CLIMATE ACTION PLAN
V.1.1

05.01.19

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AUBURN CLIMATE ACTION PLAN V 1.1
01 MAY 2019

NOTE: *Auburn University's Climate Action Plan is a living document, & throughout the implementation & review of the campus commitment the document will be regularly revised. Changes from previous versions will be summarized below to transparently show the modifications over time.*

CHANGES FROM PREVIOUS VERSION (19 NOVEMBER 2010)

- Significantly edited the document to remove outdated information, update structure, & provide clarity.
- Established new interim goals & added an entirely new goal for "other campus emissions."
- Revised baseline years for commuting & fleet goals.
- Revised near-term goals for purchasing & community engagement.
- Combined transportation initiatives for commuting.
- Updated emissions, electricity, & natural gas data.

CHANGES FROM PREVIOUS DRAFT VERSION (15 MAY 2010)

- Executive Summary
  - overall neutrality goal
  - preliminary emissions reductions targets
  - strategies for each of the five main areas of focus
- Extensive revision & clarification of Energy-related plan & actions based on ongoing Facilities Energy Reduction Planning.
- Established an overall strategy statement for each category, revised goals to be measurable, & identified individual focal areas as initiatives.
- Re-numbered all action recommendations to be individually identified for discussion (e.g. E.1.2)

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EXECUTIVE SUMMARY OF GOALS, TARGETS, & STRATEGIES

CLIMATE NEUTRALITY GOAL

As part of the United Nations Framework Convention on Climate Change, the Paris Agreement aims "to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels & to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius."[1]

According to the Intergovernmental Panel on Climate Change (IPCC), in order to achieve this ambitious international target of 1.5° Celsius in warming, we must limit atmospheric concentrations of CO2 to around 430 parts per million. Achieving these targets will require us to cut carbon pollution to zero by 2050.[2]

Given this currently accepted set of scientific conclusions, Auburn University will be part of the solution by pledging to:
REDUCE AUBURN CORE CAMPUS GREENHOUSE GAS EMISSIONS 100% FROM 2008 LEVELS BY 2050.

INTERIM REDUCTION TARGETS

The following plan includes many near-term actions. The relative contribution of these actions to reducing the university's greenhouse gas emissions remains undetermined at this point. As such, piloting potential action projects & quantifying the reductions achieved should stay top priorities for Auburn.

We have established ambitious, yet achievable, 5-year targets. In 2024, after implementing & tracking projects, Auburn will establish additional interim targets to create checkpoints leading to the 2050 carbon neutrality goal.

NEAR-TERM EMISSIONS TARGETS FOR AUBURN UNIVERSITY

By 2024, Auburn University will achieve a:

- 10% reduction from a 2008 baseline in electricity emissions;
- 40% reduction from a 2008 baseline in funded travel emissions;
- 15% cap in growth from a 2008 baseline in on-campus stationary combustion emissions;
- 30% reduction from a 2008 baseline in other campus emissions;
- 10% cap in growth from a 2014 baseline in commuting emissions; &
- 0% change from a 2014 baseline in campus fleet emissions.

Collectively these efforts mean Auburn University will reduce total emissions by 20% from a 2008 baseline.

KEY STRATEGIES

The following represent the overarching strategies Auburn plans to pursue in each of the major areas identified in the plan.

ENERGY

- Increase the efficiency of utility production & distribution systems.
- Improve the performance & efficiency of university building systems.
- Increase the use of energy-saving, energy-efficient, & renewable technologies & operational best practices.
- Increase energy awareness & energy conservation efforts by faculty, staff, & students.

TRANSPORTATION

- Improve tracking of funded travel for mileage & associated emissions & evaluation of reduction potential.
- Increase alternatives to single-occupancy vehicle (SOV) commuting for students, faculty, & staff.
- Increase use of transportation avoidance/elimination strategies.
- Improve the performance & reduce emissions associated with the campus fleet.
- Increase awareness of emissions associated with transportation choices by faculty, staff, & students.

PURCHASING

- Establish sustainable purchasing guidelines &/or best practices.
- Monitor & analyze campus purchasing trends to identify areas for emissions reductions.
- Increase awareness of emissions associated with purchasing choices by faculty, staff, & students.

GROUNDS

- Evaluate & manage for potential carbon sequestration through trees & plantings on core campus.
- Evaluate the potential for reducing building cooling loads by reducing the campus heat-island effect.
- Reduce peripheral emissions associated with water infrastructure by targeting water reduction measures.
- Increase awareness of the value of tree protection by faculty, staff, students, campus visitors, & contractors.

COMMUNITY ENGAGEMENT

- Increase understanding & awareness of climate change & the impact of behavioral choices & campus operations on university emissions.
- Increase depth of information & availability of campus resource use to the Auburn community.
- Increase participation from the campus community in creating & implementing solutions to reduce campus emissions.
- Expand inclusion of climate issues & emissions solutions into the campus curriculum.

[1] https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement.
[2] https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/.

INTRODUCTION & BACKGROUND

Auburn University demonstrates its commitment to sustainability in a number of ways. It is woven throughout the 2019 Strategic Plan & the Campus Master Plan, embodied within the Sustainability Policy, & brought to life through various academic, outreach, & operational practices. In other words, sustainability serves as a core value for Auburn University.

In keeping with the university's commitment, in September 2008 then President Jay Gogue signed the American College & University Presidents' Climate Commitment.[3] This plan outlines recommendations for Auburn's Climate Action Plan (CAP), which was one of the key tasks mandated by the commitment. The near-term recommendations that follow have been taken from the work of the original nine CAP Working Groups: Energy, Buildings, Information Technology (IT), Purchasing, Transportation, Grounds, Food & Dining, Community Engagement, & a Student group. Each group had ten to fifteen members who represented stakeholders from across campus (Appendix 4).

As with any public institution, the following plan remains contingent upon adequate funding, with an accurate accounting of the long-term costs & benefits of any mitigation action.

CURRENT REALITY

Auburn established 2008 as its baseline year for measuring progress toward the carbon neutrality goal. The original greenhouse gas analysis showed a total carbon footprint of 263053 MTCO2E with approximately 69% attributed to buildings, 23% associated with transportation, & the other 8% being tied to waste, fertilizers, refrigerants, & animal husbandry.

Since the initial inventory, progress toward reducing emissions has been mixed, at best (Appendix 1). While overall emissions (219,811.88 MTCO2E) now sit below the 2008 baseline, the primary driver behind the reduction has been improved analysis of data rather than huge gains in on-the-ground reductions. Actual reductions have, however, occurred in emissions associated with purchased electricity, waste, refrigerants, & animal husbandry. Given these reductions, approximately 69% of current emissions connect to buildings, 23% relate to transportation, & the remaining 8% comes from other sources.

Even though the university's commitment represents an absolute, rather than normalized, goal, contextualizing the progress made provides a greater appreciation for gains achieved thus far. In the time since 2008, campus square footage has increased by roughly 34% & the primary campus population has grown approximately 22%. Such growth poses serious challenges to reduction efforts, but the reductions achieved show an increasing level of efficiency across campus.

GOALS & TARGETS

The scientific community currently recommends a 100% reduction in carbon pollution by 2050 to stay within the global target of limiting warming to a 1.5˚ Celsius increase & to avoid the worst consequences of climate change. Other predictions of concern include rising energy costs (both electricity & gasoline) & the growing scarcity of resources. Auburn will use these & other current recommendations from the scientific community as the basis for goal & target development.

Based on comparisons from other campuses, evaluation of potential on Auburn's campus, & the current scientific recommendations, the following targets & goals have been established.

By 2024, Auburn University will reduce total emissions by 20% from a 2008 baseline. This will be achieved, in part, as a result of reaching the following targets:

10% reduction from a 2008 baseline in electricity emissions;

40% reduction from a 2008 baseline in funded travel emissions;

15% cap in growth from a 2008 baseline in on-campus stationary combustion emissions;

30% reduction from a 2008 baseline in other campus emissions;

10% cap in growth from a 2014 baseline in commuting emissions; &

0% change from a 2014 baseline in campus fleet emissions.

By 2030, Auburn University will reduce total emissions by 40% from a 2008 baseline.

By 2050, Auburn University will reduce total scope 1, 2, & 3 emissions by 100% from a 2008 baseline.

Progress toward these goals & targets will be examined annually & will be updated at a minimum of every 5 years.

EVALUATION & TRACKING

Because of the uncertainty surrounding technological potentials, financial considerations, & the likelihood of new global targets based on scientific evidence, Auburn's CAP should be regularly re-evaluated. Ideally, the Auburn CAP should be evaluated with stakeholder input at least every 2.5 years & an emissions inventory should be conducted every fiscal year.

