
Commuting & Sustainability at Georgia Tech

The Impact of Commuting Behaviors & Policies on Scope 3 GHG
Emissions at Georgia Tech

Katie Maxwell
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Background

1/3 of all 4-year accredited universities in the U.S. have signed the Carbon Commitment

Georgia Tech signed in 2007 with a goal to be carbon neutral by 2050

2% of carbon emissions within the U.S. are contributed by universities

Commuting emissions are a top contributor to university GHG emissions



Climate Leadership Statement

We, the undersigned presidents and chancellors of colleges and universities, believe firmly in the power, potential, and imperative of higher education's key role in shaping a sustainable society. Not only are we deeply concerned about the increasing pace and intensity of global climate change and the potential for unprecedented detrimental impacts, but we also understand that technology, infrastructure, global interconnectedness, and our greatest asset – engaged, committed, smart students – allow us to explore bold and innovative solutions and to lead in climate action and sustainable solutions.

We have begun to experience the effects of climate change in our communities and we understand that these effects are projected to become more severe and damaging. We recognize that mitigation and adaptation are complementary strategies for reducing the likelihood of unmanageable change, managing the risks, and taking advantage of new opportunities created by our changing climate.

We believe colleges and universities must exercise leadership in their communities and throughout society by providing the knowledge, research, practice, and informed graduates

**What are the are the commuting behaviors and emissions at Georgia Tech?
What & the best opportunities for emissions reductions?**

Methodology

Goal:

Determine GT commute mode split & emissions baseline

Determine relative impact of policy interventions

Identify promising solutions based on unique GT characteristics

1

Analyze the 2019 Parking & Transportation Services commuter survey for commute modal split

2

Calculate commuting emissions utilizing the distance/mode-based methodology

3

Simulate commuting policy interventions to compare magnitude of emission reduction

4

Suggest policy interventions based on revealed commute preference, emissions impact, and stated alternative transit preferences

Commute Modal Split Results 2019

Faculty/Staff:

- Most employees drive alone
- Driving alone represents more of commute behavior than all other modes together
- Most popular modes: driving alone, MARTA rail, carpooling

Students:

- Driving alone is the largest single commute mode for students
- The majority of students use methods other than driving alone
- Most popular modes: walking, biking, campus transit

