Sustainability Master Planning from All Perspectives

18 September 2019

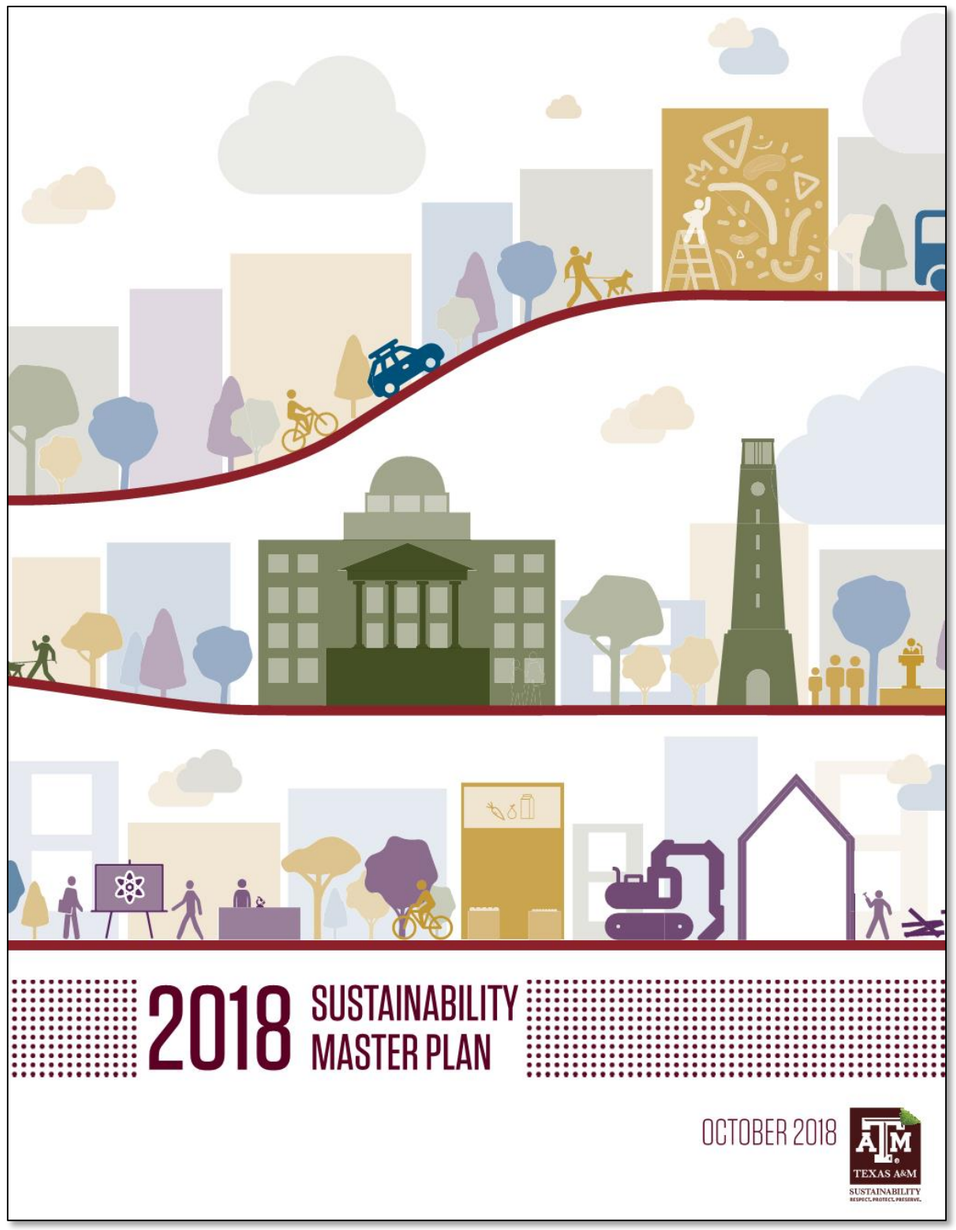
Howdy!

