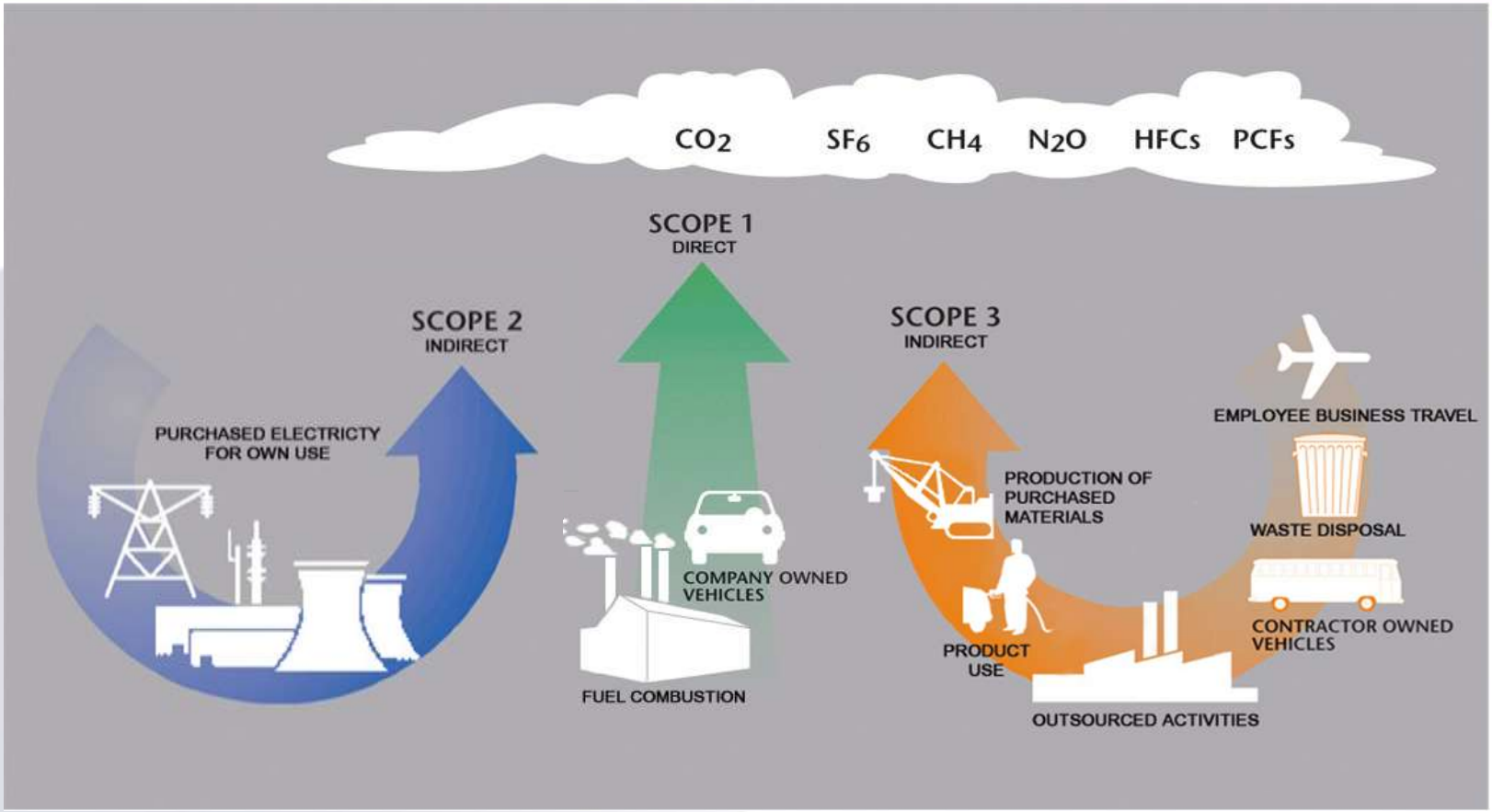
Sightlines Members
- Sightlines works with more than 220 institutions
- Sightlines works with institutions in over 34 states and the District of Columbia

Go-Green Measurement and Analysis Members
- Sightlines has more than 50 Members
- Approximately 1/3 are public
- More than 1/2 have signed the ACUPCC
- More than 40% are Charter Signatories of the ACUPCC

Data Collection and Member Web site
- Go-Green Measurement and Analysis collects over 20 pieces of data in 8 categories
- Go-Green Measurement and Analysis now delivers nearly 70 benchmark charts

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.**

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This slide courtesy of CA-CP

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Contextualizing MTCDEs

What is a Metric Ton of Carbon Dioxide Equivalent?

	MTCDE	Commodity Used	Context
	1 MTCDE	190 CCFs of Natural Gas	Heating a home for three months
	1 MTCDE	1,651 kWh (national average)	Powering a 60W equivalent CFL for 117,929 hours
	1 MTCDE	112 Gallons of Gasoline	Driving 2,475 miles by car

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Collected Carbon Emissions at Millersville

Scope 1

- Fossil Fuel: Natural Gas and Oil
- Vehicle Fleet
- Refrigerants
- Fertilizer

Scope 2

- Purchased Electricity

Scope 3

- Student Commuting: zip code data
- Faculty & Staff Commuting: survey
- Study Abroad Air Travel
- Faculty & Staff Financed Air Travel
- Wastewater
- Paper
- Solid Waste

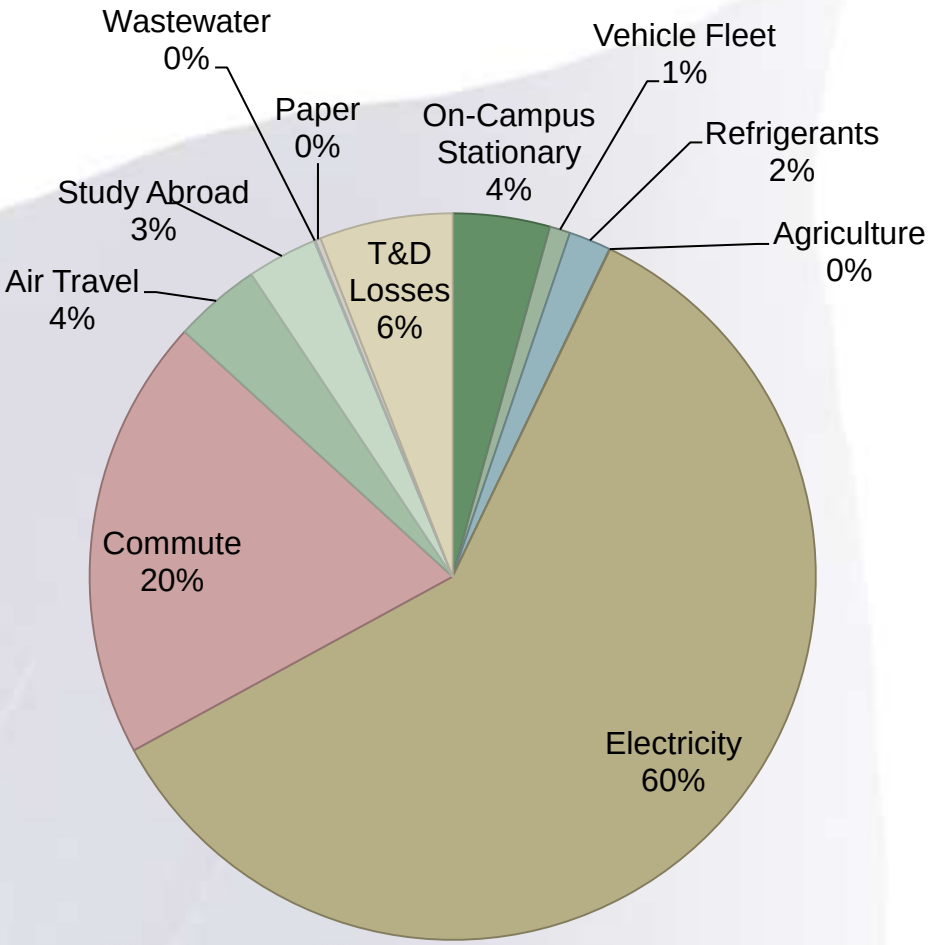
Offsets

- Green Power REC's at 10% of total electricity purchased, consistent with all PASSHE institutions

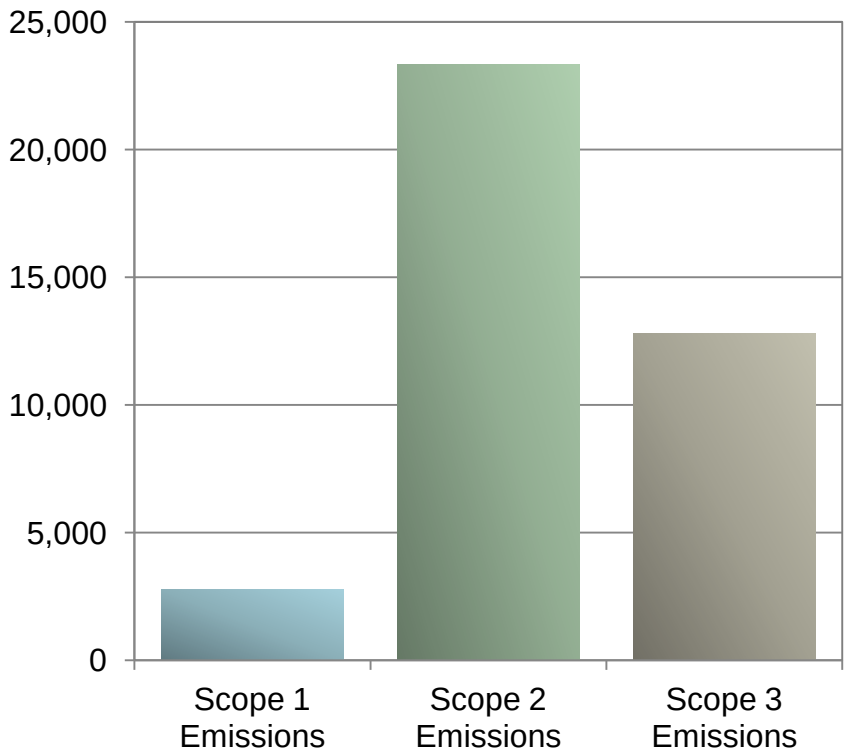
Total Carbon Emissions : 38,912 MTCDE in FY09

Electricity consumption is responsible for 66% of emissions

Carbon Emissions by Type



Carbon Emissions by Scope



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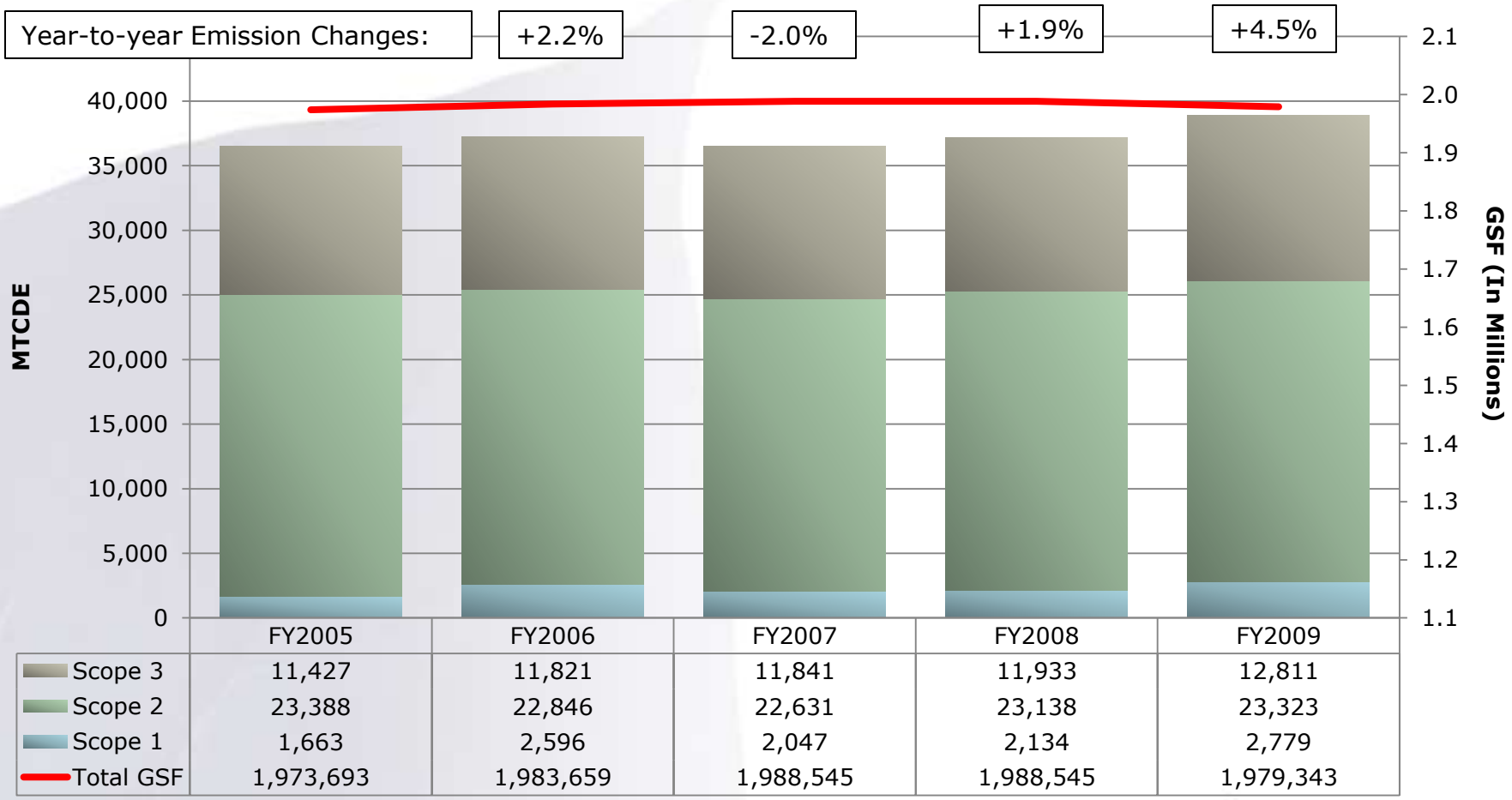
Longitudinal Performance