In addition, the financial costs & savings of the actions within this plan must be regularly evaluated & accurately quantified. Traditional financial analyses, such as simple or discounted payback periods, often do not capture the long-term costs & savings of the project itself or those found in other sub-systems (e.g. the effects of lighting retrofits on heating & cooling systems). As such, using life-cycle cost analysis to evaluate both CAP-recommended & campus projects, in general, would be a better approach to capture the full range of implications.

ENERGY

ENERGY BACKGROUND

Building-related energy continues to represent the largest portion of our carbon footprint. Given it was the primary concern of the buildings & IT groups, this section includes strategies designed to address utilities, buildings, & IT. In order to counteract building-related emissions, rising energy costs & rising consumption due to an increase in campus square footage, the following recommendations stress energy conservation through new technology & behavior change & the introduction of renewables.

Fortunately, Auburn has already made a good start in reducing campus energy intensity by developing & implementing an Energy Reduction Strategy (ERS). The ERS aligns with the CAP & targets reductions in purchased electricity, natural gas, & water.

NEAR-TERM ENERGY GOALS

By 2024, Auburn University will achieve a:

10% reduction from a 2008 baseline in electricity emissions; &

15% cap in growth from a 2008 baseline in on-campus stationary combustion emissions.

OVERARCHING ENERGY STRATEGY

Auburn University will work to reduce energy usage, utility consumption, energy costs, & the University's carbon footprint by utilizing the following strategies:

- Increase the efficiency of utility production & distribution systems.
- Improve the performance & efficiency of university building systems.
- Increase the use of energy-saving, energy-efficient, & renewable technologies & operational best practices.
- Increase energy awareness & energy conservation efforts by faculty, staff, & students.

A consistent & steady investment of university funds must be made, in conjunction with other university requirements & needs, to successfully implement this strategy.

ENERGY ACTIONS

INITIATIVE 1: IMPROVE MONITORING, PERFORMANCE & EFFICIENCY OF EXISTING BUILDING SYSTEMS.

E.1.1 ~ Develop & implement a long-term, retro-commissioning plan for all buildings.

E.1.2 ~ Develop a priority list for efficiency upgrades by completing comprehensive building energy audits.

INITIATIVE 2: BUILD NEW BUILDINGS TO ACHIEVE THE HIGHEST FEASIBLE ENERGY EFFICIENCIES.

E.2.1 ~ Modify project design & review process to include full life-cycle energy cost analysis rather than simple payback period, discounted payback period, or simple cost-benefit analysis.

E.2.2 ~ Develop commissioning standards for new building & building renovations. This should include different levels of commissioning to reflect the type of building based on its primary use.

INITIATIVE 3: IMPROVE EFFICIENCY OF ENERGY-INTENSIVE BUILDING SUB-SYSTEMS.

E.3.1 ~ Upgrade computer labs with efficiency as a key goal.

E.3.2 ~ Develop an education/training program for distributed IT managers to establish best practices for computer energy & e-waste reduction.

E.3.3 ~ Adopt EPEAT standards as a requirement for campus computer purchases, including peripherals.

E.3.4 ~ Investigate centralized computer power management system that allows IT managers to remotely shut the system down, but also bring it online for updates, repair, time-clocking, & to activate systems sequentially in the morning to prevent overload on the network.

E.3.5 ~ Investigate the use of thin clients for base level computing needs.

E.3.6 ~ Move toward centralized networked printers.

E.3.7 ~ Develop a strategy for reducing electricity consumption from computer peripherals.

E.3.8 ~ Evaluate becoming a partner with the US DoE/EPA Labs21 Program to expand campus laboratory energy savings & best practices.

INITIATIVE 4: EDUCATE & EMPOWER BUILDING OCCUPANTS TO REDUCE ENERGY CONSUMPTION.

E.4.1 ~ Develop a campus-wide education program regarding energy conservation that addresses behaviors, appliance & research equipment selection, & building systems set- back policies.

E.4.2 ~ Create a committee on campus energy education & behavioral change composed of the energy

manager, staff, faculty, & students to provide input on a campus energy plan & develop an implementation schedule.

INITIATIVE 5: DEVELOP A RENEWABLE ENERGY STRATEGY.

E.5.1 ~ Install at least one pilot project on campus in the three renewables areas [solar thermal pre-heat, solar electric photovoltaic, biomass gasification].

E.5.2 ~ Conduct a comprehensive review of all heating applications on campus for the potential of solar thermal substitution or pre-heating applications in conjunction with existing equipment.

INITIATIVE 6: USE ADMINISTRATIVE/POLICY SOLUTIONS TO EXPAND EFFICIENCY & EMISSIONS REDUCTION ON CAMPUS, & EVALUATE CAMPUS OPERATIONS FOR EMISSIONS OFFSETS.

E.6.1 ~ Revise university policies to ensure continued improvement regarding energy efficiency.

E.6.2 ~ Develop a campus energy strategic plan.

E.6.3 ~ Investigate & implement creative funding strategy for efficiency projects similar to Harvard's Green Campus Loan Fund.

E.6.4 ~ Investigate possibilities for collaboration to reduce emissions associated with purchased energy.

E.6.5 ~ Evaluate need for additional energy reduction staffing & develop prioritized staffing plan if the evaluation Indicates a need.

E.6.6 ~ Develop a strategy to offset emissions by exploring the potential for university lands or outreach projects to serve as carbon offsets.

TRANSPORTATION

TRANSPORTATION BACKGROUND

Transportation-related activities compromise the second largest source of campus greenhouse gas emissions. At the same time, data for determining transportation-related emissions on campus are the most uncertain. In order to address transportation emissions on campus in the long term, additional data collection & analysis measures must be put into place.

There are three main components within transportation: directly financed travel (air & ground travel supported with university funds), commuting (faculty/staff/students), & campus fleet.

NEAR-TERM TRANSPORTATION GOALS

By 2024, Auburn University will achieve a:

40% reduction from a 2008 baseline in funded travel emissions;

10% cap in growth from a 2014 baseline in commuting emissions; &

0% change from a 2014 baseline in campus fleet emissions.

OVERARCHING TRANSPORTATION STRATEGY

Auburn University will work to reduce emissions from transportation, fuel costs, & the university's carbon footprint by utilizing the following strategies:

- Improve tracking of funded travel for mileage & associated emissions & evaluation of reduction potential.
- Increase alternatives to single-occupancy vehicle (SOV) commuting for students, faculty, & staff.
- Increase use of transportation avoidance/elimination strategies.
- Improve the performance & reduce emissions associated with the campus fleet.
- Increase awareness of emissions associated with transportation choices by faculty, staff, & students.

A consistent & steady investment of university funds must be made, in conjunction with other university requirements & needs, to successfully implement this strategy.

TRANSPORTATION ACTIONS

INITIATIVE 1: IMPROVE MONITORING & UTILIZATION OF EXISTING CAMPUS TRANSPORTATION RESOURCES.

T.1.1 ~ Conduct an annual evaluation of campus transportation resources & needs through: transportation mode surveys for faculty, staff, & students; parking occupancy surveys; & mileage logs per fleet vehicle, in part to identify high travel units in fleets.

T.1.2 ~ Work with Payment & Business Services to establish a travel accounting system that allows determination of miles traveled for ground & air trips using university funds.

INITIATIVE 2: IMPLEMENT SOLUTIONS THAT REDUCE OR ELIMINATE THE NEED FOR TRAVEL.

T.2.1 ~ Evaluate telecommuting, flex work hours, & other options for employees. If needed, develop an awareness campaign for supervisors & employees.

T.2.2 ~ Evaluate the potential for expanded use of off-campus video conferencing.

INITIATIVE 3: REDUCE THE USE OF SOVs FOR COMMUTING.

T.3.1 ~ Develop a program for evaluating barriers to non-SOV transportation & establish an education campaign for behavioral change on campus.

T.3.2 ~ Develop incentives for not regularly bringing a car on campus.

T.3.3 ~ Evaluate the potential for increasing parking permit fees for vehicles to reflect the cost of parking facilities. Any increases in parking fees should not penalize lower paid employees, but should be scaled as a proportion of salary (similar to healthcare benefit for campus staff).

T.3.4 ~ Develop an education program targeting students & parents before they arrive on campus to reduce the number of cars brought initially.

INITIATIVE 4: REDUCE THE NEED FOR ON-CAMPUS TRAVEL.

T.4.1 ~ Evaluation of all campus forms & paperwork for the potential of using an electronic signature to eliminate on-campus document movement.

T.4.2 ~ Support & promote the use of on-campus video conferencing for meetings.

INITIATIVE 5: CONTINUE TO REDUCE THE EMISSIONS FROM CAMPUS FLEET.