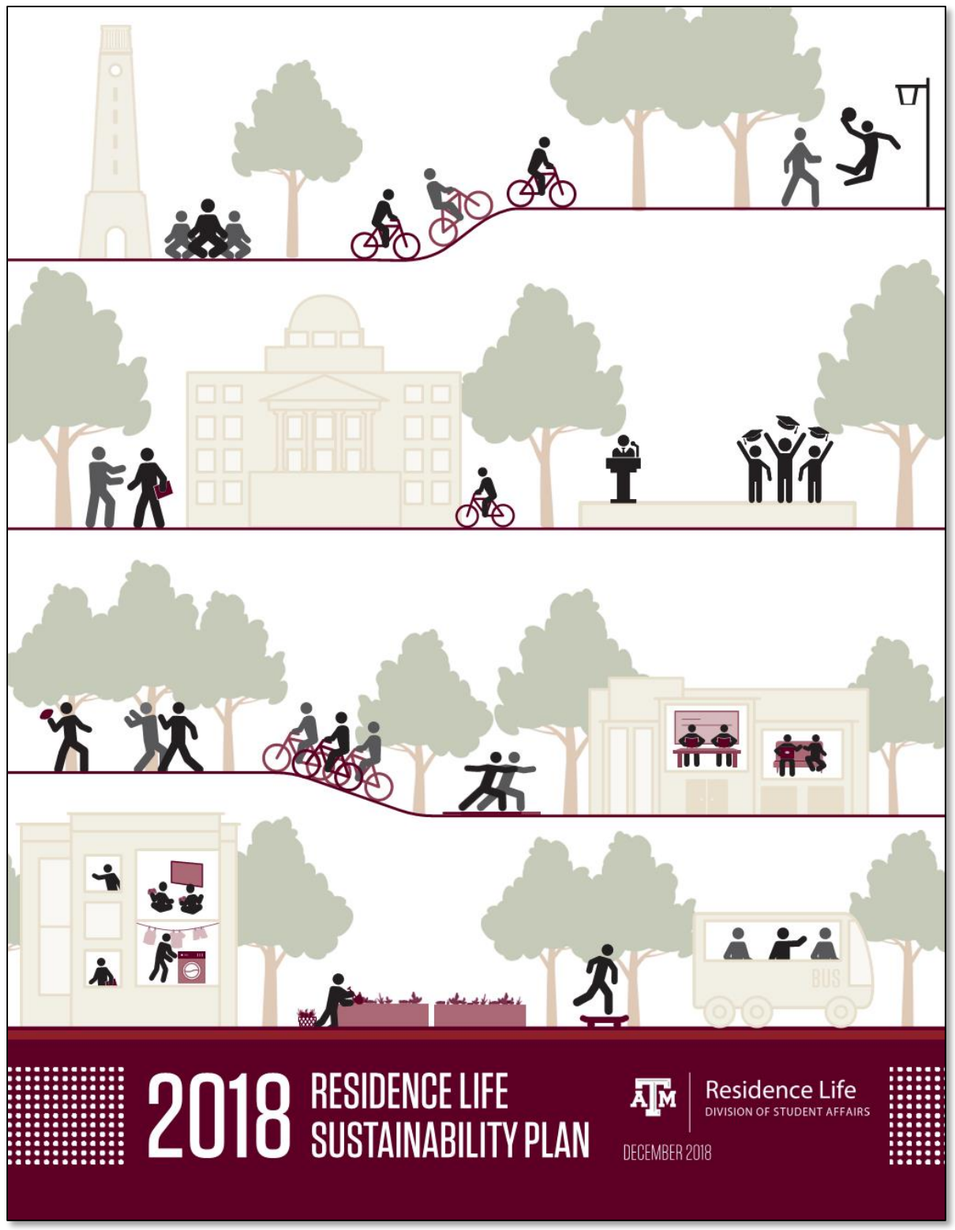
Carol Binzer
Director of Administrative
& Support Services,
Residence Life
Texas A&M University
carolb@tamu.edu

Kelly Wellman
Director of Sustainability
Texas A&M University
kwellman@tamu.edu

Allison Wilson
Sustainability Director
Ayers Saint Gross
awilson@asg-architects.com