5% emission increase in 5 years despite consistent GSF



	FY2005	FY2006	FY2007	FY2008	FY2009
Scope 3	11,427	11,821	11,841	11,933	12,811
Scope 2	23,388	22,846	22,631	23,138	23,323
Scope 1	1,663	2,596	2,047	2,134	2,779
Total GSF	1,973,693	1,983,659	1,988,545	1,988,545	1,979,343

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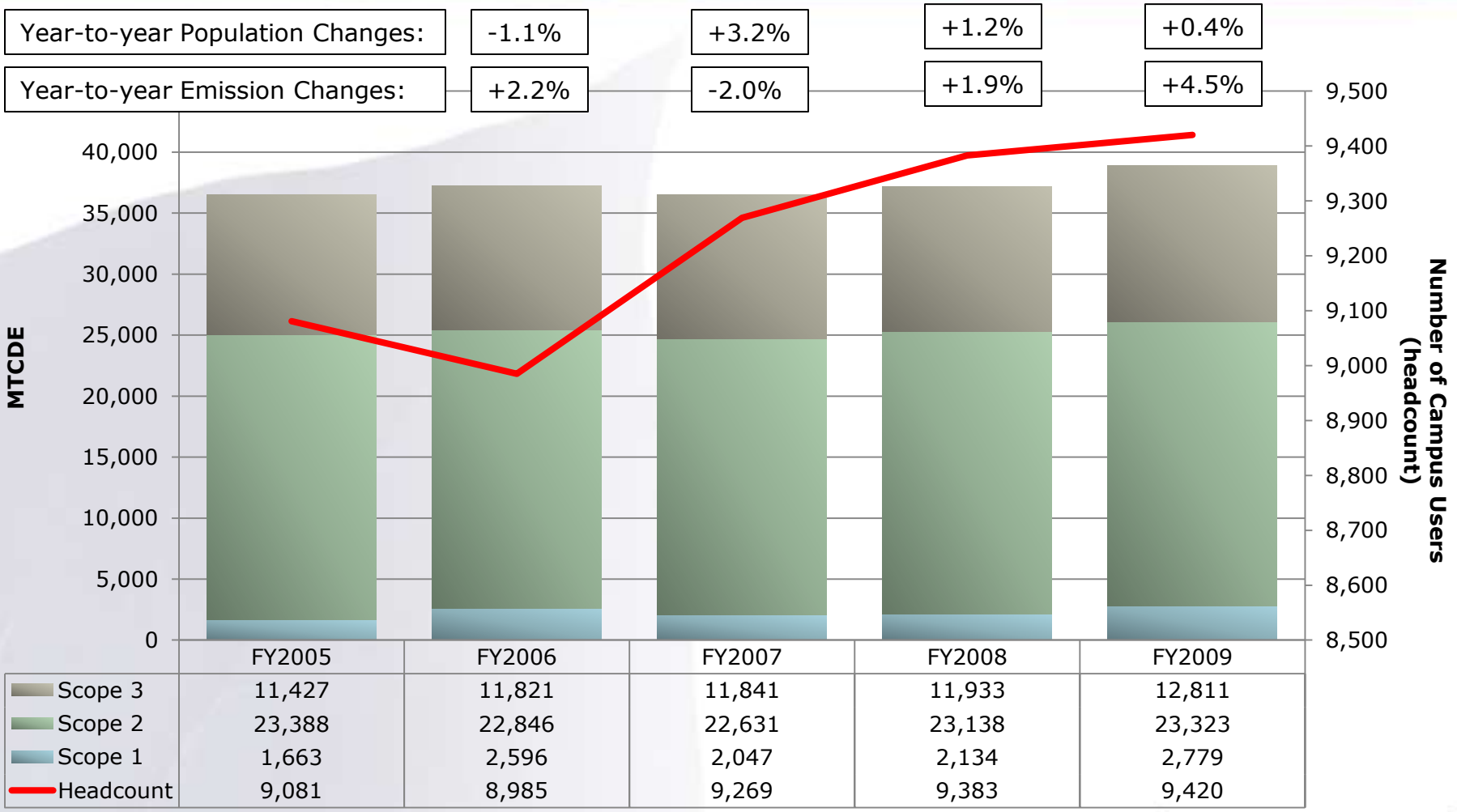
Longitudinal Performance

Increase in campus population effects Scope 3



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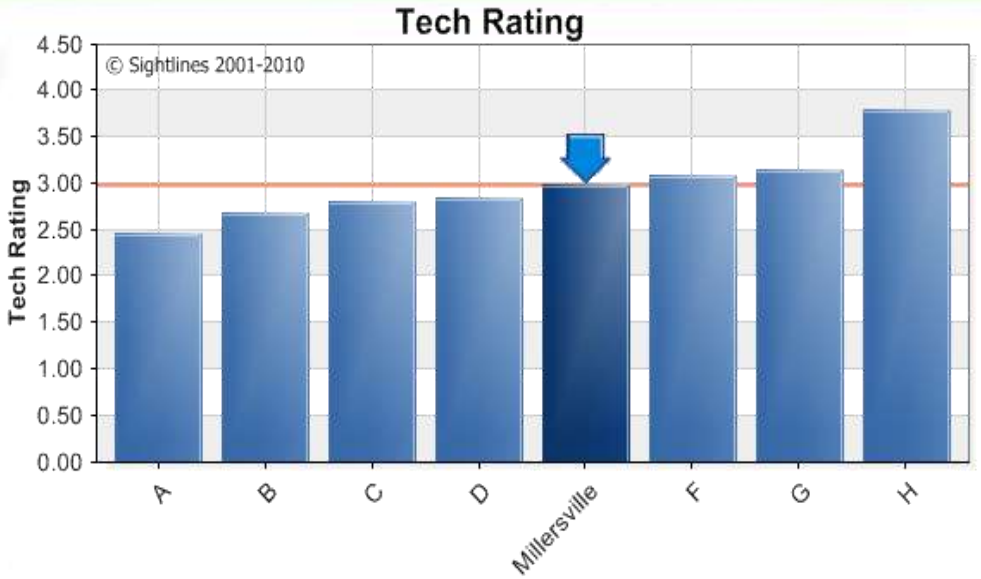
Putting Millersville in context with peers

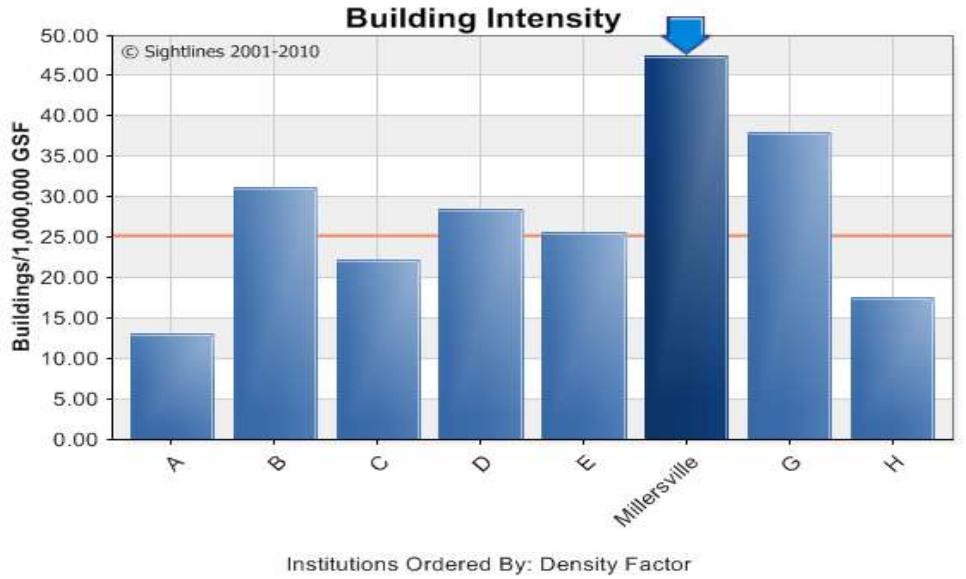
Smaller buildings on campus impact energy consumption

Go-Green Peer Institutions
American University
Bentley University
Fitchburg State College
Loyola University Maryland
Rowan University
Shippensburg University
The University of Dayton

Considerations for Peer Group:

- Size
- Climate Zone
- Technical Complexity
- Program
- Campus Setting





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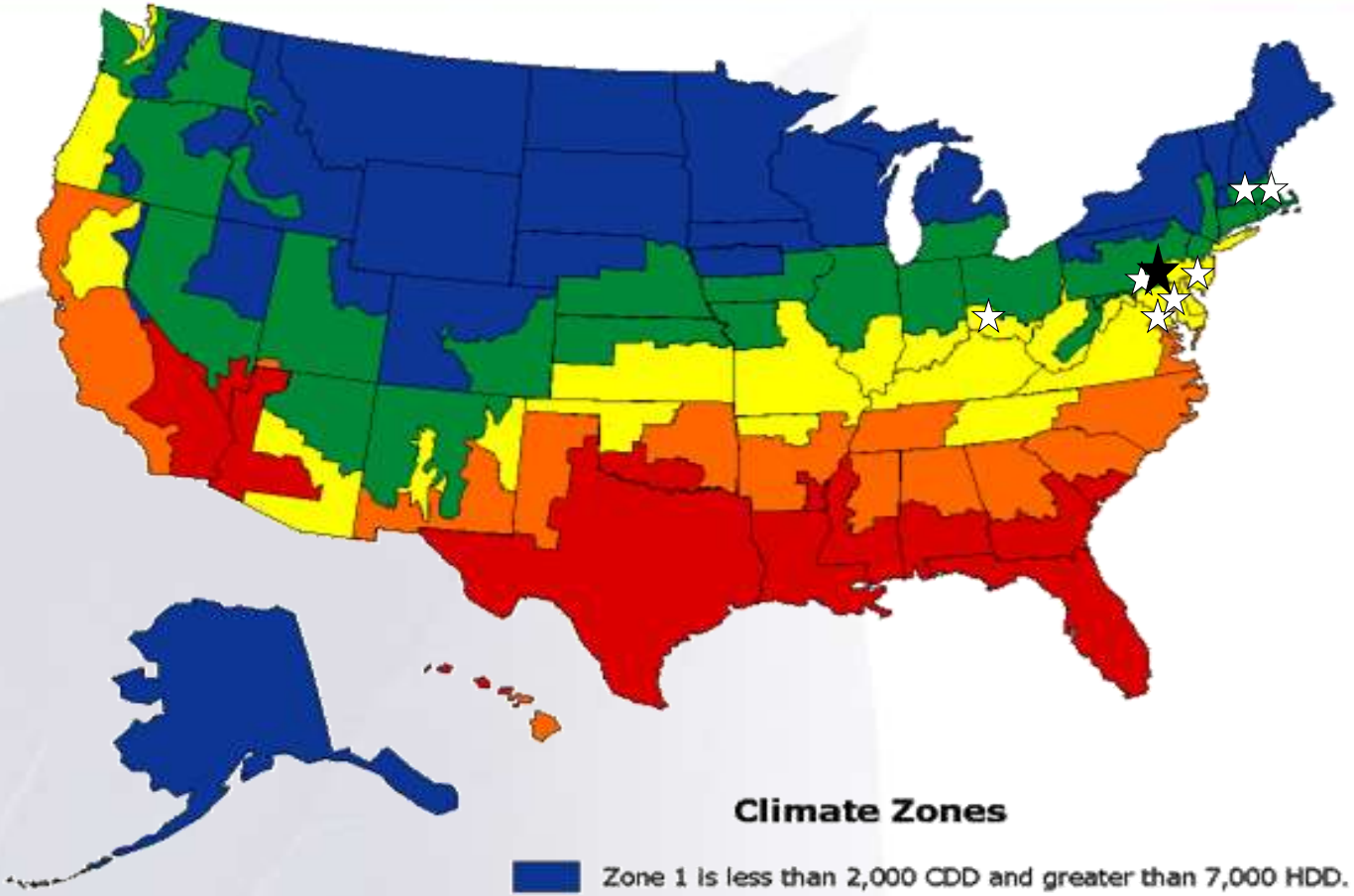
Putting Millersville in context with peers

Peer group falls within Climate Zone 2 and 3



Go-Green Peer Institutions
American University
Bentley University
Fitchburg State College
Loyola University Maryland
Rowan University
Shippensburg University
The University of Dayton