T.5.1 ~ Move toward small electric vehicles for on-campus service needs as vehicles are replaced. Establish vehicle replacement schedule targeting both high travel need units (give priority of efficiency to the units with greatest required travel) & the most inefficient vehicles in campus fleet

T.5.2 ~ Continue use of electric vehicles & consideration of low-emission equipment for Landscape Services.

T.5.3 ~ Incorporate biodiesel (preferably from on-campus biofuels research) into fleet diesel vehicles.

INITIATIVE 6 – USE ADMINISTRATIVE SOLUTIONS TO REDUCE TRANSPORTATION MILES & RELATED EMISSIONS.

T.6.1 ~ Develop a comprehensive campus transportation plan that addresses funded travel, fleet, & commuting.

T.6.2 ~ For efficient management, increase communication between units associated with transportation or examine the potential for consolidating transportation-related administration on campus (parking, traffic, Tiger Transit, pedestrian, bicycling) into a single reporting line (currently transportation administration occurs through both Auxiliary Services & Facilities).

PURCHASING

PURCHASING BACKGROUND

Given the significant contribution of university purchased items to overall emissions, purchasing solutions can play an integral part in reducing building energy consumption & transportation emissions.

NEAR-TERM PURCHASING GOALS

By 2024, Auburn University will:

Publish sustainable purchasing guidelines & guidance; &

Improve tracking & analysis of university purchased items as they relate to emissions.

OVERARCHING PURCHASING STRATEGY

Auburn University will work to reduce emissions associated with items purchased with university funds by utilizing the following strategies:

- Establish sustainable purchasing guidelines &/or best practices.
- Monitor & analyze campus purchasing trends to identify areas for emissions reductions.
- Increase awareness of emissions associated with purchasing choices by faculty, staff, & students.

A consistent & steady investment of university funds must be made, in conjunction with other university requirements & needs, to successfully implement this strategy.

PURCHASING ACTIONS

INITIATIVE 1: ADOPT A BLANKET SUSTAINABLE PURCHASING POLICY.

P.1.1 ~ Create & adopt a sustainable purchasing policy.

P.1.2 ~ If the initial sustainable purchasing policy is framed as guidelines & preferences, then once adopted, regular (every 2-3 years) evaluation, with consideration of the potential need for purchasing mandates, should be conducted.

INITIATIVE 2: GATHER & ANALYZE PURCHASING DATA AS IT RELATES TO ENERGY USE & WASTE PRODUCTION TO DEVELOP REDUCTION GOALS & STRATEGIES.

P.2.1 ~ Evaluate the potential for a centralized system with the ability to track purchases on campus & analyze the potential impact on energy use & waste production.

P.2.2 ~ Develop a prioritized list of items purchased on campus that potentially have the largest impact on campus emissions.

P.2.3 ~ Determine the contribution to the campus waste stream from packaging & shipping materials for consideration of waste minimization targets in contracts.

P.2.4 ~ Communicate with vendors holding existing contracts to express the campus interest in efficiency (utilities & transportation) & waste reduction options to see what they might voluntarily offer or have in place.

INITIATIVE 3: INCORPORATE "BEST PRACTICES" FOR SUSTAINABLE PURCHASING INTO THE OPERATIONS OF CENTRALIZED & DECENTRALIZED PURCHASING DECISIONS ON CAMPUS.

P.3.1 ~ Create a multi-stakeholder group to assist in evaluating the "best sustainability choices" for major &/or high-volume purchasing.

P.3.2 ~ As existing contracts come up for revision & renewal, the specific details of the sustainability considerations for that product/product class should be evaluated by PPS, decentralized purchasers, & the stakeholder group mentioned above to provide guidance on best practices.

P.3.3 ~ Develop an education campaign targeting decentralized purchasers on campus to encourage purchasing decisions with emissions reductions in mind.

GROUNDS

GROUNDS BACKGROUND

Grounds-related emissions do not account for a large component of Auburn's carbon footprint. The two direct grounds-related emissions sources consist of the application of fertilizers & the fuel to operate landscaping.

However, campus grounds policies & decisions related to tree canopy shade, managed or unmanaged landscapes (restoration & conservation areas), pavement & sidewalks (amount, permeability, & material color) all have indirect effects through their contribution to the "heat island effect" on campus & the implications for building cooling loads. In addition, while stormwater & general water usage do not have a measurable effect on campus emissions, they do contribute to overall regional emissions levels (e.g. energy required to purify &/or pump water for delivery to campus) & are directly connected to how the university manages its landscape.

NEAR-TERM GROUNDS GOAL

By 2024, Auburn University will establish a baseline inventory for campus trees & plantings & calculate the carbon sequestration potential.

OVERARCHING GROUNDS STRATEGY

Auburn University will work to reduce emissions associated with campus grounds by utilizing the following strategies:

- Evaluate & manage for potential carbon sequestration through trees & plantings on core campus.
- Evaluate the potential for reducing building cooling loads by reducing the campus heat-island effect.
- Reduce peripheral emissions associated with water infrastructure by targeting water reduction measures.
- Increase awareness of the value of tree protection by faculty, staff, students, campus visitors, & contractors.

A consistent & steady investment of university funds must be made, in conjunction with other university requirements & needs, to successfully implement this strategy.

GROUNDS ACTIONS

INITIATIVE 1: ADVANCE ENERGY SAVINGS, POTENTIAL CARBON SEQUESTRATION, & DIRECT EMISSIONS REDUCTIONS THROUGH CAMPUS LANDSCAPING SOLUTIONS.

G.1.1 ~ Continue support for regularly updated Campus Tree Inventory & include calculation of carbon sequestration through core campus plantings.

G.1.2 ~ Develop existing academic GIS resources to provide support, along with the Tree Inventory, to be able to monitor & assess campus tree canopy cover & shade zones.

G.1.3 ~ Increase the tree canopy in managed areas of campus by 5% per decade over the next 30 years & promote a healthy urban forest by continuing a robust tree planting program, enhancing tree maintenance, & implementing more stringent tree protection measures.

G.1.4 ~ Meet requirements of the Arbor Day Foundation for yearly recertification as a Tree Campus USA.

G.1.5 ~ Form a working group to examine the potential for conservation & restoration of campus lands.

G.1.6 ~ Include campus fertilizer application in a centralized data collection system for emissions monitoring & examine the potential for minimizing fertilizer application.

INITIATIVE 2: REVISE UNIVERSITY POLICIES TO ALLOW LANDSCAPE SERVICES TO OPTIMIZE CAMPUS TREE MANAGEMENT, CANOPY COVER, FERTILIZER APPLICATION, & WATER USE.

G.2.1 ~ Revise Auburn University Tree Preservation Policy to:

a) expand policy scope to include new construction, general operations, Telecom, & vendors;
b) impose punitive penalties for tree damage that cover tree value, removal, & replacement; &
c) establish a tree replacement fund to be funded by penalties & donations.

INITIATIVE 3: INCLUDE WATER-RELATED CONSIDERATIONS ALONGSIDE EMISSIONS REDUCTION CONCERNS.

G.3.1 ~ Continue active management of landscape irrigation practices begun in 2008.

G.3.2 ~ Develop a stormwater management plan for Auburn's campus that calls for widespread use of drains, bioswales, rain gardens, creek daylighting, constructed wetlands, cisterns, & other best management practices.

G.3.3 ~ Increase the use of porous paving alternatives wherever appropriate on campus when replacing old or installing newly paved ground surfaces.

COMMUNITY ENGAGEMENT

ENGAGEMENT BACKGROUND

While the specific percentages remain unknown, a considerable link between individual behaviors & Auburn's carbon footprint exists, as well as the connection to costs associated with utilities & transportation. Conservation through behavior change also goes hand in hand with recommendations for deploying the best efficiency technology & the introduction of renewable energy production on campus.

NEAR-TERM ENGAGEMENT GOAL

By 2024, Auburn University will:

Increase understanding of & participation in campus emissions reduction programs; &

Increase performance on the curriculum & research credits in the Sustainability, Tracking, Assessment, & Rating System from the 2013 baseline.

OVERARCHING ENGAGEMENT STRATEGY

Throughout CAP implementation, Auburn will work to engage the campus & surrounding community to reduce the university's carbon footprint by utilizing the following strategies:

- Increase understanding & awareness of climate change & the impact of behavioral choices & campus operations on university emissions.
- Increase depth of information & availability of campus resource use to the Auburn community.
- Increase participation from the campus community in creating & implementing solutions to reduce campus emissions.
- Expand inclusion of climate issues & emissions solutions into the campus curriculum.

A consistent & steady investment of university funds must be made, in conjunction with other university requirements & needs, to successfully implement this strategy.

ENGAGEMENT ACTIONS

INITIATIVE 1: DEVELOP A CAMPUS-WIDE CAMPAIGN TO EDUCATE/RAISE AWARENESS AMONG STUDENTS, FACULTY, & STAFF REGARDING THE UNIVERSITY'S COMMITMENT TO REDUCING EMISSIONS.