Two Sustainability Plans – Macro and Micro Lenses





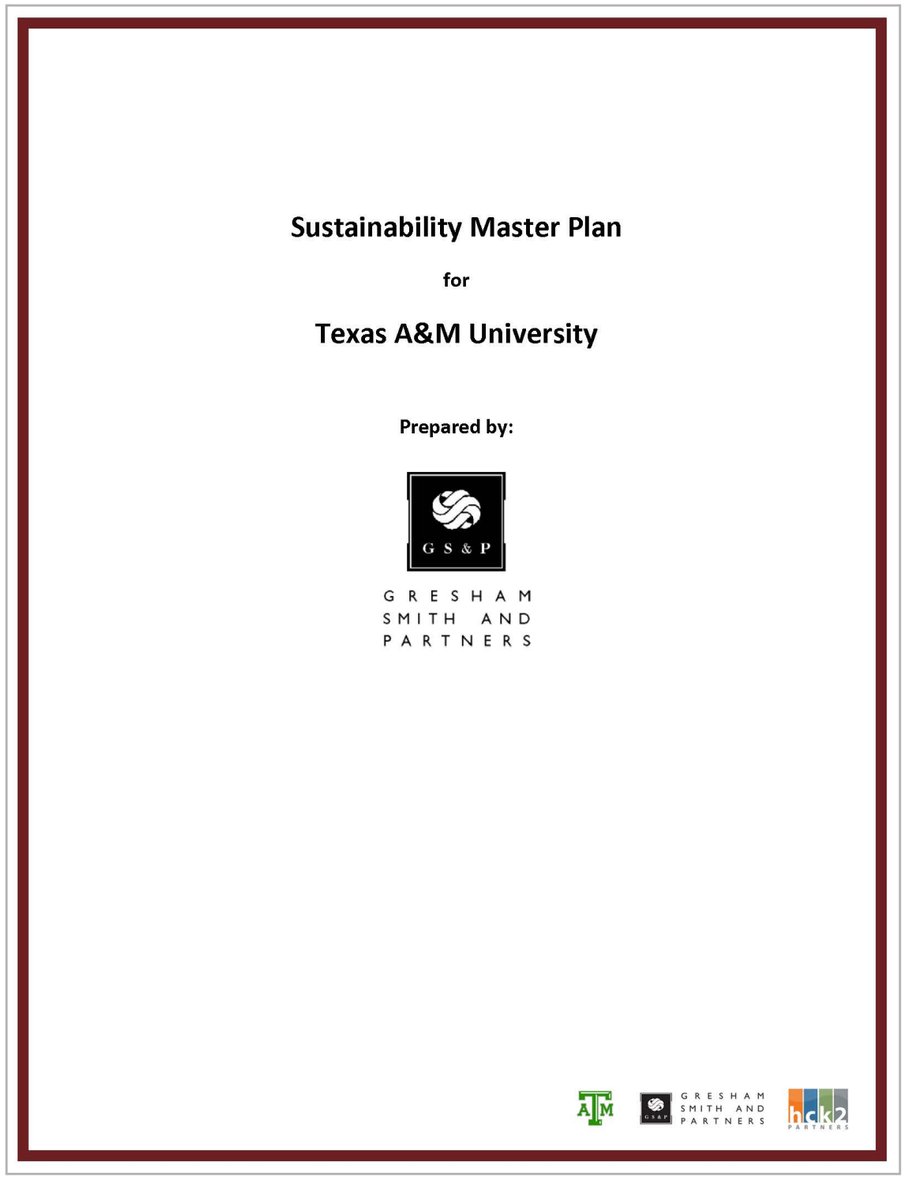
Sustainability’s Legacy at Texas A&M

Sustainability Defined at Texas A&M

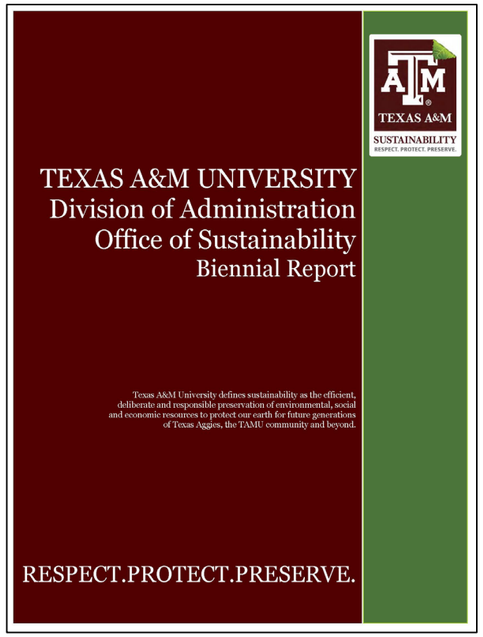
Texas A&M University defines sustainability as the efficient, deliberate, and responsible preservation of environmental, social, and economic resources to protect our earth for future generations of Texas Aggie's, the Texas A&M University community, and beyond.

Springboard - 2010 Sustainability Master Plan

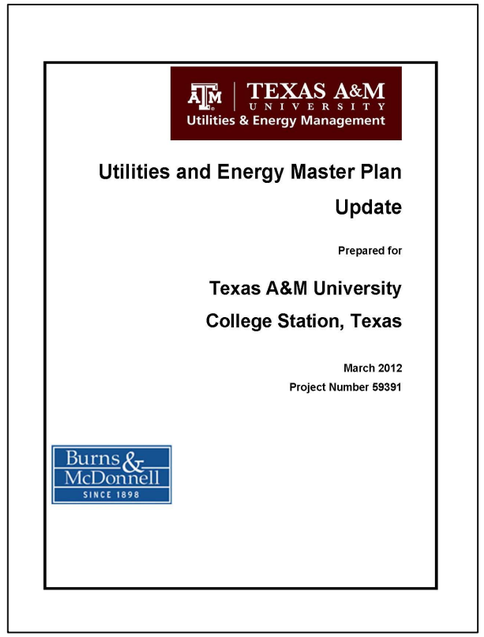
- Entirely verbal
- Identifies the "Sustainability 12"
- Charts 25 Goals and Targets and 113 Actions
- Approximately 18% of actions have been completed
- Approximately 42% of actions are ongoing