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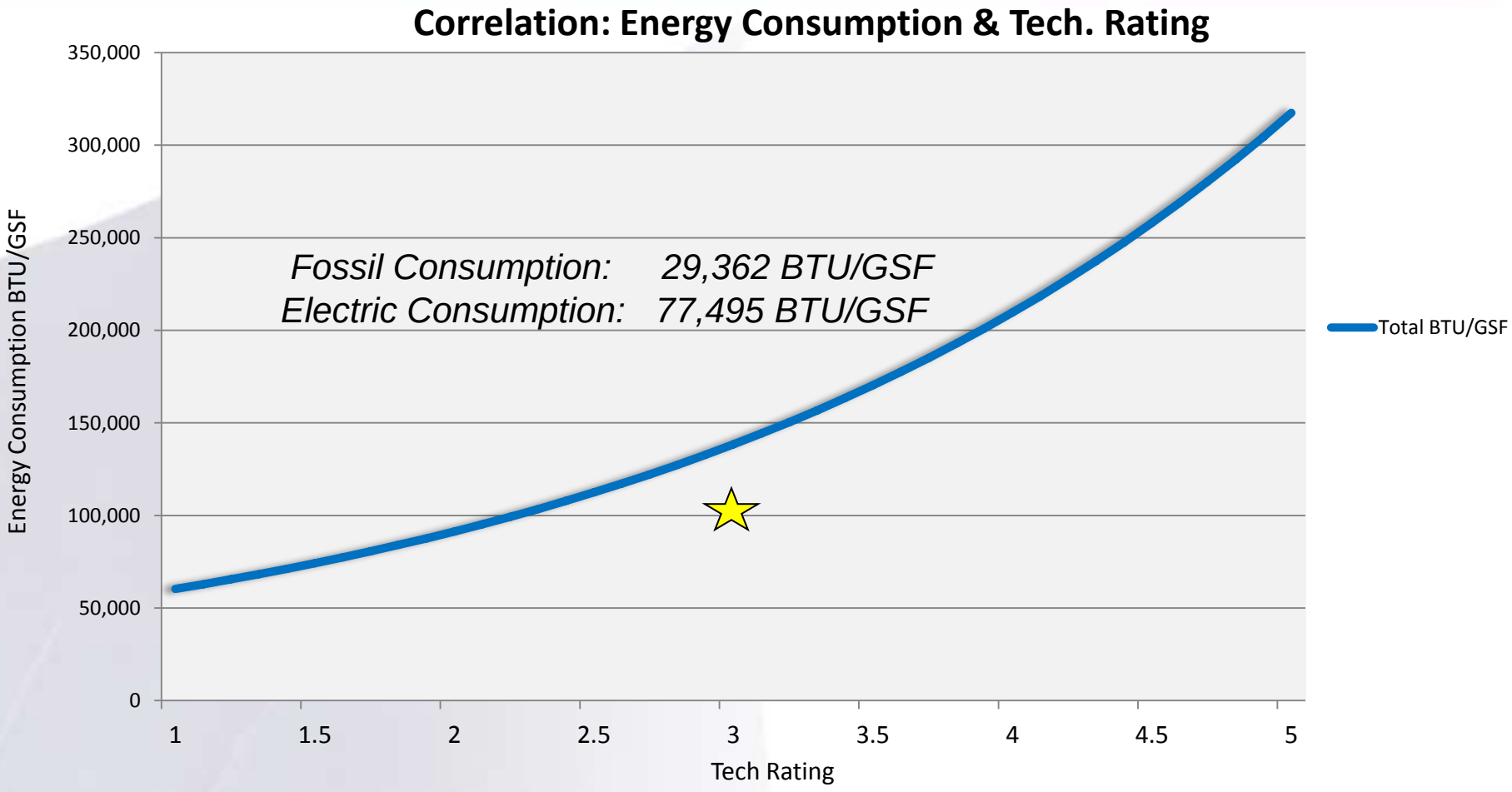
Energy consumption increases with tech rating

Millersville's consumption is below database trend



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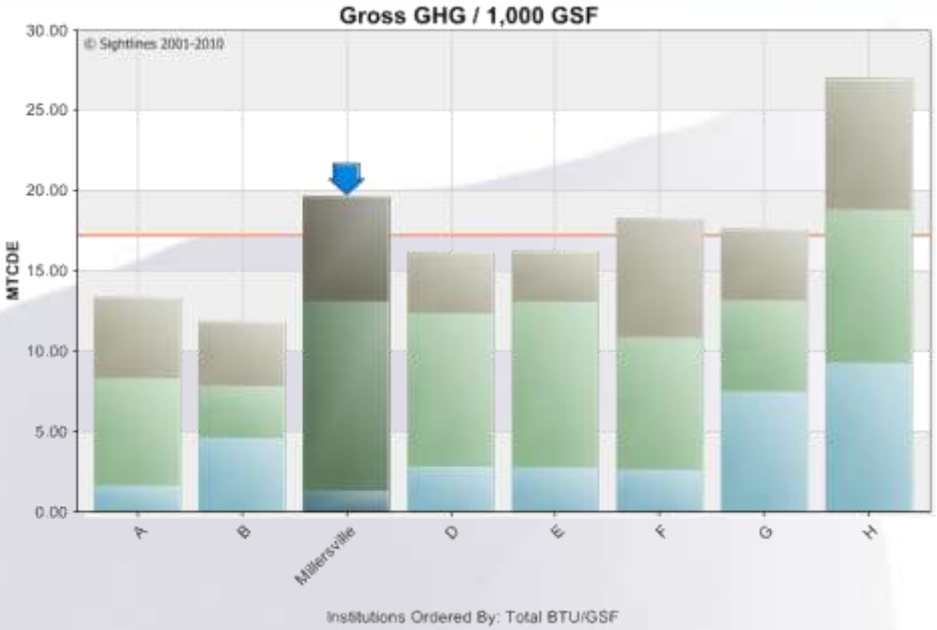
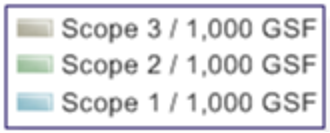
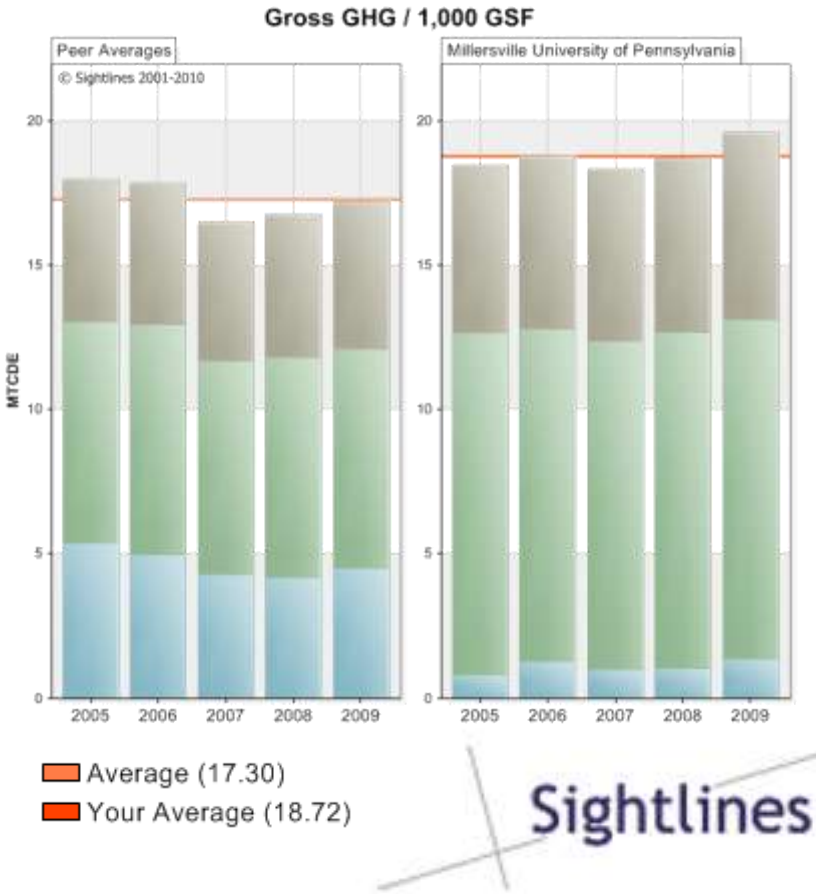
Emissions per GSF are slightly above peer average

Scope 2 dominates Millersville's emissions profile







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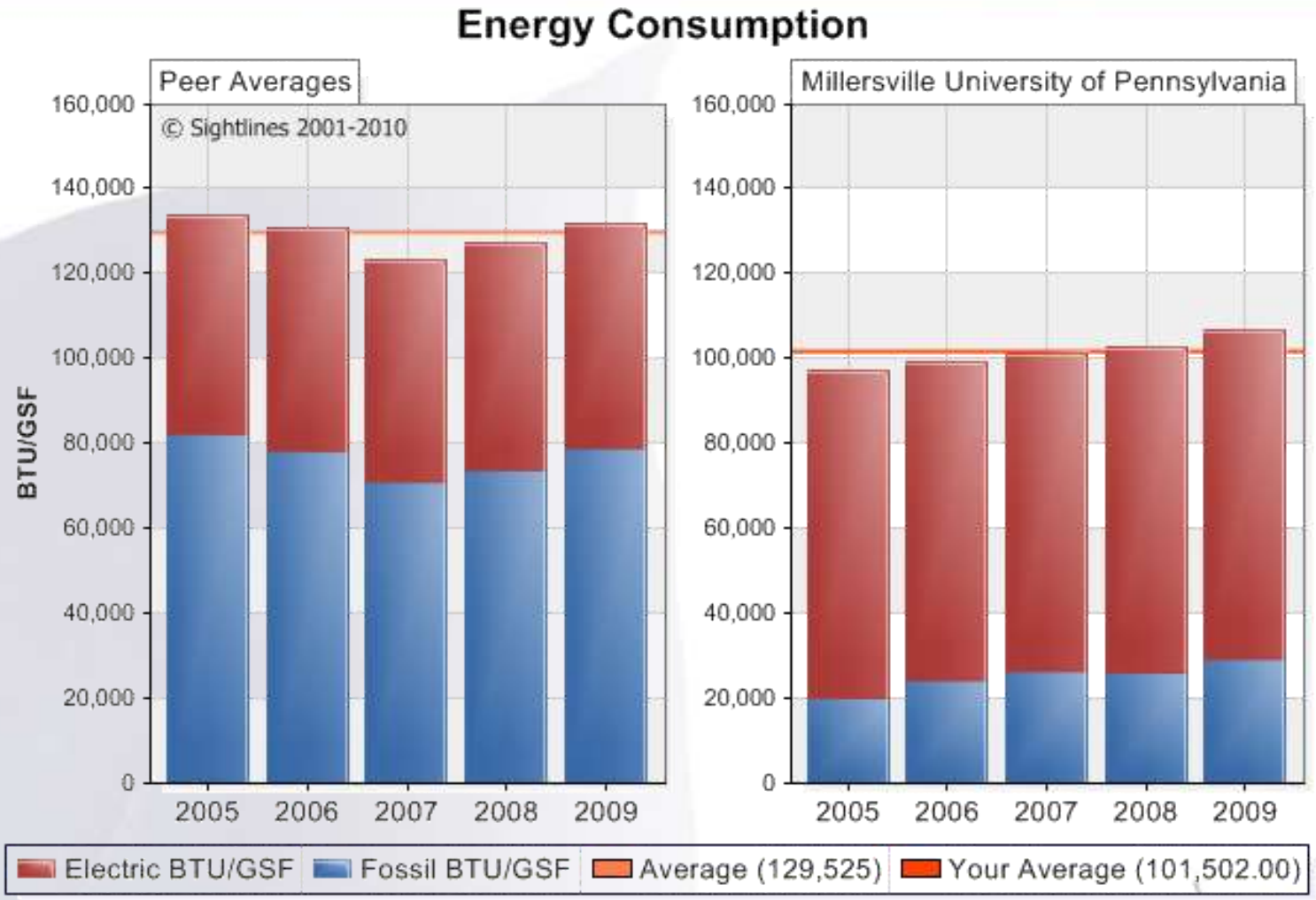
Key Building Emissions – Millersville University

Total Energy Consumption

Millersville is below peer average; however, consumption is increasing



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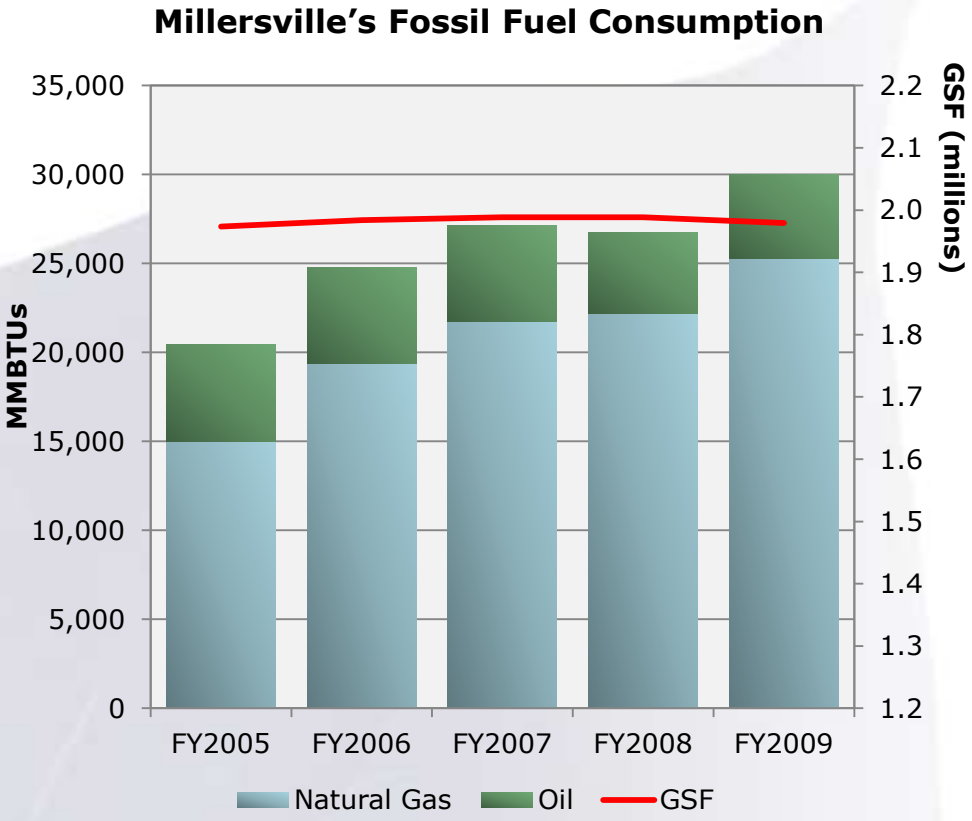
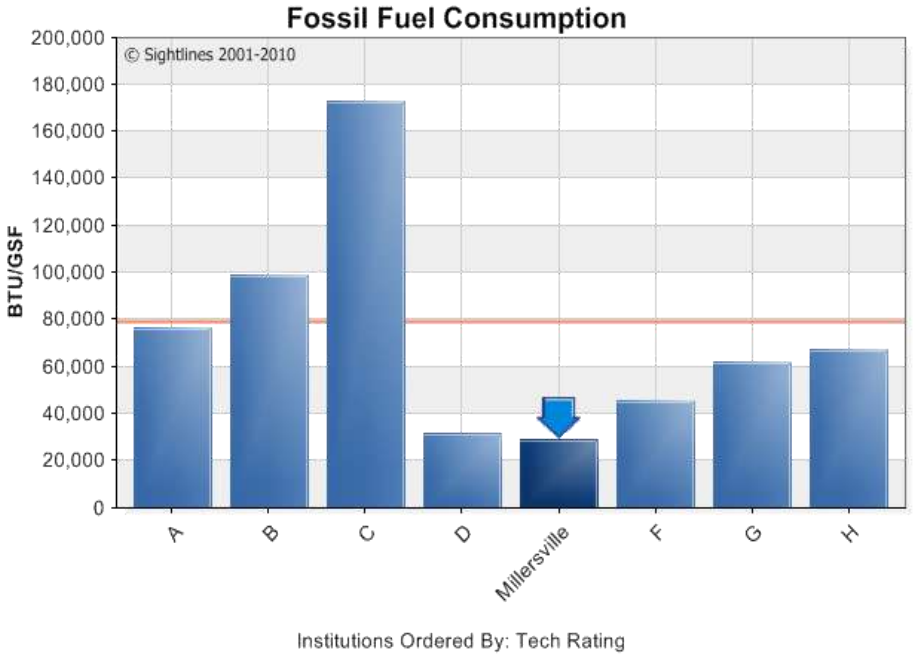
Fossil Fuel Consumption