C.1.1 ~ Provide the resources necessary for the Office of Sustainability to coordinate a campus-wide campaign to raise awareness.

C.1.2 ~ Use the existing structure of the university to leverage education & visible support for the university's commitment to reducing our carbon footprint.

C.1.3 ~ Integrate a fun educational/awareness program into student orientation.

INITIATIVE 2: GATHER & ANALYZE ENERGY DATA FOR EACH BUILDING & CONSIDER A CENTRALIZED DATA COLLECTION SYSTEM SIMILAR TO OTHER UNIVERSITIES.

C.2.1 ~ Make relevant energy data visible & accessible to all members of the university.

C.2.2 ~ Celebrate major milestones in a way that draws attention to progress.

C.23 ~ Include emissions reductions progress & milestones in campus recruiting & publicity materials.

INITIATIVE 3: INTEGRATE EDUCATION CAMPAIGNS (& OTHER EMISSIONS REDUCTION EFFORTS) INTO ACADEMIC COURSES AT AUBURN.

C.3.1 ~ Create a working group to evaluate the potential for academic units to contribute to the emissions reduction goals. Once evaluated, the group should target key units/departments/majors & identify a faculty/staff liaison.

C.3.2 ~ Integrate campus emissions reduction goals into the ongoing curriculum development program.

C.3.3 ~ Incorporate emissions reductions & sustainability into new faculty/staff/student orientation & initial training.

C.3.4 ~ Incorporate emissions reduction into the baseline performance criteria for staff at Auburn.

C.3.5 ~ Develop a sustainability/emissions reductions specific course to be offered through the HR Professional Development Courses.

ADDITIONAL EMISSION REDUCTION STRATEGIES

NEAR-TERM ADDITIONAL EMISSIONS GOAL

By 2024, Auburn University will achieve a 30% reduction from a 2008 baseline in other campus emissions.

WASTE ACTIONS

Waste contributes directly to the university's carbon footprint through the decomposition of organic wastes into methane at landfill sites. Indirect emissions associated with the processing & transport of wastes also occur & can be reduced by eliminating the need to process them at all via source-reduction efforts.

INITIATIVE 1: REDUCE WASTE AT THE SOURCE BY INCLUDING WASTE REDUCTION MANDATES IN PURCHASING, FOOD & DINING, & CONSTRUCTION.

W.1.1 ~ Include waste minimization in purchasing decisions & contracts.

W.1.2 ~ Evaluate creating a "disposal" fund for items by including a small fee at the time of purchase.

INITIATIVE 2: REDUCE EMISSIONS ASSOCIATED WITH SOLID WASTE DECOMPOSITION THROUGH COMPOSTING.

W.2.1 ~ Evaluate the potential for a campus-wide composting facility.

REFRIGERANT ACTIONS

Refrigerant chemicals are among the most potent greenhouse gases. Accidental releases at Auburn remain relatively low, but efforts should be made to eliminate releases completely.

INITIATIVE 1: CONTINUE TO MINIMIZE RELEASES OF HIGHLY POTENT REFRIGERANTS ON CAMPUS.

R.1.1 ~ Increase efforts to eliminate leaks in refrigerant systems on campus & consider controls systems that detect leaks & provide an alert early.

DINING ACTIONS

Dining's primary contribution to the university's carbon footprint comes from solid waste generation. General indirect emissions associated with the methods associated with food production & transportation also exist & should be addressed.

INITIATIVE 1: WORK WITH THE DINING CONTRACTOR TO HELP EXPAND & SUPPORT THEIR EXISTING EFFORTS.

D.1.1 ~ Create an education campaign to encourage students to support preferable food choices through what they choose to eat on campus.

D.1.2 ~ Support the use of the catering services to pilot & promote "green" dining options.

APPENDIX 1: GREENHOUSE GAS (GHG) EMISSIONS DATA

The following graphs & tables summarize the results of the greenhouse gas inventories conducted from fiscal years 2008 through 2017. For a better understanding of the boundaries, scopes, assumptions, limitations, & results of the inventories, please see visit Auburn's profile on the Second Nature Reporting Platform.

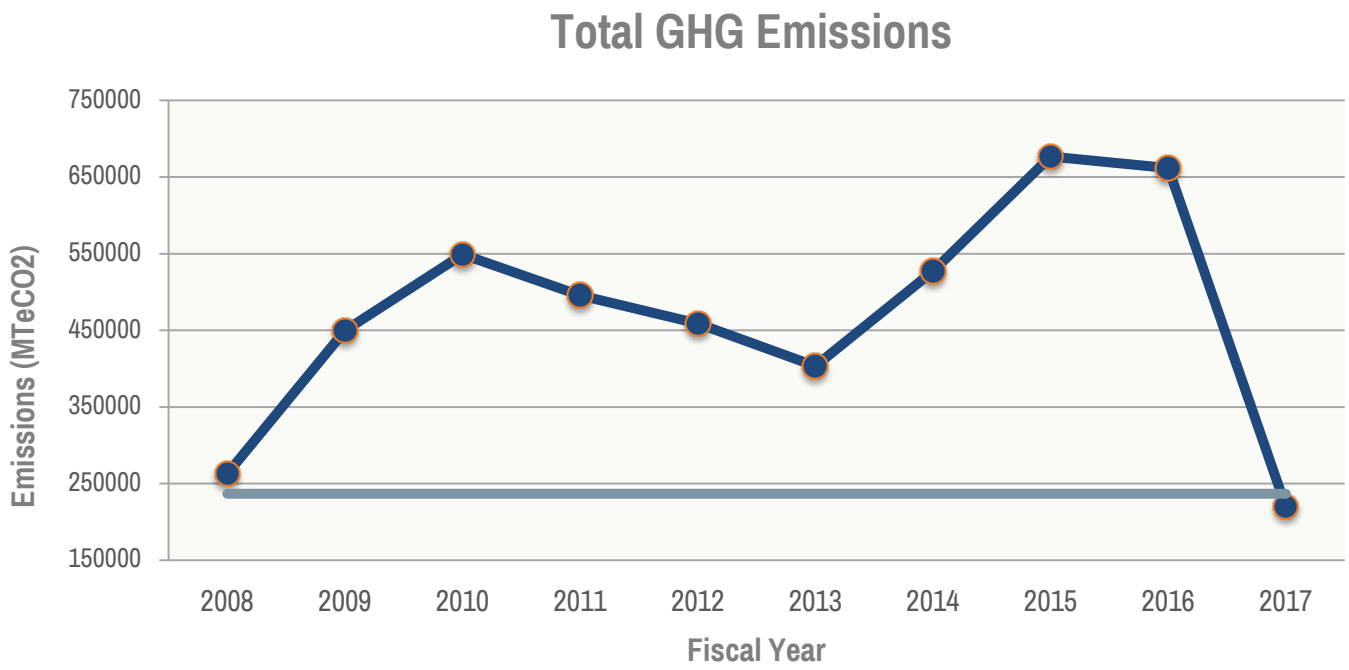


Figure 1: Total Greenhouse Gas Emissions, 2008-2017.