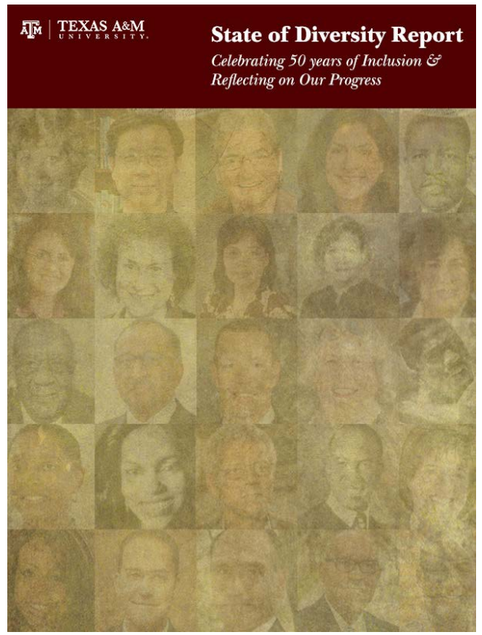
Planning Document Building Blocks



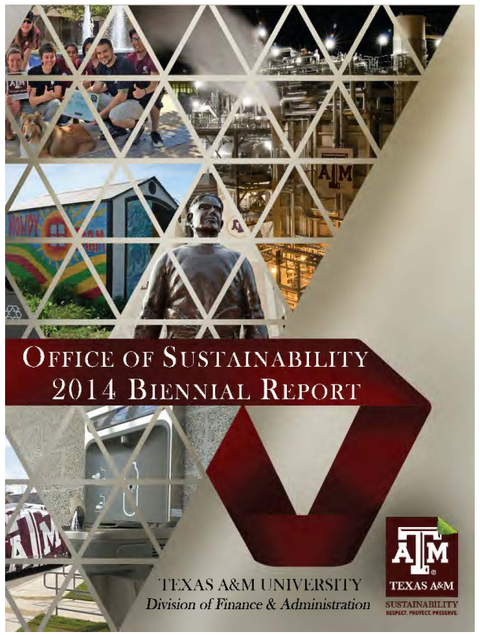
2012 Biennial Report



2012 UES Master Plan

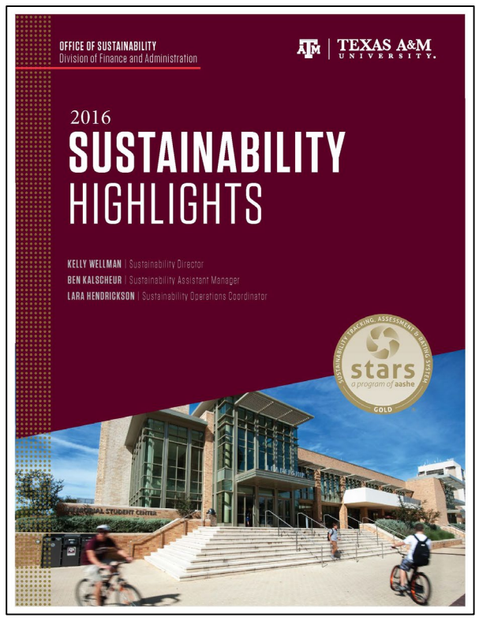


2013 State of Diversity Report



2014 Biennial Report

2015 Bicycle District Strategic Plan



2016 STARS Report

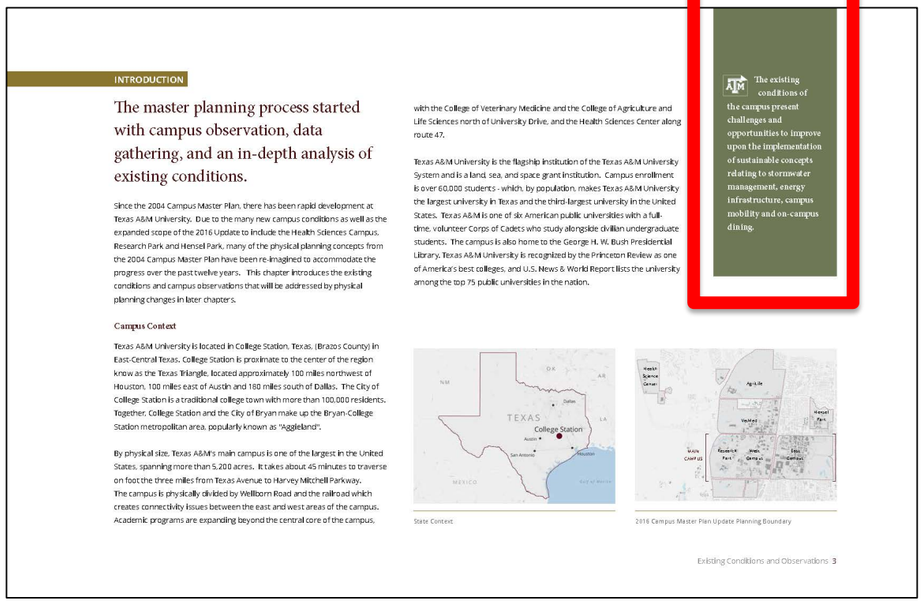
2016 State of Diversity Report

2017 Campus Master Plan

Focus Areas:

- Campus Development Plan
- Mobility and Safety
- Sustainability and Wellness
- Campus Guidelines
- Heritage Conservation
- Wayfinding and Signage

A Comprehensive Approach



INTRODUCTION

The master planning process started with campus observation, data gathering, and an in-depth analysis of existing conditions.

Since the 2004 Campus Master Plan, there has been rapid development at Texas A&M University. Due to the many new campus conditions as well as the expanded scope of the 2016 Update to include the Health Sciences Campus, Research Park and Hensel Park, many of the physical planning concepts from the 2004 Campus Master Plan have been re-imagined to accommodate the progress over the past twelve years. This chapter introduces the existing conditions and campus observations that will be addressed by physical planning changes in later chapters.

Campus Context

Texas A&M University is located in College Station, Texas, (Brazos County) in East-Central Texas. College Station is proximate to the center of the region know as the Texas Triangle, located approximately 100 miles northwest of Houston, 100 miles east of Austin and 160 miles south of Dallas. The City of College Station is a traditional college town with more than 100,000 residents. Together, College Station and the City of Bryan make up the Bryan-College Station metropolitan area, popularly known as "Aggieland".

By physical size, Texas A&M's main campus is one of the largest in the United States, spanning more than 5,200 acres. It takes about 45 minutes to traverse on foot the three miles from Texas Avenue to Harvey Mitchell Parkway. The campus is physically divided by Wellborn Road and the railroad which creates connectivity issues between the east and west areas of the campus. Academic programs are expanding beyond the central core of the campus, with the College of Veterinary Medicine and the College of Agriculture and Life Sciences north of University Drive, and the Health Sciences Center along route 47.