Natural gas consumption increased despite steady GSF





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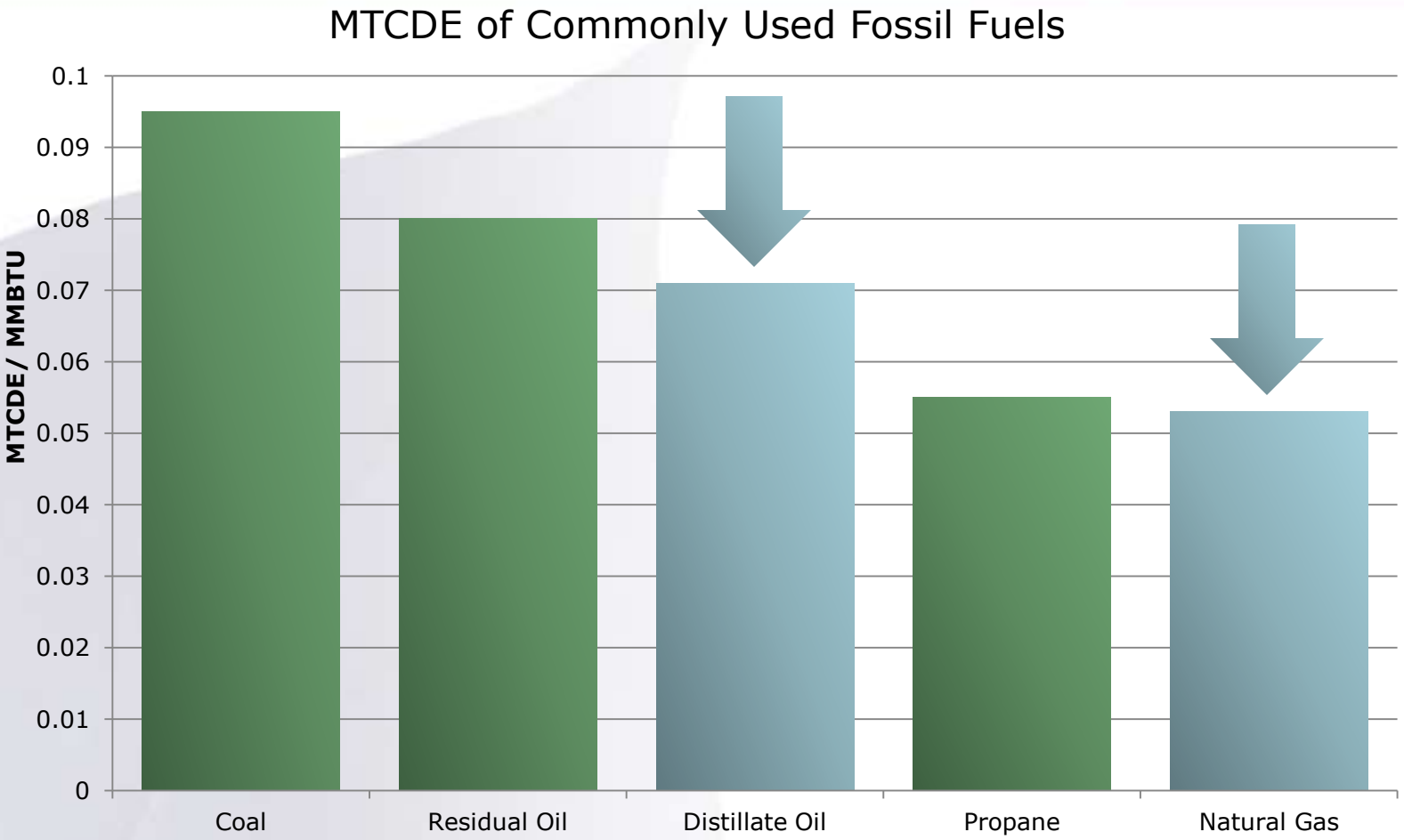
Millersville Fuel Usage

Higher emissions per unit of energy when the campus burns oil



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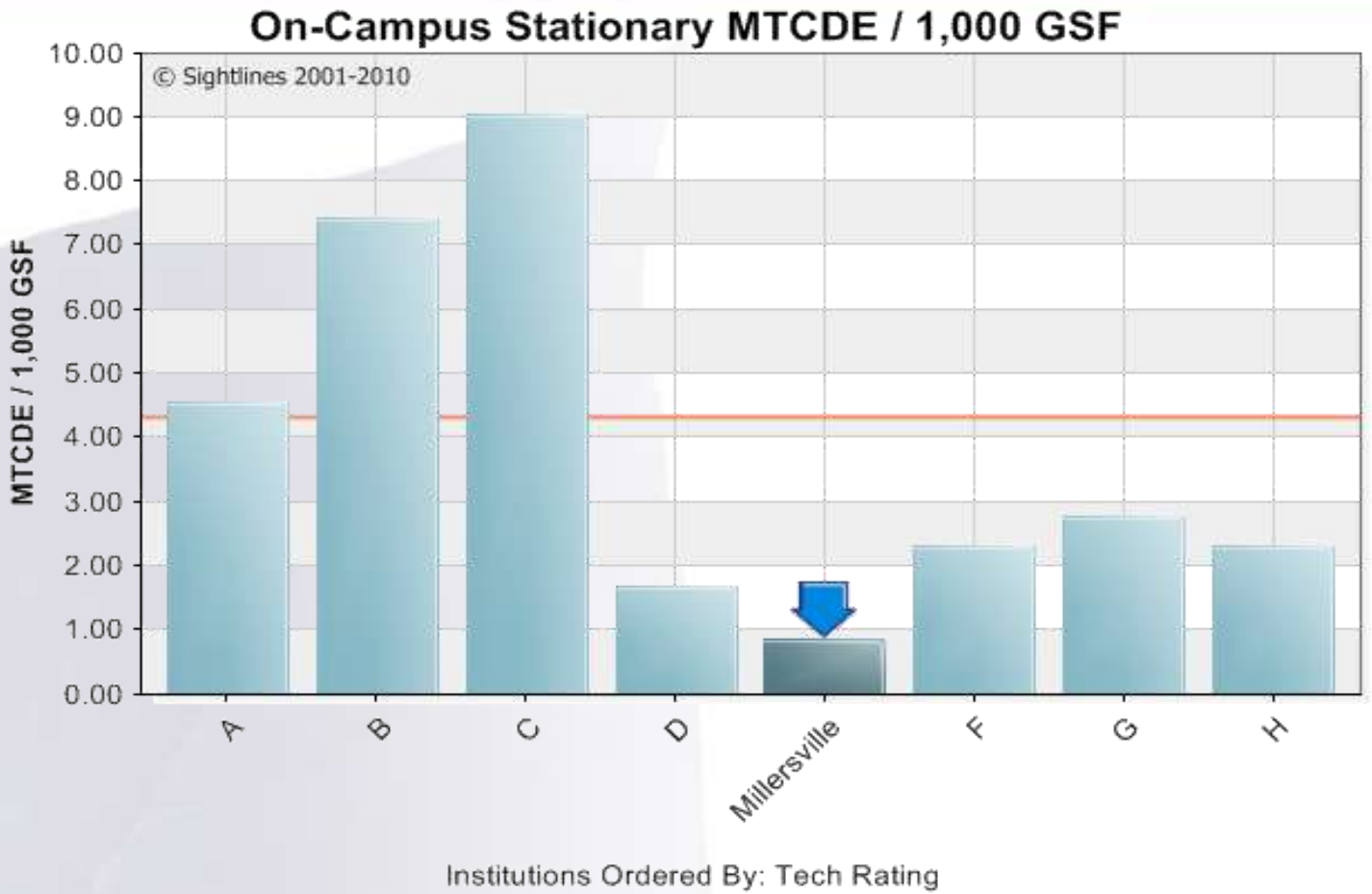
Emissions from Fossil Fuel

Low utility emissions from fossil because of reliance on electric



Fossil Fuel Carbon Emissions: 1,682 MTCDE
4.3% of '09 Total

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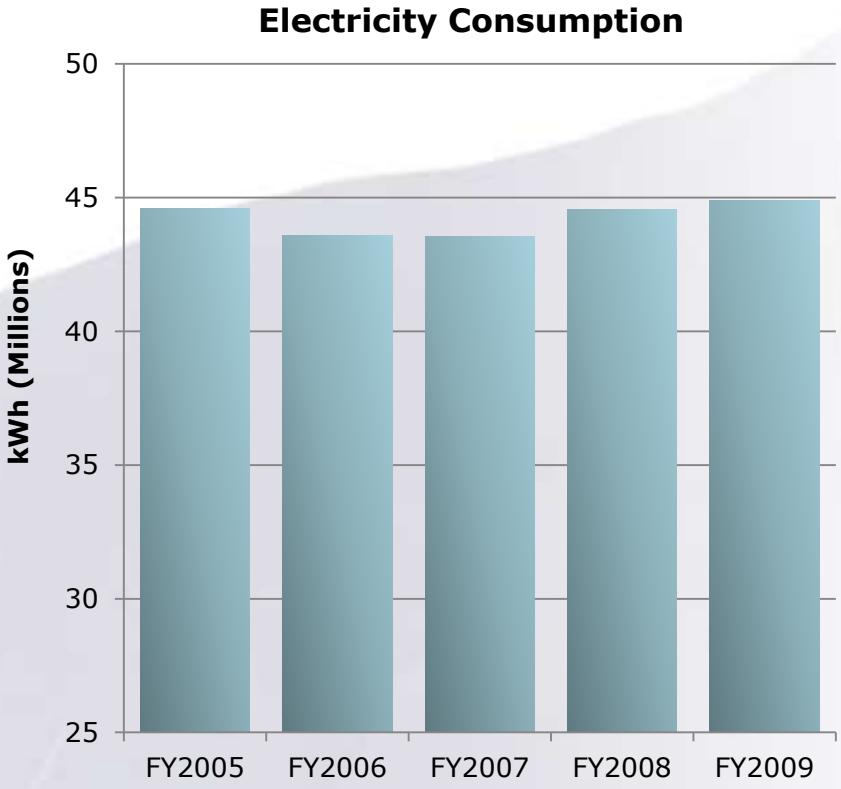
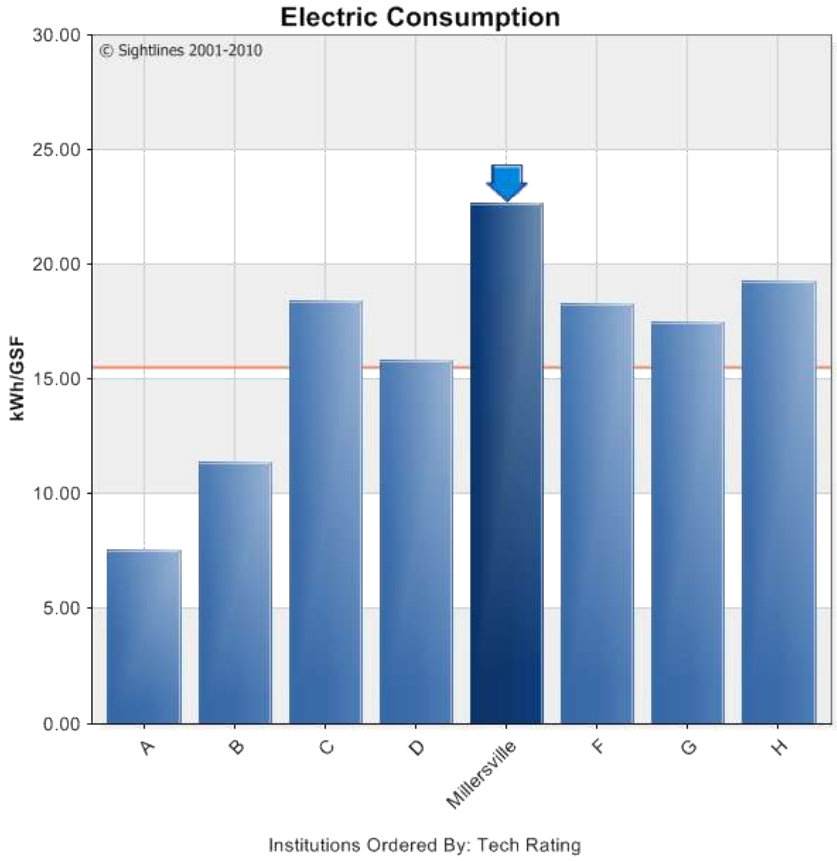
Electricity consumption increasing longitudinally