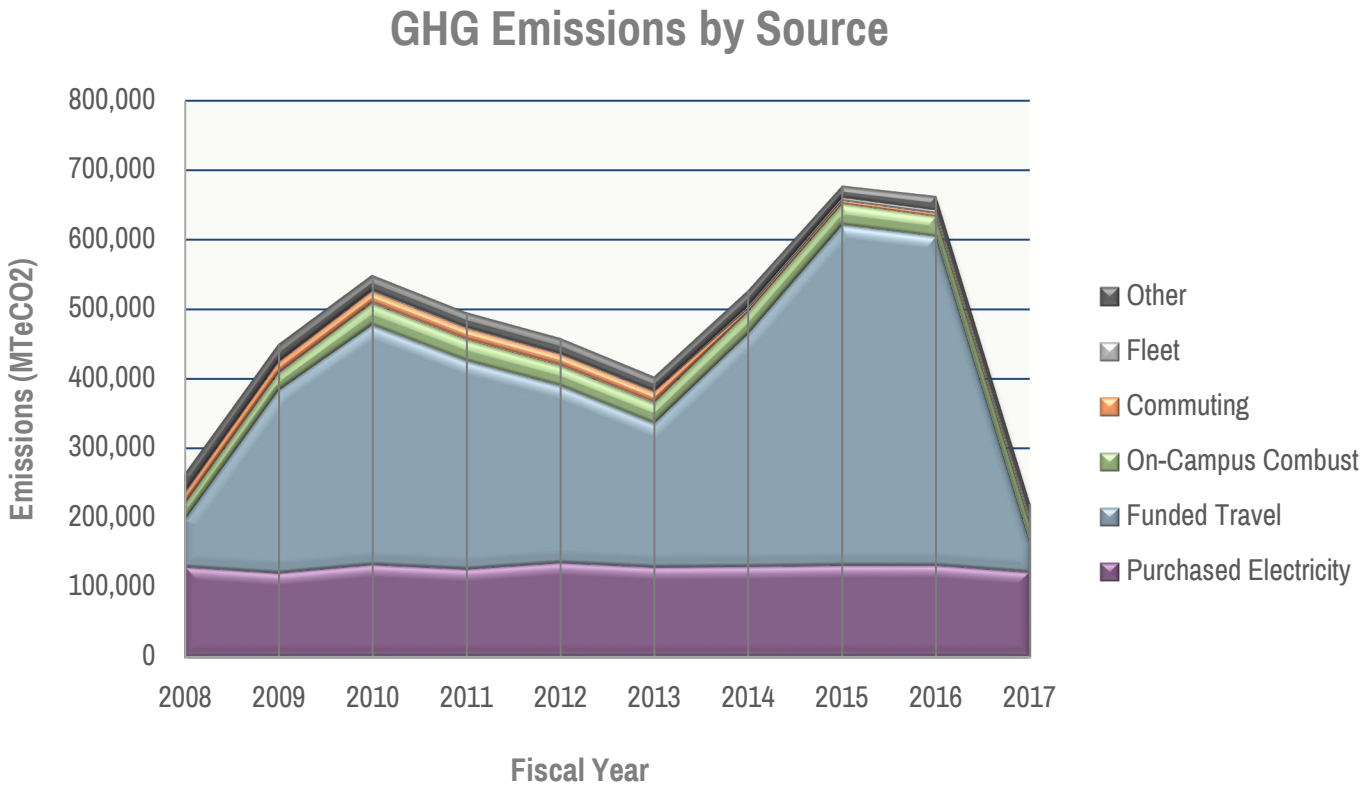
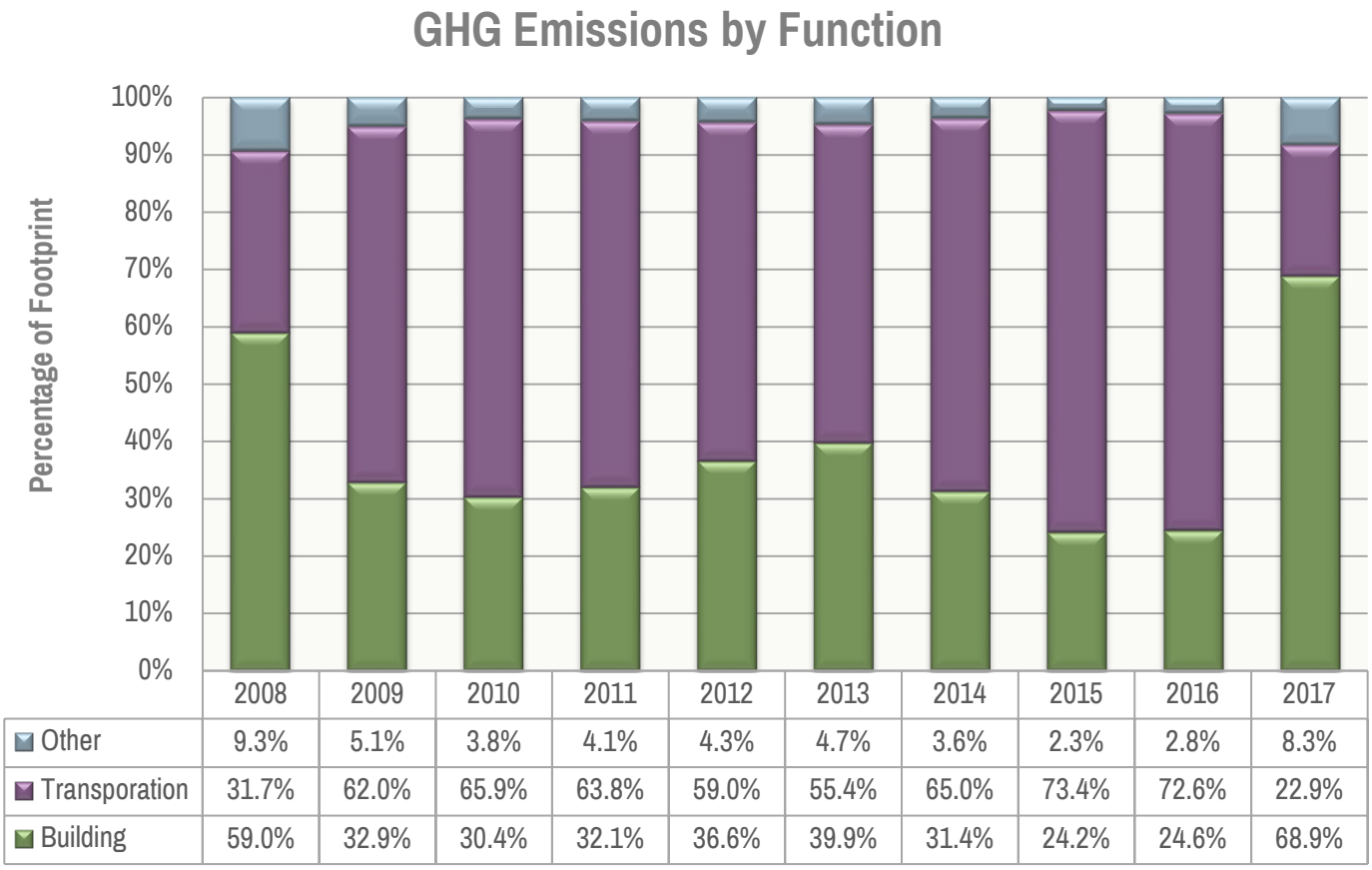


Figure 2: Greenhouse Gas Emissions by Source, 2008-2017.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Other	9.3%	5.1%	3.8%	4.1%	4.3%	4.7%	3.6%	2.3%	2.8%	8.3%
Transporation	31.7%	62.0%	65.9%	63.8%	59.0%	55.4%	65.0%	73.4%	72.6%	22.9%
Building	59.0%	32.9%	30.4%	32.1%	36.6%	39.9%	31.4%	24.2%	24.6%	68.9%

Figure 3: Greenhouse Gas Emissions by Function, 2008-2017.