Texas A&M University is the flagship institution of the Texas A&M University System and is a land, sea, and space grant institution. Campus enrollment is over 60,000 students - which, by population, makes Texas A&M University the largest university in Texas and the third-largest university in the United States. Texas A&M is one of six American public universities with a full-time, volunteer Corps of Cadets who study alongside civilian undergraduate students. The campus is also home to the George H. W. Bush Presidential Library. Texas A&M University is recognized by the Princeton Review as one of America's best colleges, and U.S. News & World Report lists the university among the top 75 public universities in the nation.

The existing conditions of the campus present challenges and opportunities to improve upon the implementation of sustainable concepts relating to stormwater management, energy infrastructure, campus mobility and on-campus dining.

State Context

2016 Campus Master Plan Update Planning Boundary

STORMWATER

The University landscape has relatively little topographic change and includes lndised storm channels that present surface water features on campus. The campus straddles two watershed areas and primarily drains southwest through White Creek, Brushy Creek, and Turkey Creek into the Brazos River Watershed. The remainder of campus drains southeast through Wolf Pen Creek into the Navasota River Watershed.

Stormwater runoff is the excess quantity of water on a land surface that cannot be infiltrated into the soil where it falls following a storm event. This water travels on the ground surface and in subsurface water channels into downstream water bodies, creating erosion and transiting pollution. Impervious surfaces such as building footprints, roadways, and parking lots block precipitation from soaking naturally into the ground and exacerbate the quantity and quality of stormwater runoff. Soil type also impacts the ability of the ground to absorb water. Texas A&M's predominantly clay soils have little capacity to retain water and become inundated from relatively modest storm events. The 95th percentile storm at Texas A&M is a 1" storm and even this volume of water has difficult infiltrating into College Station's soils.

Because of the fast pace of campus development and the difficulty of funding infrastructure, it has been challenging for Texas A&M's stormwater management system to keep pace with development. With the addition of new buildings and large surface lots, specifically on West Campus, the runoff into White Creek has been exceptionally high and has caused rapid erosion of the creek both on and off campus. During storm events, the campus has major drainage issues - buildings flood, pedestrian paths pool water, and open spaces become swamps in post-storm conditions. Most of the courtyards and quadrangles on campus have been designed to divert stormwater off-site into the storm sewer system as quickly as possible, limiting infiltration and groundwater recharge, and flooding underground systems with a high volume of stormwater.

Currently, there are few low-impact development solutions for stormwater on campus, which in turn causes large volumes of water to run directly into storm drains and eventually out to the creek. To address known stormwater issues, the University has recently approved a project to construct several new detention ponds along White Creek, and is moving forward with new detention ponds along Harvey Mitchell Parkway and on the Golf Course.

A campus-wide stormwater management plan that embraces landscape infrastructure in addition to improved piping infrastructure has been developed to support the stormwater management process for future construction projects.

This information is located in Chapter Five, Sustainability and Wellness, and articulates strategies compatible with low-impact development.