Consuming electricity at higher levels than peer institutions





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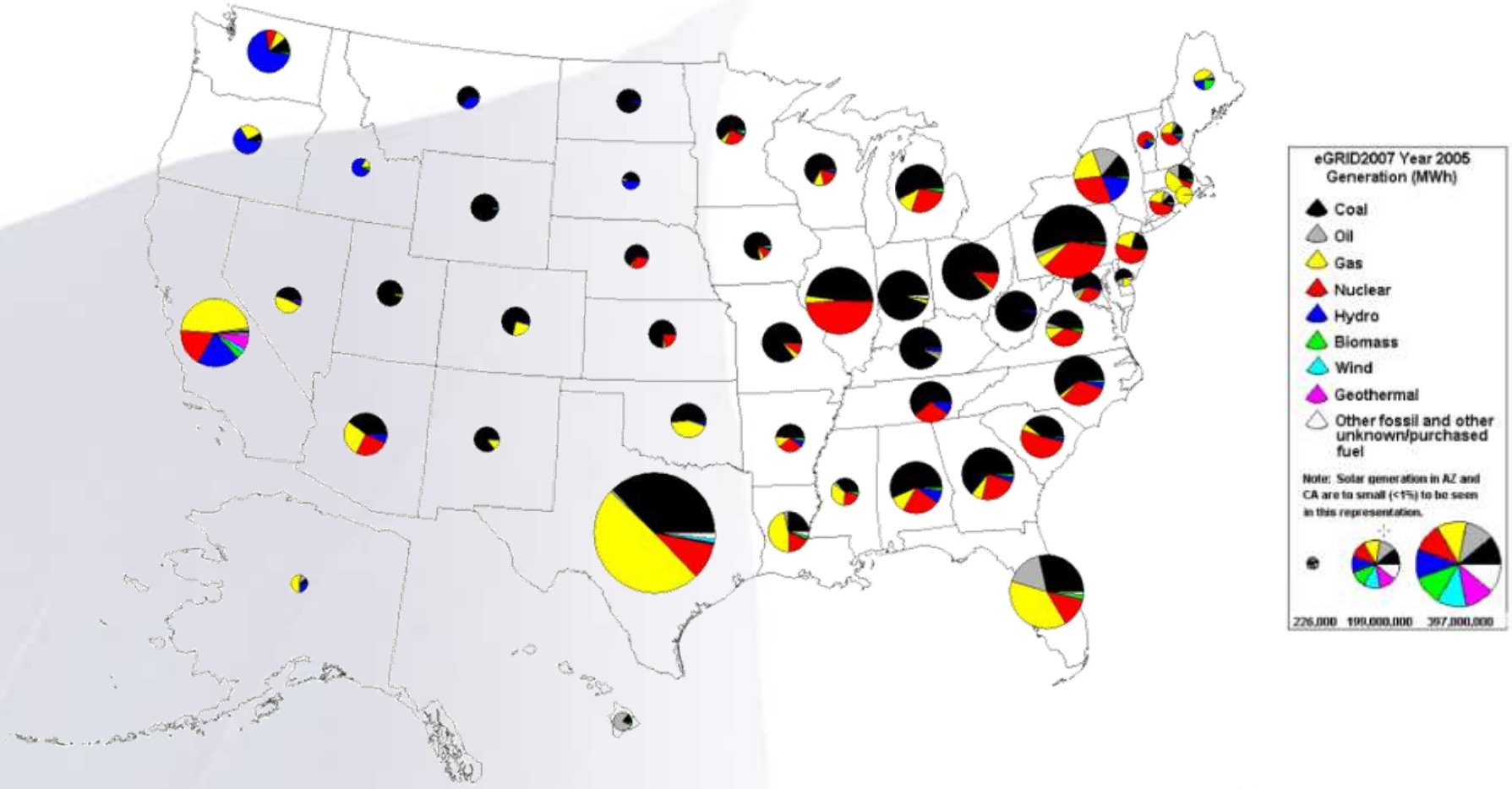
Electric Fuel Mix Varies Across the Country



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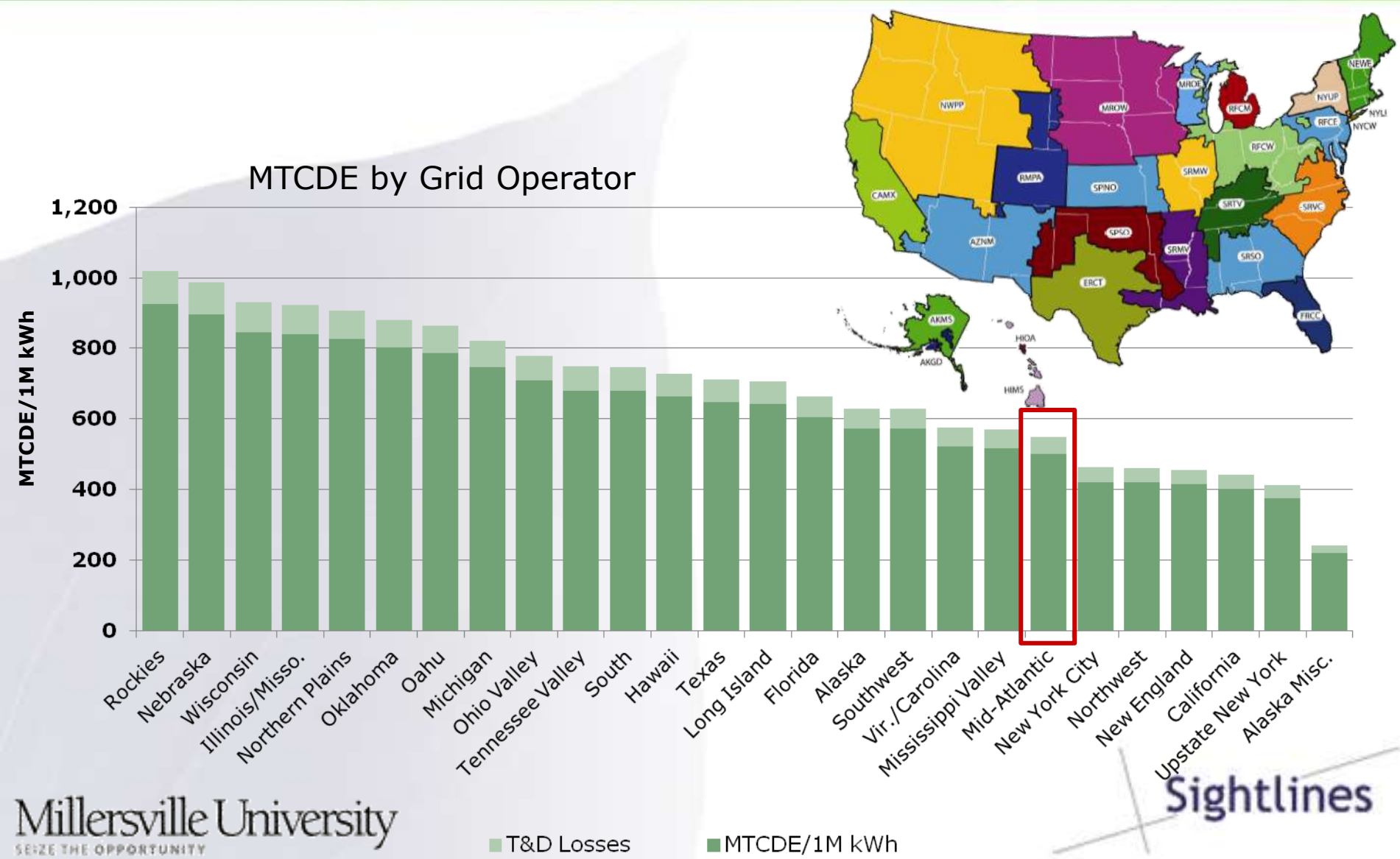
Fuel Mix of electric grid impacts emissions



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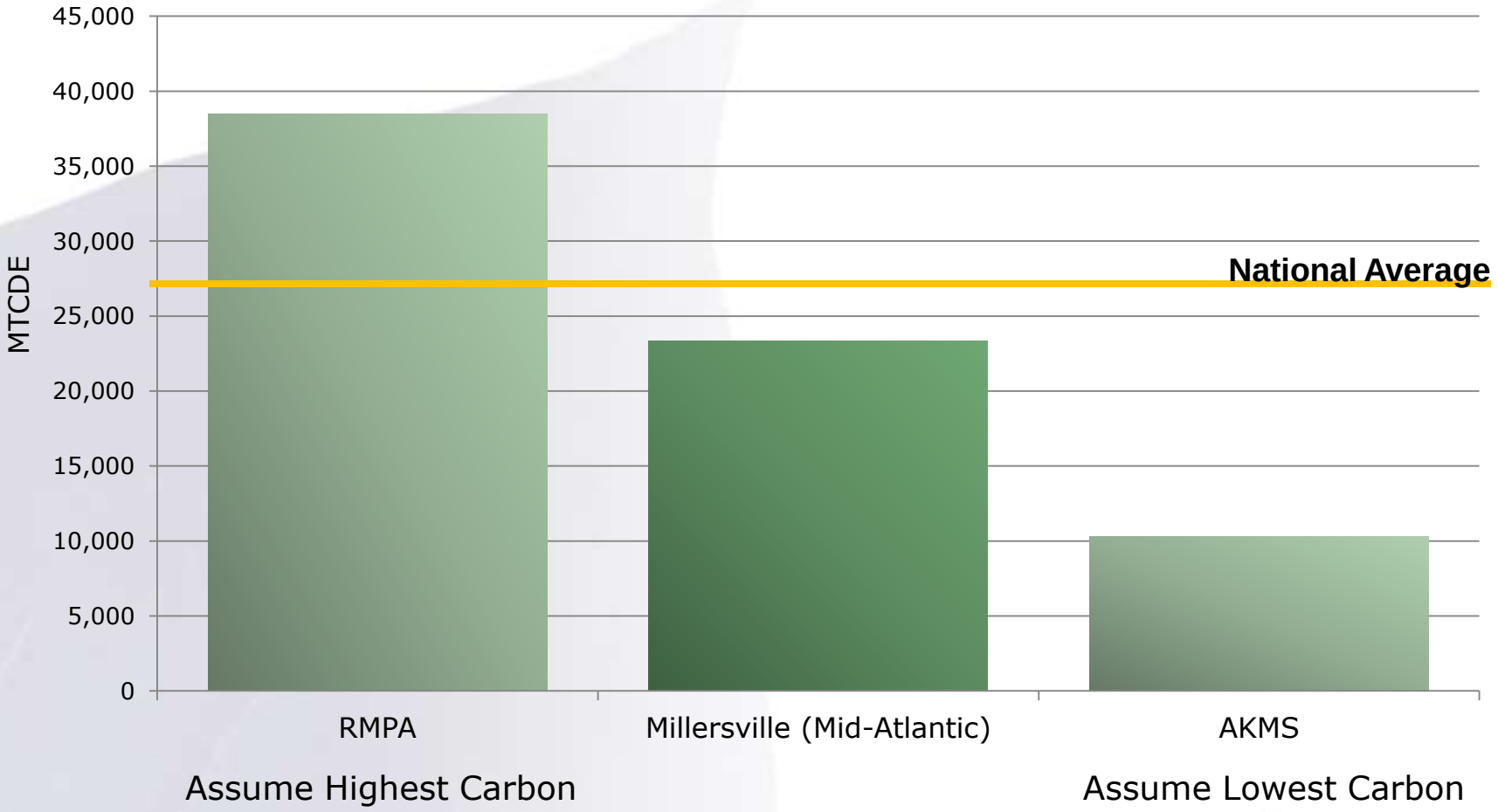
Impact of Regional Fuel Mix for Millersville



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Emissions from purchased electricity

Millersville is highest in the peer group

This graph shows how many emissions are produced for each kWh purchased based on the regional e-grid of each institution. Schools B, C, F, and H are all on the same e-grid as Millersville