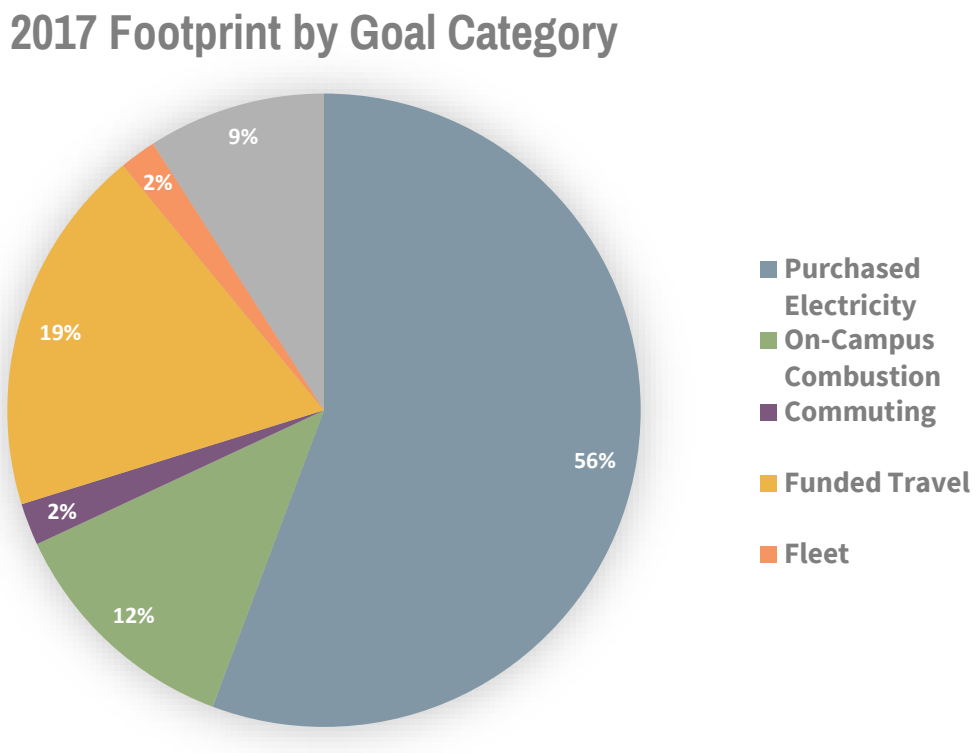
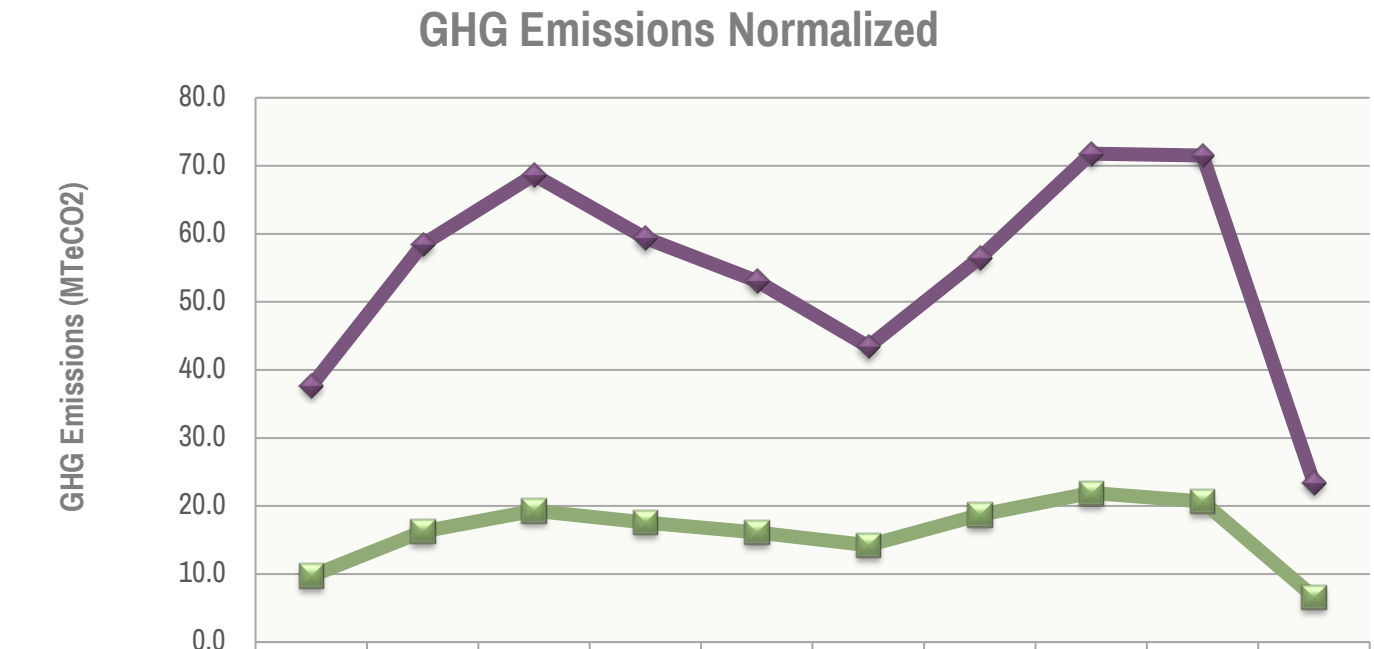
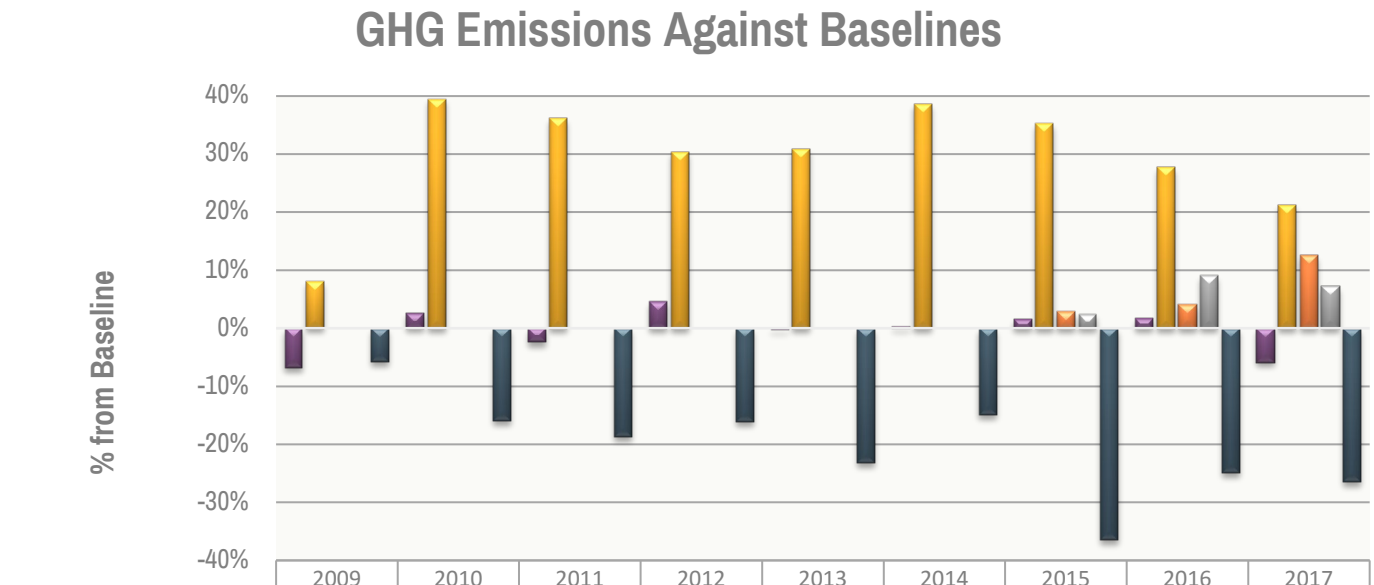


Figure 4: Greenhouse Gas Emissions by Goal Category, 2017.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
GHG/Capita	9.7	16.2	19.3	17.6	16.1	14.2	18.7	21.9	20.7	6.6
GHG/1000 Sq Ft	37.7	58.4	68.6	59.4	53.0	43.4	56.5	71.8	71.5	23.4

Figure 5: Greenhouse Gas Emissions Normalized, 2008-2017.



	2009	2010	2011	2012	2013	2014	2015	2016	2017
Purchased Electricity	-6.8%	2.6%	-2.4%	4.6%	-0.2%	0.3%	1.6%	1.7%	-5.8%
On-Campus Combustion	8.1%	39.5%	36.1%	30.4%	30.9%	38.6%	35.2%	27.7%	21.2%
Commuting							2.9%	4.1%	12.5%
Fleet							2.4%	9.1%	7.2%
Other	-5.8%	-16.0%	-18.7%	-16.1%	-23.2%	-14.9%	-36.4%	-24.9%	-26.5%

Figure 6: Greenhouse Gas Emissions against Baselines, 2009-2017.
Note: Funded travel omitted due to graph scale, but is down ~38%.
Note: Commuting & fleet have a 2014, instead of 2008, baseline, which reflects a change in the accounting of Tiger Transit emissions.

APPENDIX 2: ENERGY DATA

The following graphs summarize the electricity & natural gas costs of the university from fiscal years 2006 through 2017. These costs not impact the overall university budget & inform the viability of energy & emission reduction projects.