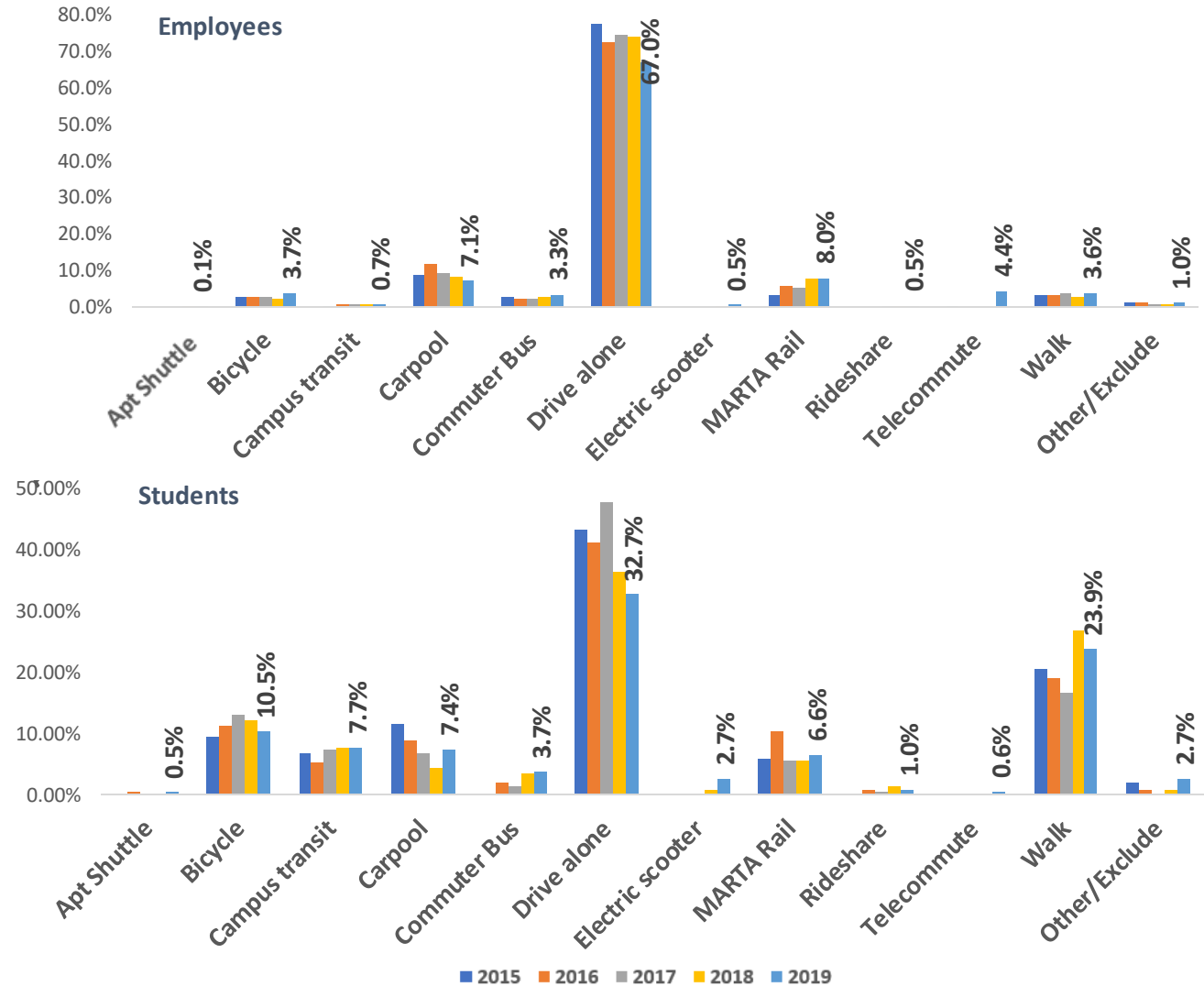
Commute Mode	Faculty		Staff		Students	
	% Trips	Miles/Trip	% Trips	Miles/Trip	% Trips	Miles/Trip
Automobile	66.28%	15.61	74.28%	19.61	35.35%	14.24
Bike	8.15%	5.09	1.44%	4.02	10.83%	3.62
Carpool	8.30%	11.87	8.01%	17.06	10.51%	11.84
Commuter Rail	8.65%	13.33	8.56%	14.43	6.80%	16.57
Light Rail		-		-	-	-
Public Bus	2.96%	18.03	4.84%	18.25	11.92%	12.12
Walk	5.65%	2.60	2.87%	3.15	24.59%	3.04

Commute Modal Split Trend

Difficulty comparing results year over year w/ survey size and population fluctuating

Commute mode split is staying relatively consistent across time

5 year comparison validates that 2019 results are reasonable

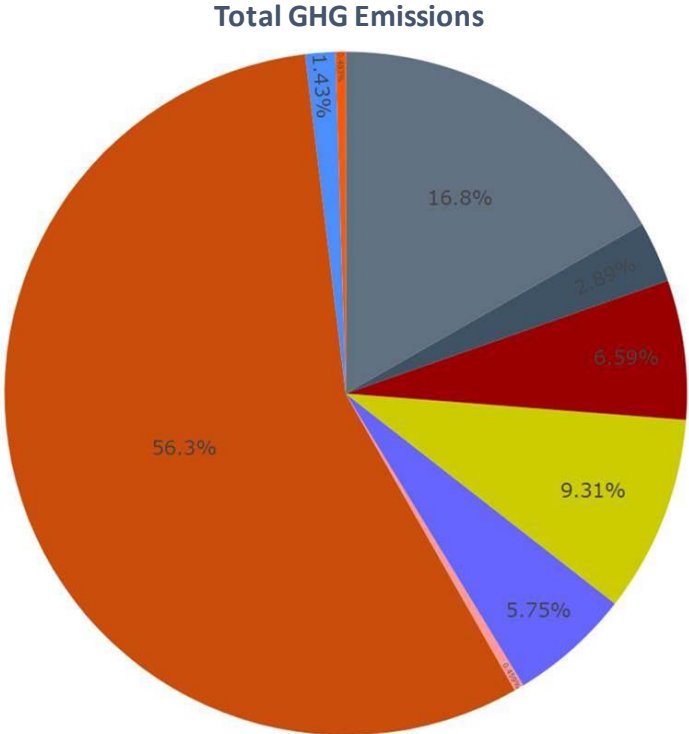
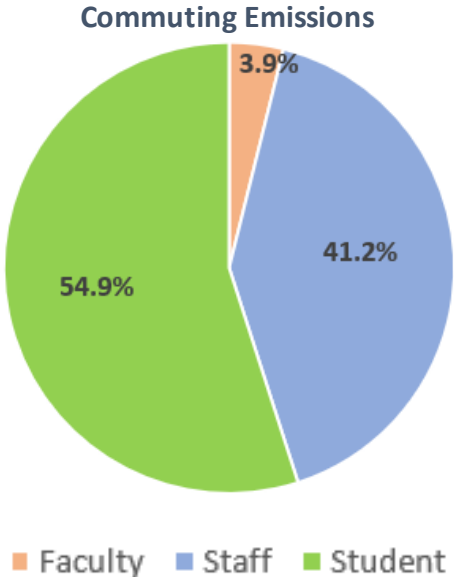