Electric Carbon Emissions: 23,323 MTCDE
60% of '09 Total

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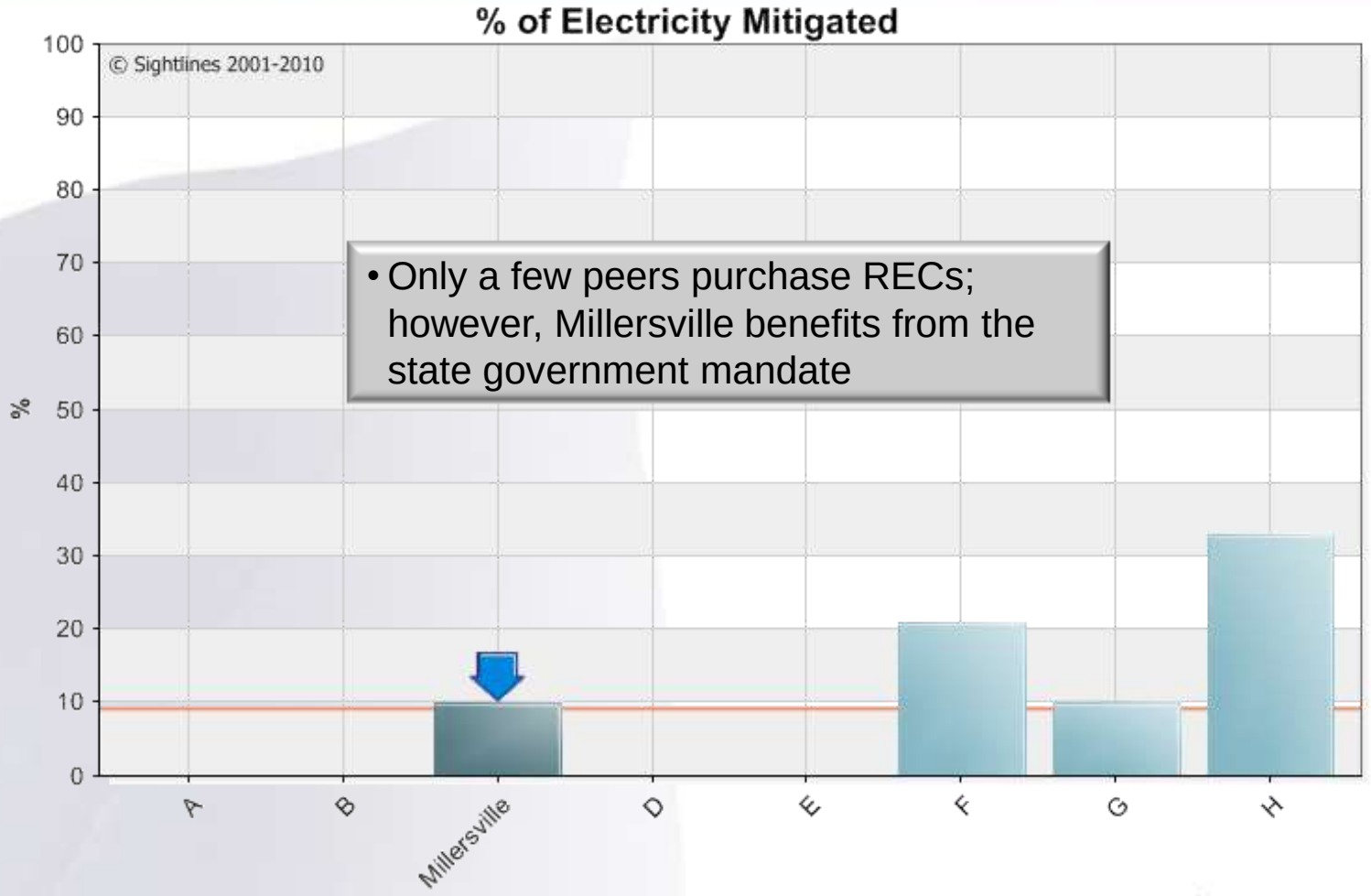
Mitigating Electricity

Purchasing Renewable Energy Credits



- Only a few peers purchase RECs; however, Millersville benefits from the state government mandate

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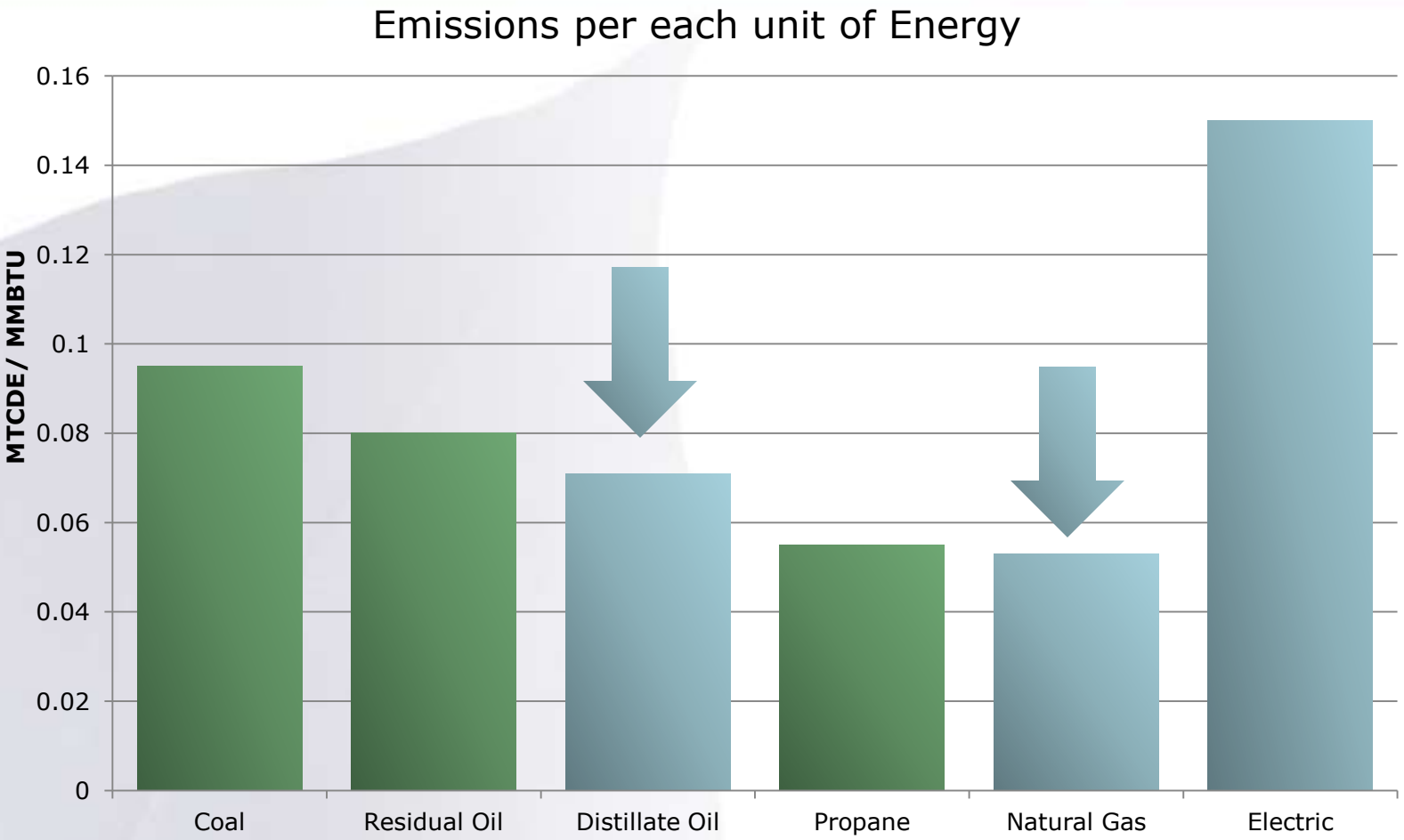
Mitigating Electricity

Analyzing the impact of using electric heat



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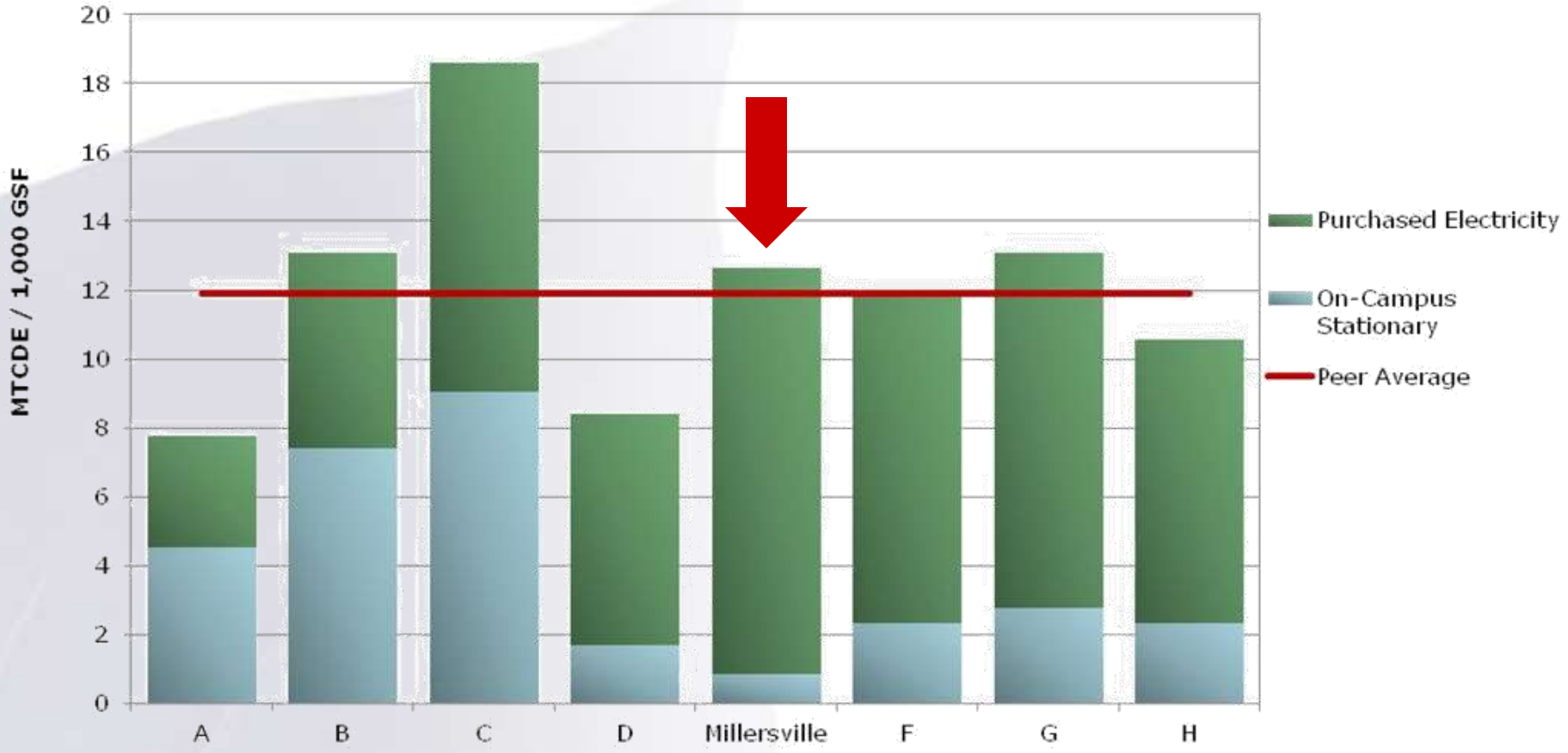
Total Emissions from Energy Consumption

Millersville is slightly above peer average



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Other Contributing Emissions

Summary of ancillary climate emissions

Scope 3 emissions represent 33% of total emissions

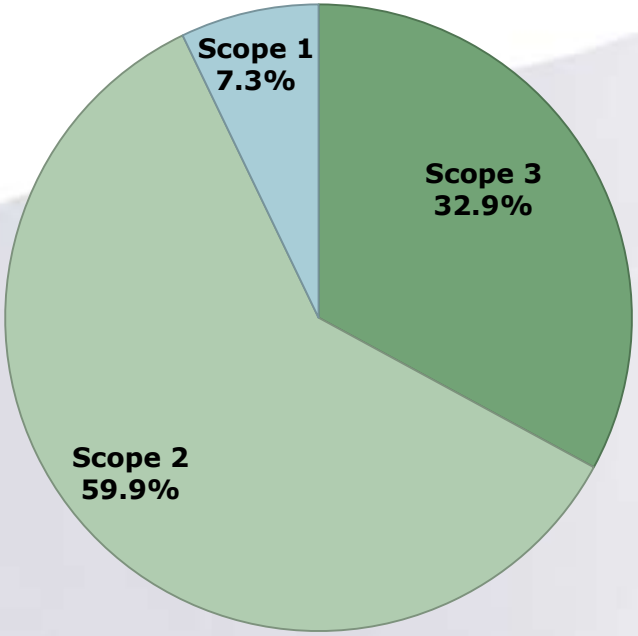
Emissions Source	FY09 Total MTCDE	Percent of FY09 Total
Student Commuting	5,696	14.6%
Scope 2 T&D Losses	2,307	5.9%
Faculty/ Staff Commuting	1,981	5.1%
Directly Financed Air Travel	1,505	3.9%
Study Abroad Air Travel	1,214	3.1%
Paper	95	0.2%
Wastewater	24	0.1%
Solid Waste	(11)	0.0%
Scope 3 TOTAL	**12,811**	**32.9%**