Erosion at White Creek

Erosion at White Creek

Drainage Issues

A stand-alone chapter & Embedded across other focus areas

Sustainability Themes in the 2017 CMP

Operational Matters

Energy Use and Greenhouse Gas Emissions

Campus Mobility

Waste Management

Stormwater Management

Built Environment and Site Design

Dining Services

Included in the Campus Master Plan Update within multiple focus areas

Supported by the Campus Master Plan Update

Non-Operational Matters

Social Sustainability

Education, Outreach, and Engagement

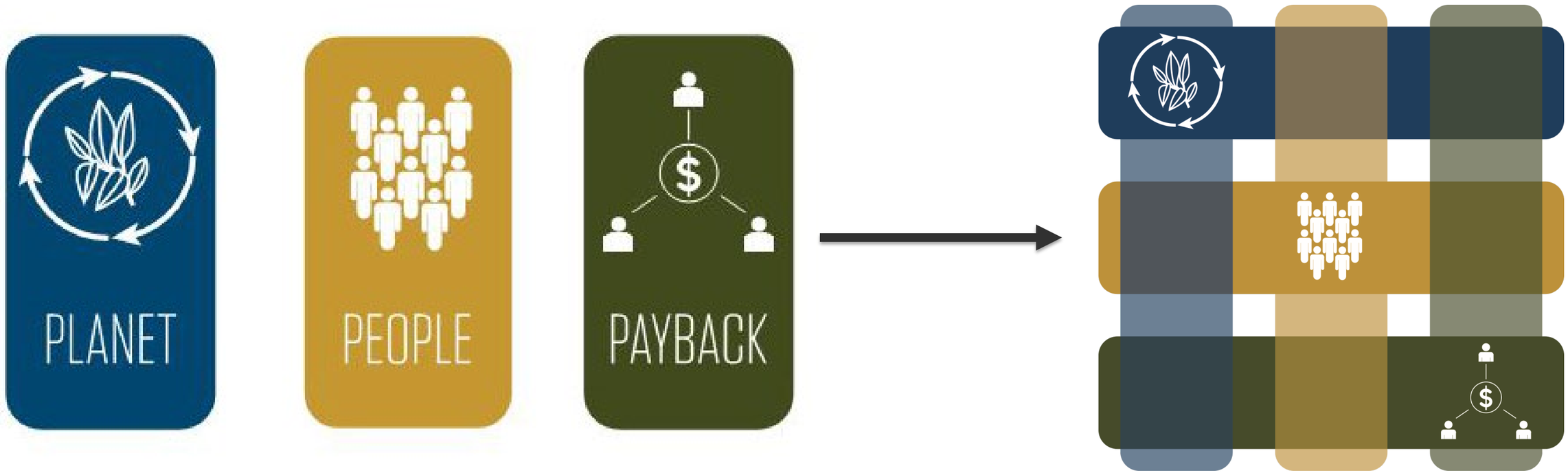
Administrative Support

Pedagogy, Research, and Innovation

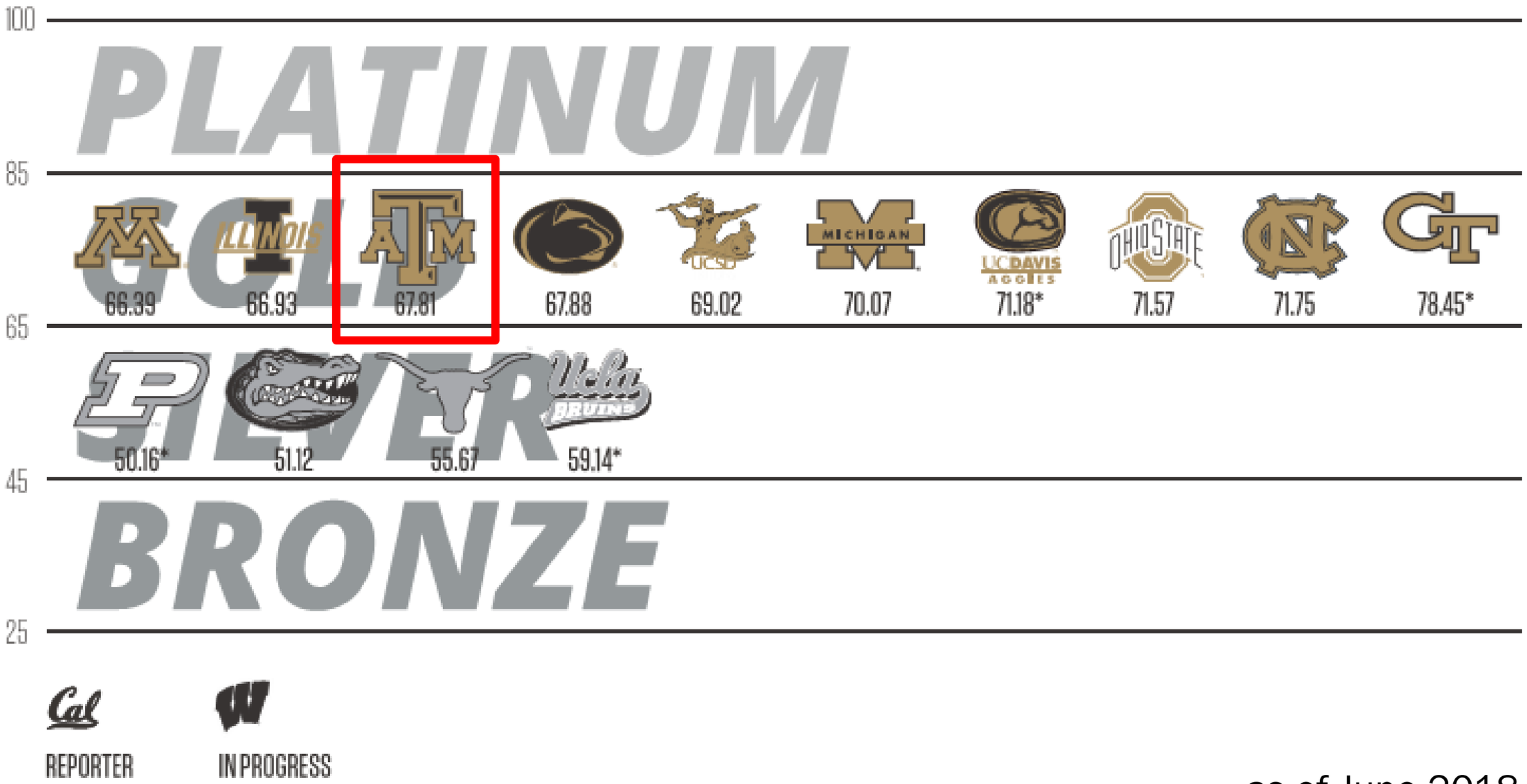
Reinforced by the Campus Master Plan

Texas A&M's
2018 Sustainability Master Plan

Goal #1: From Siloed to Woven



Goal #2: Advance TAMU's Sustainability Tracking, Assessment & Rating System (STARS) Rating