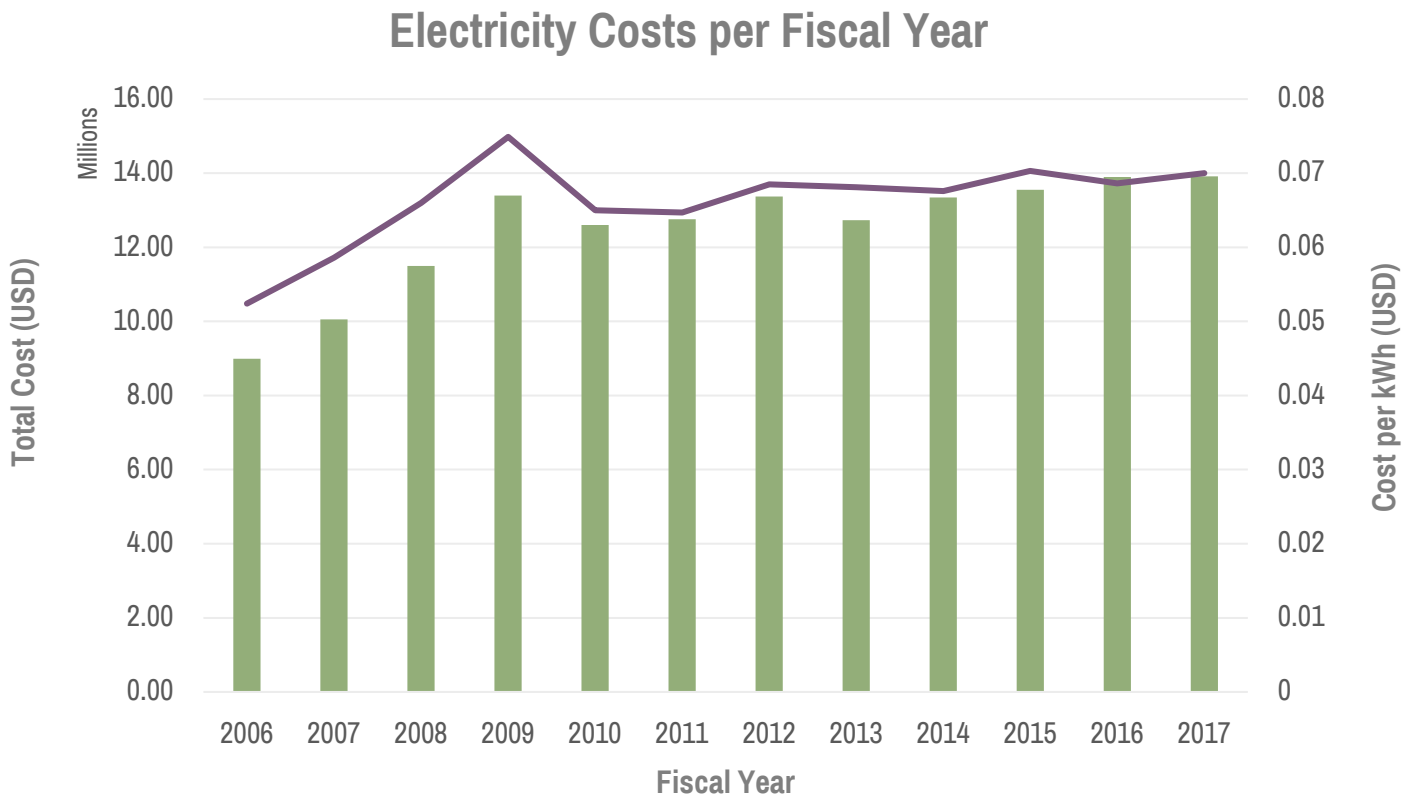


Figure 7: Electricity Costs per Fiscal Year, 2008-2017.

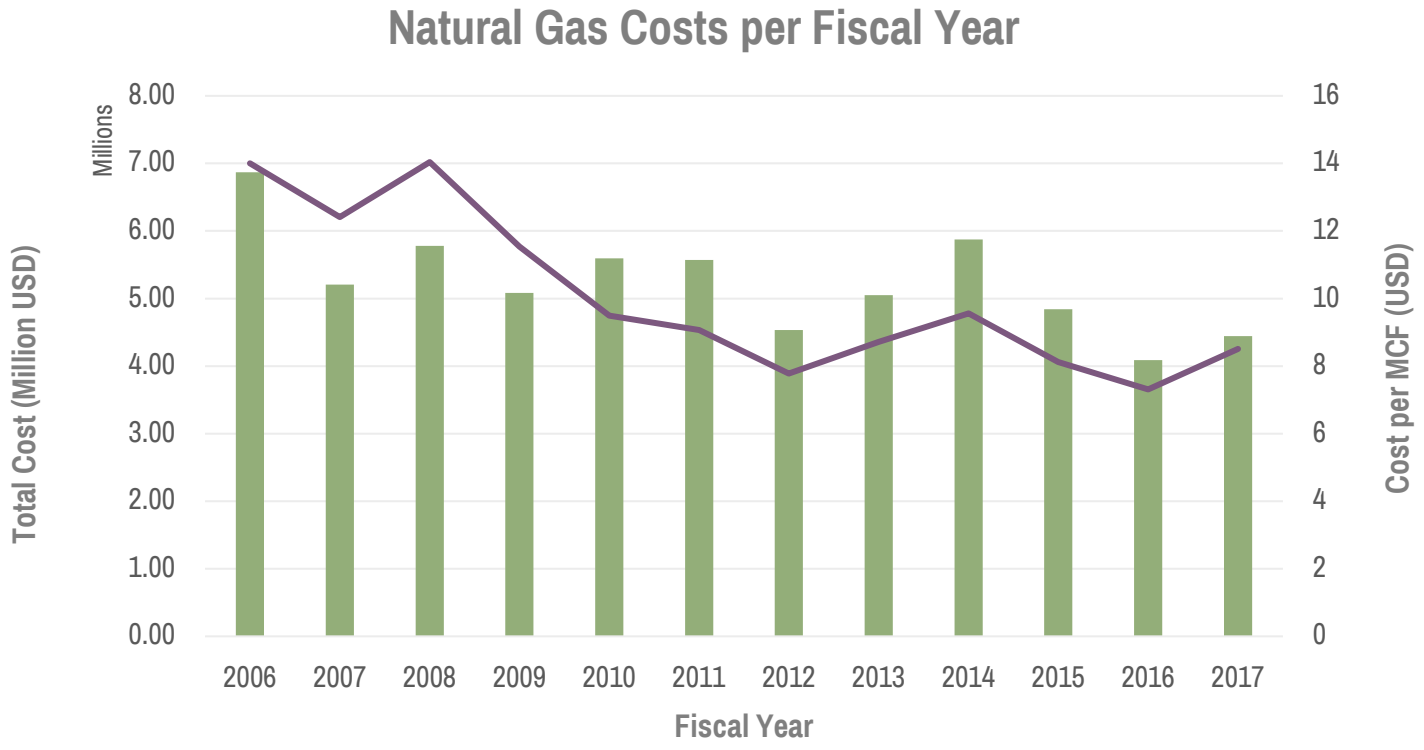


Figure 8: Natural Gas Costs per Fiscal Year, 2008-2017.

APPENDIX 3: ACTIONS REMOVED

The following actions have been removed from the main body of the CAP because they have either been completed or after analysis have been deemed not feasible for the university at this time. They have been cataloged below for archival purposes, but also so they may be revisited in future versions of climate action planning.

ENERGY ACTIONS

E.1.X ~ Create an existing buildings policy which includes minimum standards for renovations, for example, replace single glazing with double glazing windows, add radiant barrier & insulation with appropriate roofs, use white high-reflective membranes on appropriate roofs, & add insulation to walls whenever possible.

E.1.X ~ Install automatic meter reading systems & expand the use of energy management systems (e.g. Metasys) for continuous building monitoring.

E.1.X ~ Develop models for each building to analyze their utility usage on a daily basis & utilize to rapidly identify inefficiencies.

E.2.X ~ Create a new buildings policy which includes a high energy-efficiency standard (i.e. LEED Gold or Green Globes) for new campus construction & identify specific points related to energy efficiency as required points for construction on campus. The policy should ensure that efficiency measures are not "engineered out" during the construction process or if a building faces budget overruns.

E.3.X ~ Minimize energy consumption associated with lighting. a) Accelerate & complete current campus lighting retrofit to eliminate T12 fluorescent fixtures (being phased out nationally in 2011) b) continuously evaluate & deploy new, efficient lighting technologies (e.g. LED lighting).

E.4.X ~ For consumption awareness, utilize data from automated & continuous utility metering across campus & make real-time usage available on the AU website & within each building (e.g. a "dashboard" system or other prominent visual).

E.5.X ~ Measure & evaluate geothermal heat exchange project at new soccer/track building & consider potential for additional use on campus.

TRANSPORTATION ACTIONS

T.3.X ~ Expand alternative transportation options available to campus staff & faculty. Consider collaboration with the city & county for shard mass transit options; park & ride, carpooling, & car share programs; & bike to work program (including route assistance & commuter info).

T.4.X ~ Provide viable alternatives to car-ownership for students by starting a car sharing program (e.g. Zipcar or WeCar) on campus, increasing transit opportunities that include key shopping needs, & expanding bike infrastructure.

T.5.X ~ Establish bike messenger program for fast/sensitive deliveries on campus.

T.7.3 ~ Coordinate with the City of Auburn to prioritize & develop facilities for alternative transportation in the city that connect to campus (e.g. bike lanes, sidewalks, mass transit).

GROUNDS ACTIONS

G.2.X ~ For consistency in policy, develop a landscape master plan that addresses all core campus landscaping.

ADDITIONAL EMISSIONS ACTIONS

W.1.X ~ Include waste reduction mandates through reuse or recycling of materials in campus building & demolition projects.

W.2.X ~ Work with campus animal production facilities to compost animal waste through a campus-wide composting facility.

D.1.X ~ Consideration within a campus-wide composting program for an industrial (high temperature) composter that can accept all post-consumer food waste (vegetable, meat, corn-based plastics, paper service ware & to-go containers)

D.1.X ~ Work with Chartwells, College of Ag, & Adams Produce (AL produce distributor) to encourage & develop a network of local (i.e. within 250 miles) producers & help to establish ties to distributors within the state.