Commuting = 20%

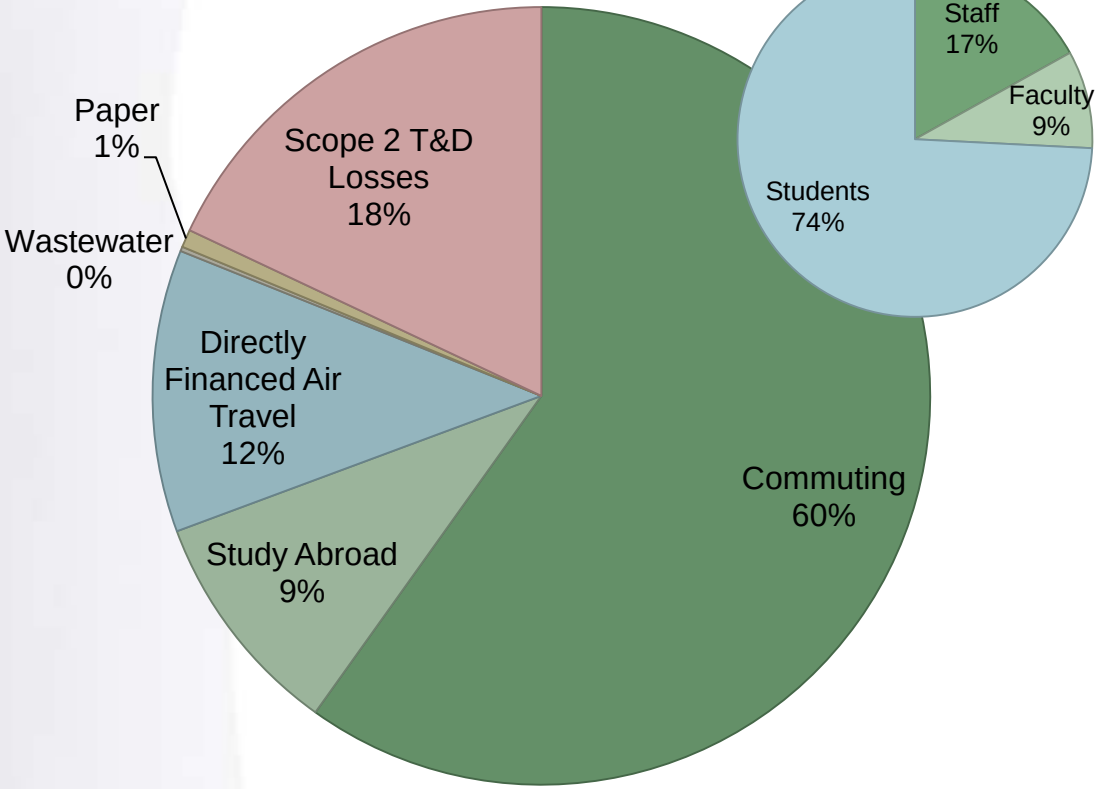
Air Travel = 7%

Components of Scope 3

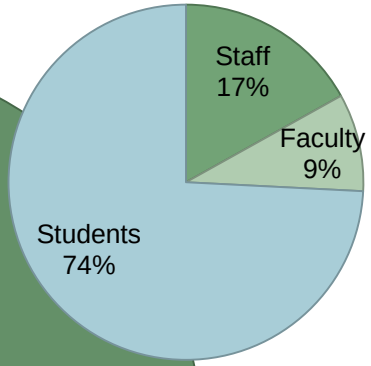
Carbon Emissions by Scope



Scope 3 Components



Commuting



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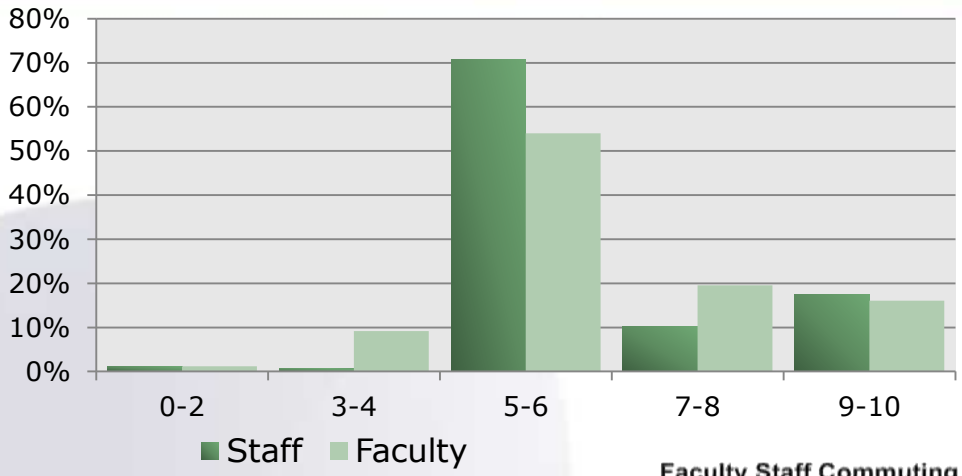
Commuting survey results

Majority of University employees drive to campus

How Often?

During a typical academic calendar week, how many roundtrips do you make to and from campus?



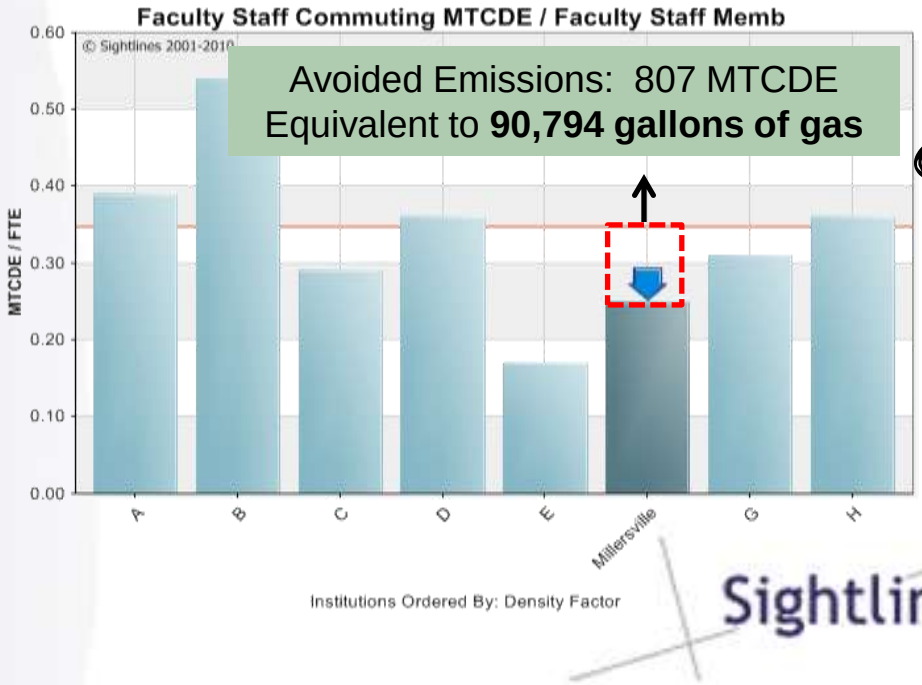
How Far?

	Average Trip Distance
Staff	10.4 miles
Faculty	8.9 miles

What Method?

What is your primary mode of transportation?

% who Drive to Campus (not including carpool)	
Staff	90%
Faculty	84%



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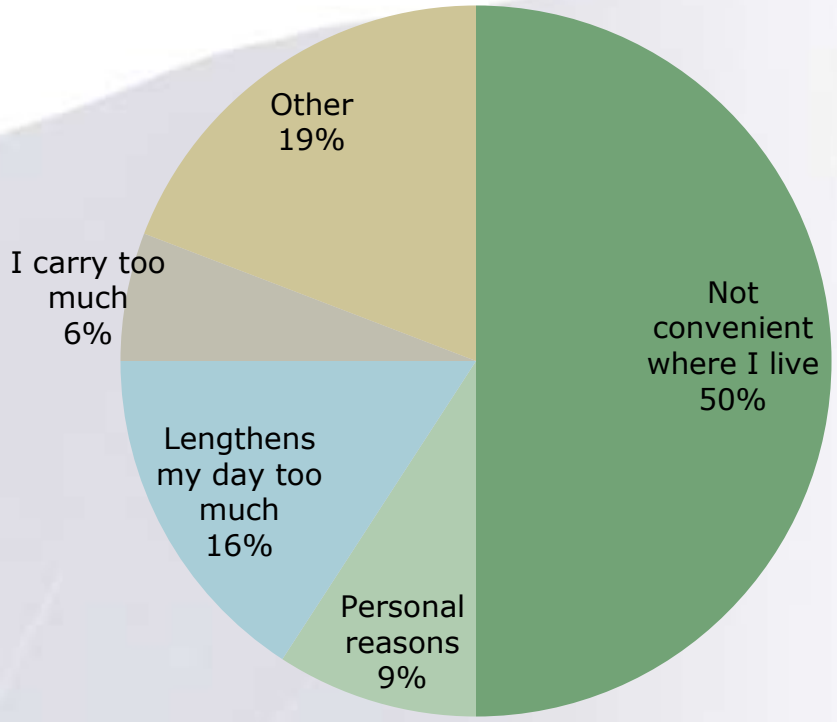
Transportation Survey

- What is the primary reason you do not use alternative transportation?



Summary of "Other"

- I work odd hours and the bus service does not run late into the night
- No one wants to ride the bus coming from work
- Mass transit is not near my house
- I take classes or have a second job so the schedule is not conducive
- No desire
- Not available where I live
- Need a vehicle for off-campus appointments
- Laziness
- I do errands before and after work
- My schedule fluctuates
- Do not carpool because schedules of co-workers do not match
- Too much traffic to bike to work, would love if there are dedicated cycling lanes
- Do not bike because no convenient facility to shower and change
- Would need a secure place to keep bike
- I am too old/do not have stamina/health reasons to bike/walk to work
- Biking is too hazardous
- Do not bike/walk because of weather reasons, or it is dark at end of work day

Transportation Survey

Other Comments / Suggestions

- Encourage the use of electric cars. Set up battery recharging stations outside buildings for faculty/staff to recharge their electric vehicles. Charge the faculty/staff employee the going university rate for electricity. Develop an automatic paycheck deduction process so the cost of recharging ones vehicle comes right off an employees paycheck.
- The University should offer alternative transportation incentives, such as subsidizing bus fares, carpooling costs, bonuses for not driving, etc.
- A parking deck near Lyle; Wickersham and Stayer would alleviate parking issues
- Create shuttle bus to/from Lancaster train station to/from MU campus.
- Perhaps going to a 4 day work week would be beneficial
- A parking lot on the other side of the Conestoga from the MU 'Bush' with a pedestrian bridge over the river would be fabulous. It would cut down on the number of cars coming in from the east and south that have to enter campus via 999 or Cottage Ave and deal with both MU and Manor High School traffic. A satellite parking lot like that, if made cheap, would siphon off a good bit of student car traffic, also, judging from the number of students who either park illegally or park on Creek Drive rather than buying a parking permit.
- Dorms, academic departments compete for the least amount of energy used or the most amount of recycling. The can win cool prizes provided by cool people(Dr. Mc Nairy) if they win....Large scale tree planting is needed. Strong environmental messages need to be handed down as priorities from the top, the president's office. Students, faculty, administrators have non factory farm days in the cafeteria to educate about the pollution associated with industrialized agriculture.
- It should be advertised that our Faculty ID card gives us free travel on the Lancaster - Millersville bus. I took the bus for a year before I found out I didn't have to pay!
- One option I would be in favor of would be to allow staff the option of working from home for a partial work week thereby reducing travel to work.
- Improve traffic patterns on and around campus to prevent unnecessary circling for parking spaces. Add spaces to compensate for decreased spaces and increased student and administrator numbers; actually, with adjunct faculty there are more faculty vehicles although there has been no increase of full-time faculty numbers . Consider how difficult it is to return to George St. and turn left onto George, all of which has been aggravated by one-way and decreased parking patterns introduced in the last 5 years. The Walking Mall long-range plan was invented when MU had 2,000 fewer students and fewer administrators and adjunct faculty.... Re-plan, please.
- Start a campaign to promote walking/riding bike to campus and offer incentives for those who do use methods of transportation that will cut down on pollution. An incentive could be something like free access to the gym in the SMC. Maybe PEBTF could start a larger campaign that would offer health care benefit savings for those who walk or ride bike? Maybe if there was on campus daycare more people could walk to campus with their children? Start a car-pool program so those who live further away could pick up those who aren't capable of walking on their way in.
- Switch university vehicles (mostly maintenance) to electric.
- This is unrelated to your survey, however I think you should know that some of the housekeeping staff empty the recycling bins into the trash regularly
- Restructure to add parking spaces--especially for faculty--NEAR classroom buildings, in my case, especially Hash which actually LOST spaces.
- Students driving to a different parking lot between classes...bad.
- Faculty & Staff driving to lunch...bad
- Campus should be more bike friendly..there are no bike lanes, narrow windy roads for all traffic, not enough bike racks, no PR for riding bikes. U. Calif. at Davis has 35% of student body biking to class...that is over 7000 students!!!! Why can't MU encourage biking and make parking on the periphery like many other campuses. We are becoming a campus of parking lots...UGLY. Our beautiful campus is really going down hill without the proper plants and maintenance of them. No landscape design whatsoever! No student involvement in campus landscaping. What a waste
- I carpooled for about 8 months and really liked that, but my partner took another job elsewhere...It saved us both money and we chatted the entire way to work. Was real nice!
- It would be great to have a direct shuttle from the Lancaster train station.
- It would be helpful to work 4 day work weeks - less miles on the car, less pollution in the air from driving less, less electricity used , less cost for daycare.
- Environmental impact isn't just about transportation...its also about recycling, re-use, eating locally and vegetarian, environmental design, combining trips when driving, etc.....
- We at Millersville are the single least green campus I am aware of. The water in our pond is toxically polluted, and ignored for years. Every year after the students leave in the Spring, we embark on a major tree decimation program, cutting down trees right and left. Students get no encouragement to recycle and control wasteful consumption.
- Our current jobs do not let us have the flex-time to commute. We have tried to commute but our schedules never seem to work together.
- The university should think about whether there are ways to encourage faculty/staff to live close to school.
- It might be worthwhile providing incentives for staff and faculty to form carpools with administrative assistance doing so.
- I'm amazed at how many people who live near campus who don't walk to work. Expenses for gas and automotive maintenance dropped drastically and insurance rates are lower.
- Parking is a nightmare! Instead of worrying about the gas it takes to get to MU, think about the gas it takes to circle endlessly in search of a parking space.
- It would be very helpful if somebody would send a request to the campus community to turn off lights after using classrooms. In many buildings, the lights are left on all day long.