as of June 2018

https://reports.aashe.org/institutions/texas-am-university-tx/report/2018-12-28/

Goal #3: Engage the UN SDGs

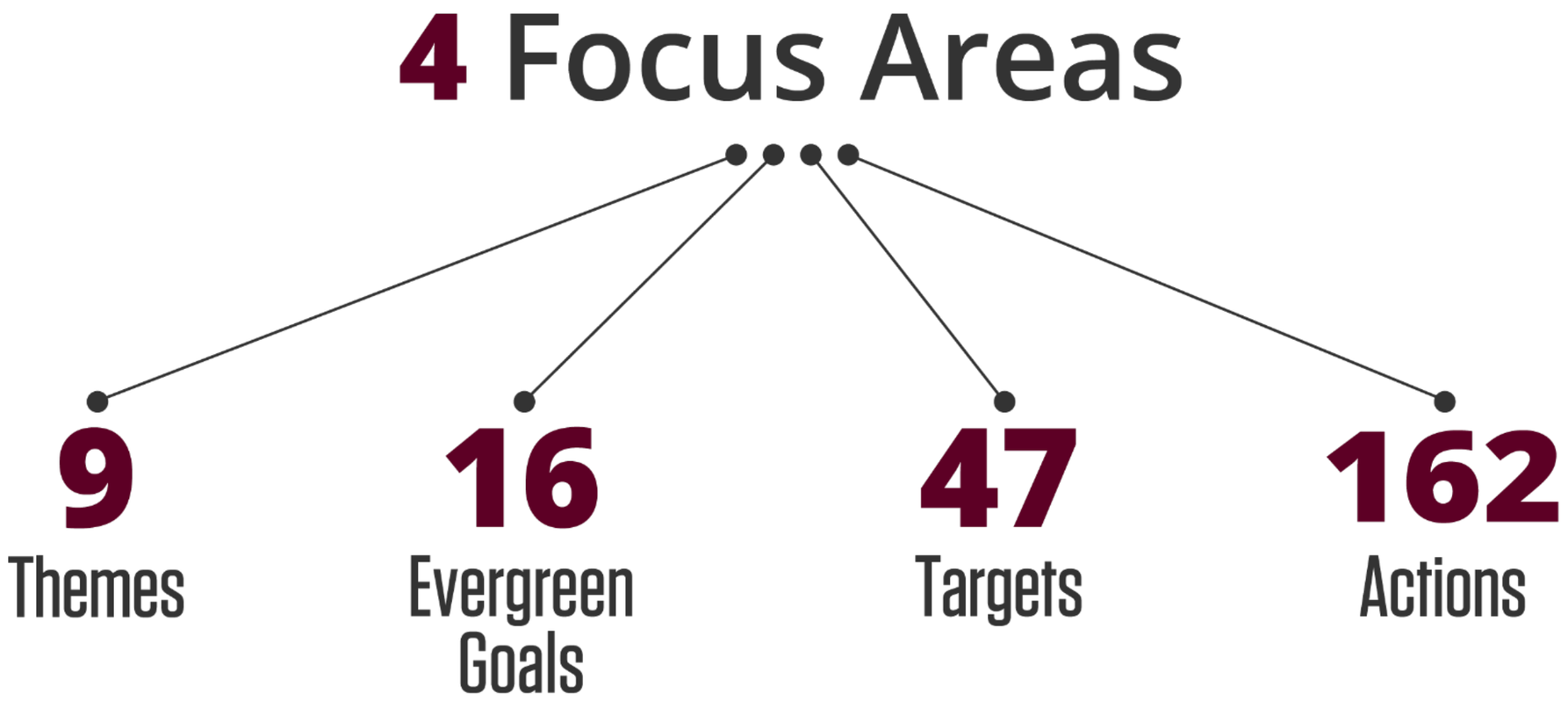
Aggies think the 5 most important sustainability-related issues for <u>Texas A&M</u> are:

- Conserving Energy
- Conserving Water
- Reducing Waste
- Using Renewable Energy
- Recycling

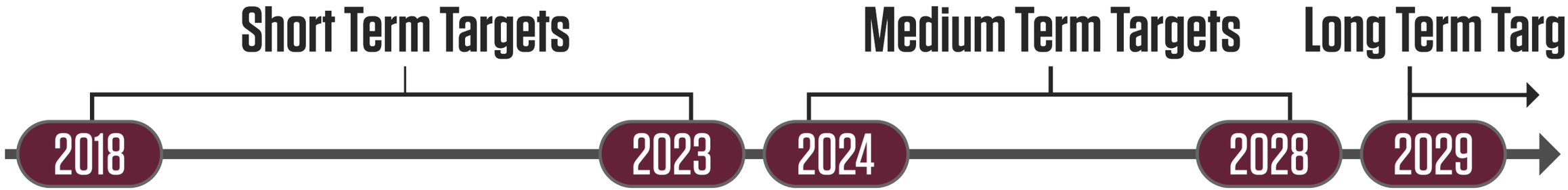
Aggies think the 5 most important sustainability-related issues for <u>our world</u> are:

- Access to Clean Water
- Access to Clean Air
- Public Health
- Food Supply
- Access to Quality Education

Plan Overview

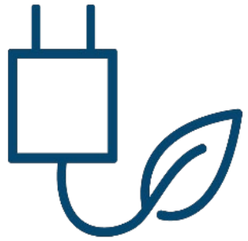


Plan Timeline: 2018 - 2038



Sustainability Themes

Physical Environment



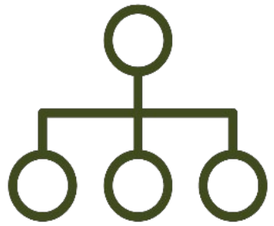
Energy Use and GHG Emissions

Campus Mobility

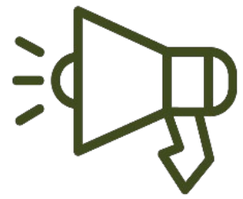
Stormwater Management

Built Environment and Site Design

Institutional Effort



Administrative Support



Education, Outreach, and Engagement

Pedagogy, Research, and Innovation

Social Sustainability

Waste Management

Plan Layout

Achieve a 50% reduction in greenhouse gas emissions per weighted campus user by 2030; achieve net-zero emissions by 2050.