Commuting Emissions Results

2019 Commuting at Georgia Tech contributed 47,178 MTCO₂e

- Faculty are 3.1% of the population and represent 3.9% of the commuting emissions
- Staff are 22% of the population but represent 41% of commuting emissions
- Students are 74.8% of the population but generate 54.9% of commuting emissions

Commuting represents 10-15% of TOTAL GHG (255,190 MTCO₂e) emissions for Georgia Tech



- Other On-Campus Stationary
- Direct Transportation
- Refrigerants & Chemicals
- Purchased Electricity
- Faculty Commuting
- Staff Commuting
- Student Commuting
- Directly Financed Air Travel
- T&D Losses

Intervention Results

Magnitude of reduction potential is in line with emissions factors of commute mode

Increasing zero emission commute methods (walking, biking) has the largest reduction potential

Policies that increase all forms of alternative transit (multi-modal) are more impactful than increasing a single non-SOV vehicular mode

Commuting Invention	Total MTCO2E Commuting	MTCO2E Saved	% Drop from Baseline
2019 Baseline	47,178.01	-	-
Bus Intervention	46,456.60	721.41	1.53%
Rail Intervention	45,042.46	2,135.55	4.53%
Carpooling Intervention	45,005.81	2,172.20	4.60%
Multi-Modal Intervention	44,570.36	2,607.65	5.53%
Bicycling Intervention	43,429.69	3,748.32	7.95%
Walking Intervention	43,439.69	3,748.32	7.95%

Evaluation

1

Revealed commute preference

Commute Mode	Faculty		Staff		Students	
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2

Emissions reduction potential

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3

Stated commute policy preference

Encouraging Policies	Weighted Rank
Expanded regional transit options (rail, bus)	103.83
Increased financial incentives	96.64
Ability to telecommute	95.55
Express shuttle to popular destinations	76.15
Safe, convenient bike paths and routes	69.55

4

Stated alternative preference

Alternative Commute Preference	Weighted Rank
MARTA rail	68.83
Telecommute	56.38
Bicycle	55.22
Carpool	53.37
MARTA bus	49.45

Recommendations

Link & encourage regional transit

- * Better access to existing transit
- * Increase knowledge & use of subsidies

- 8% of population currently uses this mode
- Top-ranked encouraging policy
- 2 of the top 5 alternative transit modes
- Low current knowledge/usage of programs (11% utilization. 38% of commuters unaware)

Increase Non-SOV Financial Incentives

- * Increase knowledge & usage
- * Explore direct payments

- Multi-modal strategy outperforms single vehicular transit reduction
- 2nd most popular encouraging policy
- Average awareness discounts 55%
- Only 7% utilization incentives
- 38% aware but had not utilized

Support Carpool Usage

- * Help match carpoolers
- * Provide backup emergency transit

- Most carbon effective alternative vehicular transit mode
- 3rd most utilized mode faculty/staff
- Avg. 8.94% of commuting behavior
- 4th ranked preference for most likely alternative transit mode
- Only 1.8% have utilized a carpool partner match program

Thank You!