D.1.X ~ Establish program to reduce unpurchased (prepared but pre-consumer) food products from being wasted (e.g Campus Kitchens).

D.2.X ~ Establish a working group with broad campus representation (staff, administration, faculty, students) to determine best practices & options (e.g. local food options, transportation reduction, packaging reduction, food service energy use reduction) that should be included in the next dining services RFP.

APPENDIX 4: ORIGINAL WORKING GROUPS

All positions & titles represent those individuals held in fall 2009 & spring 2010.

EXECUTIVE REVIEW COMMITTEE

April Staton – A&P Assembly Chair
Bliss Bailey – Exec. Director; OIT
Bob Ritenbaugh – Asst. VP Auxiliary Services
Clair Crutchley – Assoc. Professor, Finance, Chair-Elect University Senate
Daniel King – Asst. VP Facilities
Judy Woodrow – Staff Council Chair
Kathryn Flynn – Mosley Assoc. Professor, Forestry, Chair University Senate
Kim Trupp, Director – Housing & Residence Life
Shawn Asmuth – Exec. Director; Procurement & Payment Services
Thomas Tillman – Director; University Planning
W. Gaines Smith – Extension Director; Alabama Cooperative Extension System
Lindy Biggs – Director; Office of Sustainability
Matthew Williams – Program Manager; Office of Sustainability
All Working Group Chairs

ENERGY

CHAIR
Ken Martin – Campus Energy Manager, Facilities Energy & Utility Management

PARTICIPANTS
Sushil Bhavnani – Professor; Mechanical Engineering
Mike Brackin – Building Manager; COSAM
Jim Bannon – Director, Outlying Units; Agriculture & AAES
Cindy Selman – Director; Management Accounting
Steve Taylor – Professor, Head & Director; Biosystems Engineering
Bliss Bailey – Exec. Director; OIT
Steve Knowlton – Professor; Physics
Mark Barnett – Professor; Civil Engineering
Julie Rodiek – Research Engineer; Space Power Institute
Wes Wood – Professor; Agronomy & Soils
Chad Tyler – Student; Building Science
Steve Nelson – Assoc. Dir., Environment Health & Safety; Risk Management & Safety
Mark Tatum – Asst. Professor; Building Science

SUPPORTING SUSTAINABILITY STAFF & INTERN
Matthew Williams – Program Manager; Office of Sustainability
Alexander Pfeiffenberger – Student; Computer Engineering

IT

CHAIR
Scott Santos – Asst. Professor; Biological Sciences

PARTICIPANTS
Bliss Bailey – Exec. Director; OIT
Aaron Colley - Manager, IT;
OIT Jeff Stallworth – Manager; OIT
Darrell Crutchley – IT Specialist;
Liberal Arts Mark Bransby – IT Specialist; Agriculture & AAES
Orlando Acevedo – Asst. Professor; Chemistry
Asim Ali – IT Specialist; College of Ed, Learning Resources Center
Glenn Adams – Manager, IT; Facilities

SUPPORTING SUSTAINABILITY STAFF & INTERNS
Matthew Williams – Program Manager; Office of Sustainability
Kate Simpson – Student; Electrical Engineering
Alexander Pfeiffenberger – Student; Computer Engineering

PURCHASING

CO-CHAIRS
Melissa Morris – Asst. Director, Accounts Payable; Procurement & Payment Services
Missty Kennedy – Manager, Procurement; Procurement & Payment Services

PARTICIPANTS
Leigh Jacobson – Recycling & Solid Waste Clerical Asst.; Facilities Division
Debby Miller – Manager, Accounting, Central; Procurement & Payment Services
Robin Jaffe – Assoc. Professor; Theater
Luke Fargason – Student; Business
Ursula Sandefur – IT Manager; OIT

SUPPORTING SUSTAINABILITY STAFF & INTERN
Matthew Williams – Program Manager; Office of Sustainability
Emily Vollers – Student; Intl. Business

TRANSPORTATION

CHAIR
Cathy Love – Campus Civil Engineer; Facilities

PARTICIPANTS
Rod Turochy – Assoc. Professor; Civil Engineering
Becki Retzlaff – Asst. Professor Planning; Architecture
Raf Egues – Communication & Outreach Coordinator; Sustainability
Don Davino – Instructional Tech Specialist; Pharmacy
Ben Song-yul Choe – Assoc. Professor; Civil Engineering
Aaron Shapiro – Asst. Professor; History

SUPPORTING SUSTAINABILITY STAFF & INTERNS
Matthew Williams – Program Manager; Office of Sustainability
Corey Farmer – Student; Mechanical Engineering
Kate Simpson – Student; Electrical Engineering

BUILDINGS

CHAIR
Richard Burt – Professor & Head; Building Science

PARTICIPANTS
Norbert Lechner – Professor Emeritus; Building Science
Richard Brinker – Dean & Professor; Forestry & Wildlife Science
Marc Taylor – Assoc. Professor; Building Science
Christopher McNulty – Assoc. Professor; Art
Justin Miller – Asst. Professor; Architecture
Susie Fagg – Student; Architecture
John Mouton – John Edward Wilborn Chair; Building Science
Mark Aderholdt – Director Design Services, Facilities
Paula Peek – Assoc. Professor; Interior Design
John Thompson – Student; Architecture
Darren Olsen – Asst. Professor; Building Science
Melanie Duffey – Instructor; Interior Design

SUPPORTING SUSTAINABILITY STAFF & INTERNS
Matthew Williams – Program Manager; Office of Sustainability
Sarah-Ashley McCall – Student; Building Science
Clinton Cook – Student; Building Science

GROUNDS

CHAIR
Charlene LeBleu – Assoc. Professor; Landscape Architecture

PARTICIPANTS
Gary Keever – Professor; Horticulture; AU Landscape Services
Nanette Chadwick – Assoc. Professor; Biological Sciences
Charlie Crawford – Superintendent; Landscape Services
Michael Hein – Professor; Building Science
Art Chappelka – Professor; Forestry & Wildlife Sciences
Dee Smith – Head Curator; Donald E. Davis Arboretum
Luke Marzen – Assoc. Professor; Geology & Geography
Will McCartney – Student; Civil Eng.

SUPPORTING SUSTAINABILITY STAFF & INTERN
Matthew Williams – Program Manager; Office of Sustainability
Linsey Grace – Student; Interior Design

COMMUNITY ENGAGEMENT

CHAIR
Lisa Kensler – Asst. Professor; Educational Leadership

PARTICIPANTS
Brigitta Brunner – Assoc. Professor; Journalism & Communications
Tim King – Advisor, Student Programs; VP Student Affairs
Gina Murray – Outreach Programs; Professional & Continuing Education
Beth Lawrence – Development Officer; Cooperative Extension & NRMDI
Shanna Brodbeck – Specialist, Disability Program; Students with Disabilities
Emma Mulvaney – Communication & Outreach Coordinator; Sustainability
Shannon Bryant-Hankes – Communications & Marketing; Alumni Affairs
Nancy Robinson – Admin. Specialist; COSAM
Megan Lupek – Graduate Student.; Forestry & Wildlife Sciences

SUPPORTING SUSTAINABILITY STAFF & INTERN
Matthew Williams – Program Manager; Office of Sustainability
Christi Talbert – Student; Nutrition

FOOD & DINING

NO CHAIR

PARTICIPANTS
Gina Murray – Outreach Programs; Professional & Continuing Education
Emil Topel – Executive Chef; Tiger Dining
Katie Jackson – Chief Editor; Agriculture & AAES

Jan Garrett – Research Fellow III; Plant Pathology
Hunter Morgan – Student; Public Administration
Jayme Oates – Research Associate; Water Watch
Olivia Martin – Student; English
Blair Stapp – Student; Graphic Design
Sabra Sweetland – Student; Education

SUPPORTING SUSTAINABILITY STAFF & INTERN
Matthew Williams – Program Manager; Office of Sustainability
Christi Talbert – Student; Nutrition

STUDENTS

CO-CHAIRS
Nathan Warner, Student; Biosystems Engineering
Michael Tiemeyer, Graduate Student; Mathematics

PARTICIPANTS
Bethany Stillwell
Cate Babin
Claire Chapman
Stephanie Sizemore
Elizabeth Folmar
Camilla Thompson
Alison White
Ashley Smith
Elizabeth Robbins
Haley Porter
Cat Philips
Rebecca Campomanes
Kelsey Lott
Cailin Thomas
Nicole Arnett
Sarah Harrell
Rob Reid
Katie Lushington
Devin Jenkins
Mark Kleist
All students from Working Groups
All Office of Sustainability Interns

SUPPORTING SUSTAINABILITY STAFF
Matthew Williams – Program Manager; Office of Sustainability