Making an effort to "Go Green"

Recycling efforts on campus

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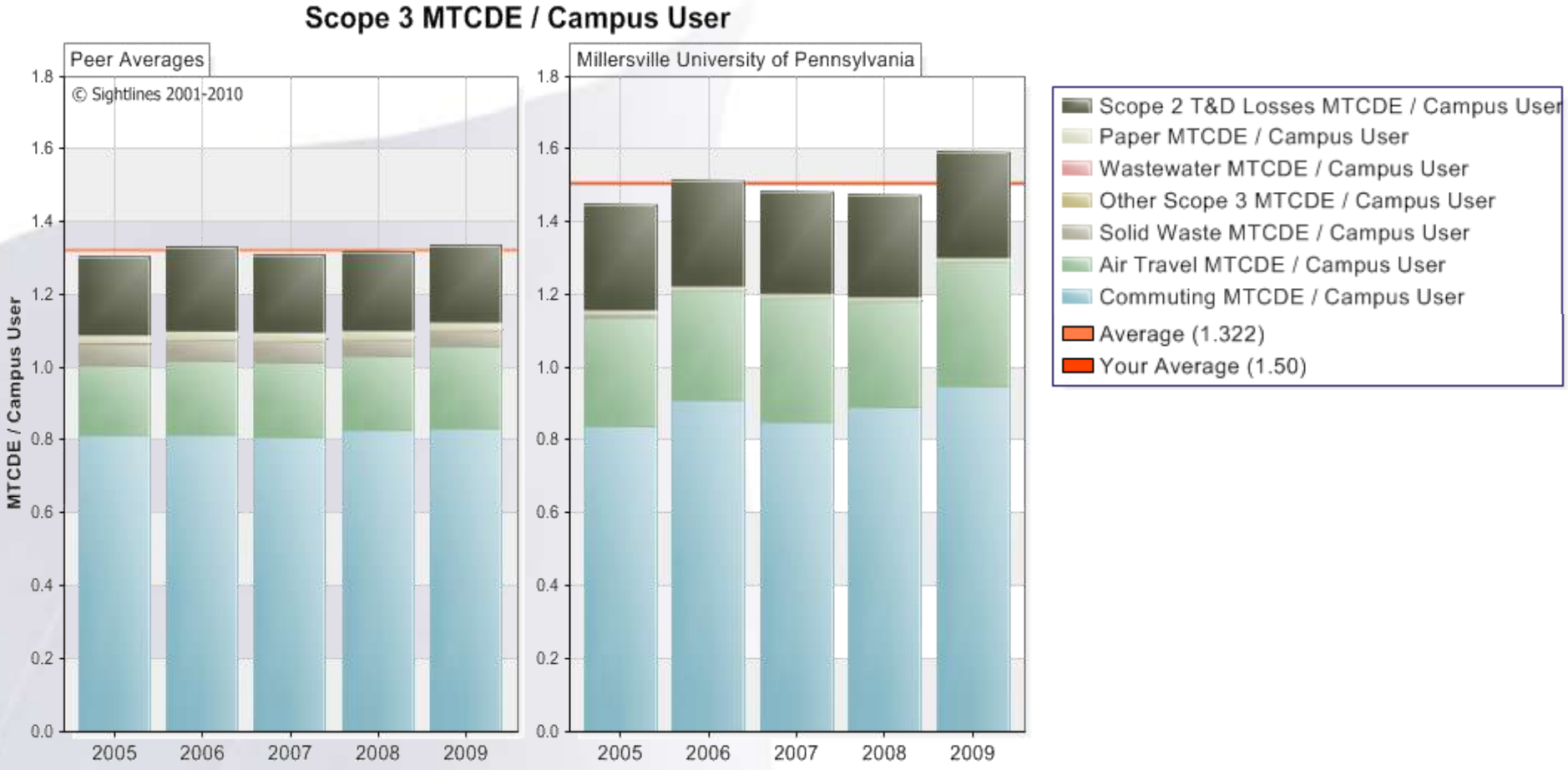
Scope 3 emissions slightly higher than peers

Commuting makes up 60% of Scope 3 Emissions



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Go-Green GHG Summary Benchmarks

National Benchmark Institutions

Institutions			
American University*	Hampshire College**	Southern Methodist University	University of Redlands**
Babson College*	Le Moyne College	Southern Oregon University**	University of Sand Diego
Bentley University**	Lewis & Clark College**	St. Lawrence University	University of San Francisco
Bowdoin College*	Loyola College in Maryland	Texas A&M University*	University of the Pacific
Carleton College*	Loyola Marymount University**	The Catholic University of America	University of Vermont**
Champlain College	Michigan State University	The University of Alabama	Vassar College
Clemson University**	Millersville University of PA	The University of Oklahoma**	Virginia Commonwealth University*
Davidson College	Mount Holyoke College	University of Arkansas**	Wagner College **
Eastern Oregon University	Nova Southeastern University	University of Dayton	Washington & Lee University *
Eckerd College*	Oregon Institute of Tech.**	University of Denver**	Wesleyan University*
Fitchburg State College**	Oregon State University**	University of Maryland*	Western Oregon University**
Gallaudet University	Rensselaer Polytechnic Institute	U Mass – Lowell	Williams College
George Mason University	Rowan University**	University of Michigan	
Grinnell College	Saint Mary's College of CA	University of Notre Dame	
Hamilton College**	Santa Clara University*	University of Oregon**	
Hamline University	Shippensburg University	University of Portland**	

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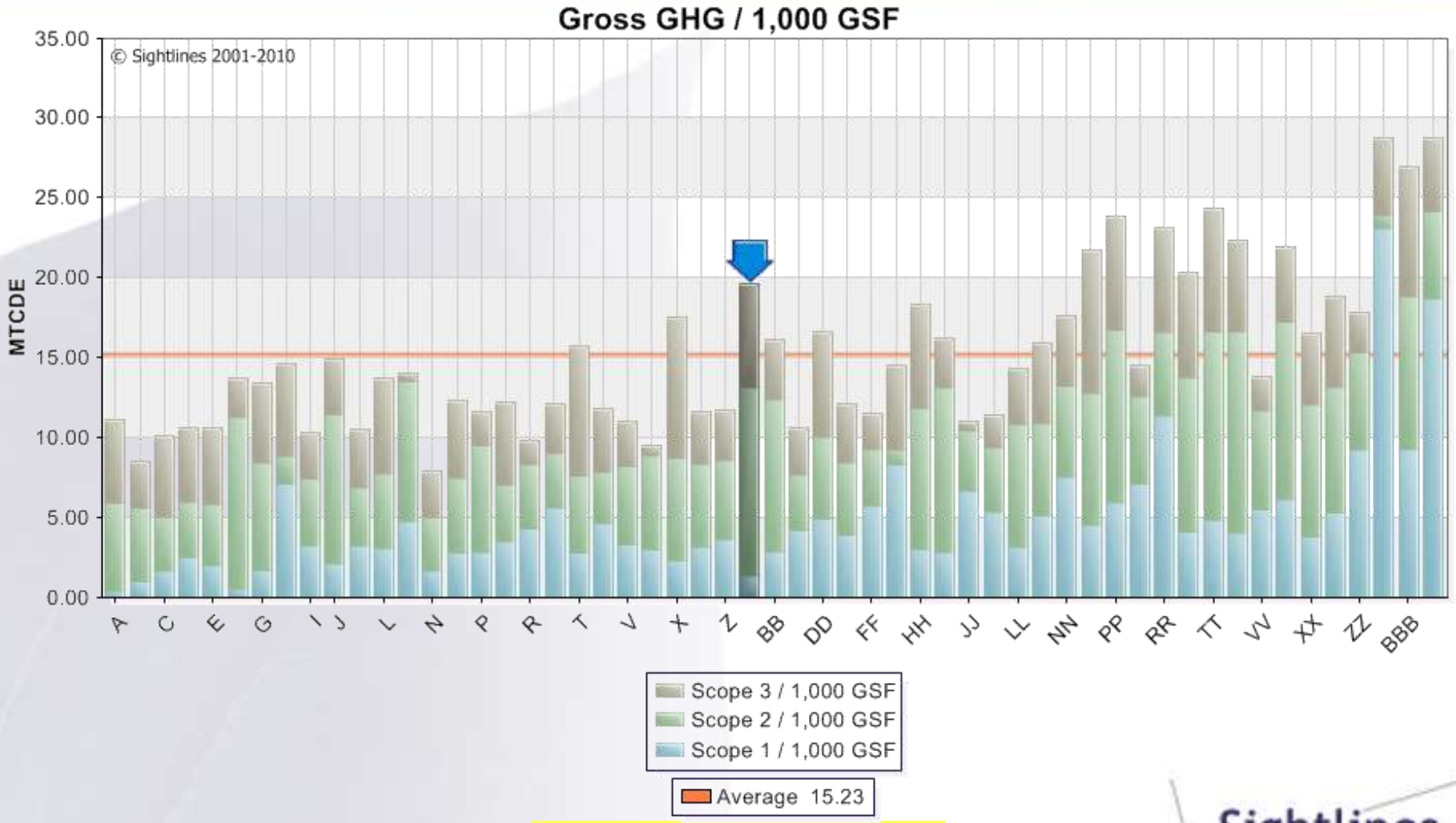
**ACUPCC Signatory*
***Charter Signatories of the ACUPCC*

Sightlines

Nationwide Benchmark

Millersville is higher than average because of high electric consumption



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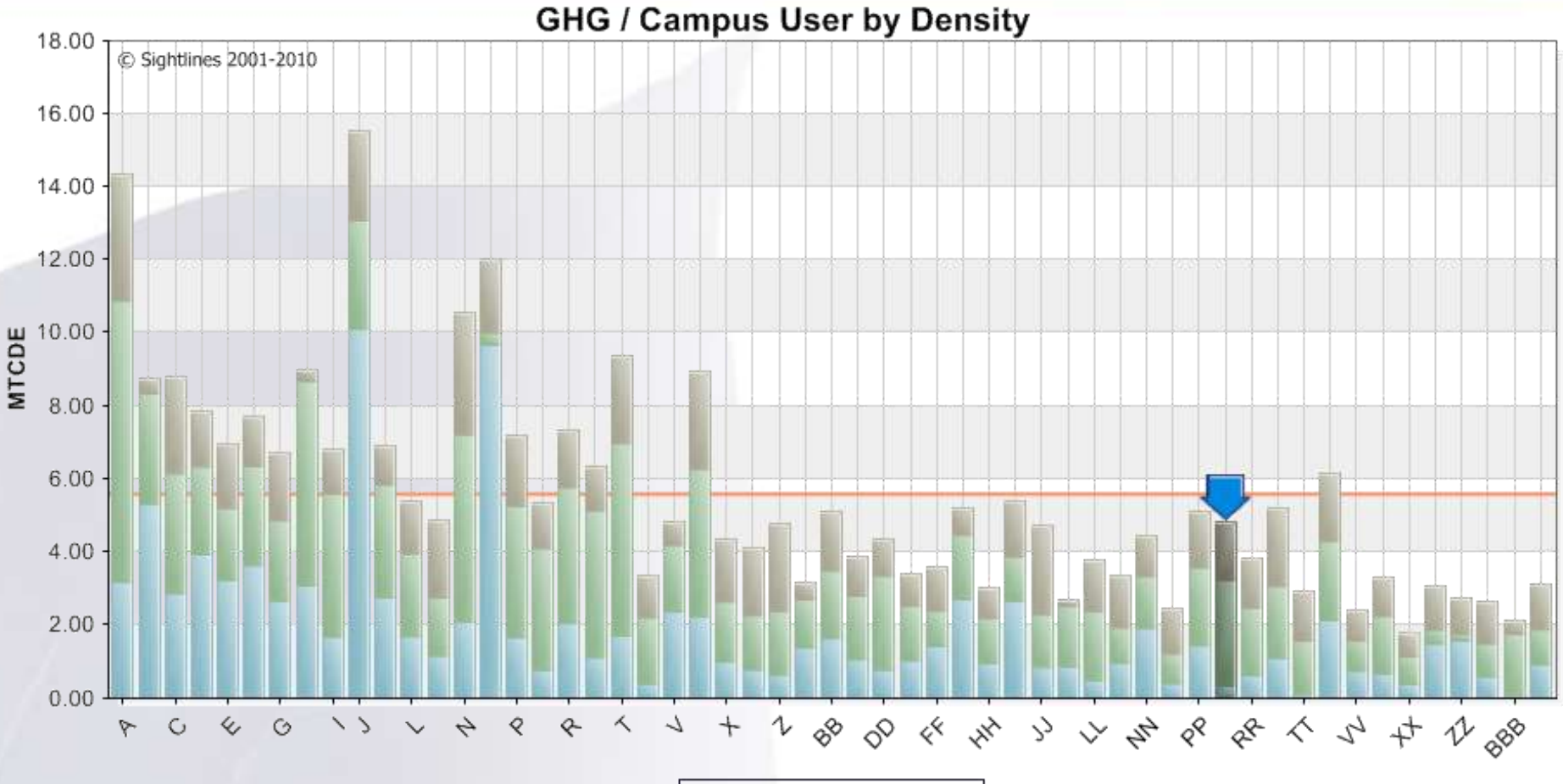
Sightlines

Density of campus impacts emissions

High density is large contributing factor for Scope 3 emission sources



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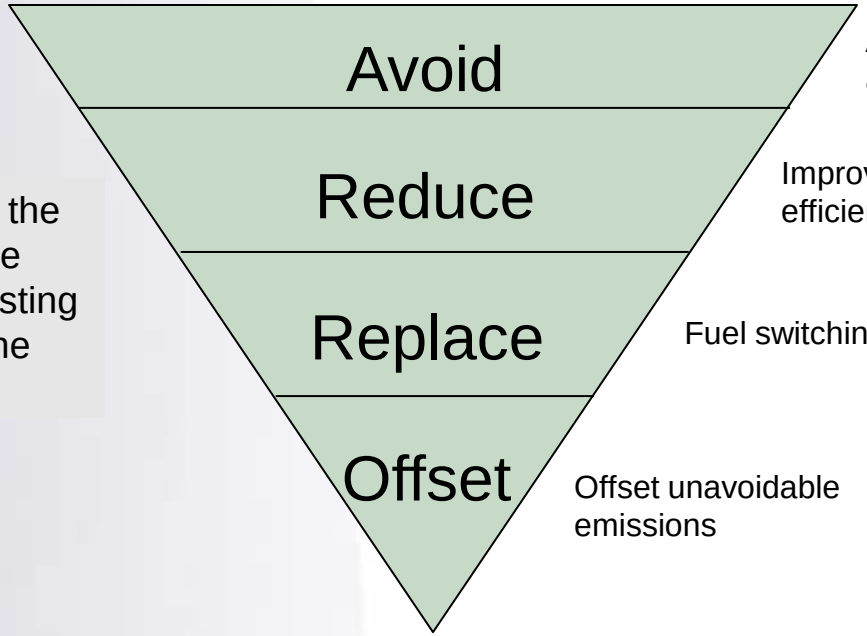
Sightlines

Providing perspective and moving forward

Actions at the top of the hierarchy are more transformative and lasting in reducing baseline emissions.



Avoid carbon-intensive activities

Improve operational efficiency

Fuel switching

Offset unavoidable emissions

Source: ACUPCC Voluntary Carbon Offset Protocol

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Sightlines

Sightlines

Questions & Discussion