Texas A&M University is committed to achieving net-zero greenhouse gas emissions per weighted campus user by 2050.

02-1: Decrease campus energy use intensity.

Energy use intensity (EUI) is a measure of how much energy is consumed per square foot in campus buildings each year. Cutting down on energy use intensity requires efficient buildings and changes in Aggie behaviors that use energy.

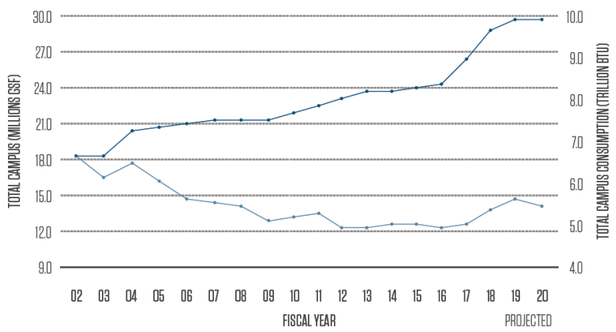
How will we do it?

Campus buildings can decrease energy use by:

- Increasing effectiveness of air-side heat recovery.
- Updating building automation systems.
- Communicating system feedback to end users.
- Upgrading laboratory fume hoods.
- Meaningfully integrating exterior shading solutions, such as that provided by trees or architectural features.

Aggies can cut energy use by:

- Turning off the lights when exiting a room.
- Turning off and unplugging devices prior to extended campus breaks.



Campus Gross Square Footage vs. Energy Consumption

While campus square footage is projected to increase 60% between fiscal years 2002 and 2020, energy consumption is predicted to decrease 20% over the same period. Energy savings can be attributed to improvements in the Central Heating and Power Plant, building-scale equipment upgrades, and improved Utility and Energy Services energy management practices.

Total Campus (million GSF)

Total Campus Consumption (trillion Btu)

Plan Layout

Achieve a 50% reduction in greenhouse gas emissions per weighted campus user by 2030; achieve net-zero emissions by 2050.

Texas A&M University is committed to achieving net-zero greenhouse gas emissions per weighted campus user by 2050.

02-1: Decrease campus energy use intensity.

192 (2017) 182 (SHORT TERM) 174 (MEDIUM TERM)

Campus Source Energy Use Intensity (kbtu/sf/year)

Energy use intensity (EUI) is a measure of how much energy is consumed per square foot in campus buildings each year. Cutting down on energy use intensity requires efficient buildings and changes in Aggie behaviors that use energy.

How will we do it?

Campus buildings can decrease energy use by:

- Increasing effectiveness of air-side heat recove
- Updating building automation systems.
- Communicating system feedback to end users
- Upgrading laboratory fume hoods.
- Meaningfully integrating exterior shading solutions, such as that provided by trees or architectural features.

Aggies can cut energy use by:

- Turning off the lights when exiting a room.
- Turning off and unplugging devices prior to extended campus breaks.

Campus Gross Square Footage vs. Energy Consumption

While campus square footage is projected to increase 60% between fiscal years 2002 and 2020, energy consumption is predicted to decrease 20% over the same period. Energy savings can be attributed to improvements in the Central Heating and Power Plant, building-scale equipment upgrades, and improved Utility and Energy Services energy management practices.

Total Campus (million GSF)

Total Campus Consumption (trillion Btu)

Achieve a 50% reduction in greenhouse gas emissions per weighted campus user by 2030; achieve net-zero emissions by 2050.

Texas A&M University is committed to achieving net-zero greenhouse gas emissions per weighted campus user by 2050.

Evergreen Goals

Plan Layout

Achieve a 50% reduction in greenhouse gas emissions per weighted campus user by 2030; achieve net-zero emissions by 2050.

Texas A&M University is committed to achieving net-zero greenhouse gas emissions per weighted campus user by 2050.

02-1: Decrease campus energy use intensity.

192 2017 | **182** SHORT TERM | **174** MEDIUM TERM

Campus Source Energy Use Intensity (kbtu/sf/year)

Energy use intensity (EUI) is a measure of how much energy is consumed per square foot in campus buildings each year. Cutting down on energy use intensity requires efficient buildings and changes in Aggie behaviors that use energy.

How will we do it?

Campus buildings can decrease energy use by:

- Increasing effectiveness of air-side heat recove
- Updating building automation systems.
- Communicating system feedback to end users
- Upgrading laboratory fume hoods.
- Meaningfully integrating exterior shading solutions, such as that provided by trees or architectural features.

Aggies can cut energy use by:

- Turning off the lights when exiting a room.
- Turning off and unplugging devices prior to extended campus breaks.

Campus Gross Square Footage vs. Energy Consumption

While campus square footage is projected to increase 60% between fiscal years 2002 and 2020, energy consumption is predicted to decrease 20% over the same period. Energy savings can be attributed to improvements in the Central Heating and Power Plant, building-scale equipment upgrades, and improved Utility and Energy Services energy management practices.

Total Campus (million GSF)

Total Campus Consumption (trillion Btu)

02-1: Decrease campus energy use intensity.

192 2017 | **182** SHORT TERM | **174** MEDIUM TERM

Campus Source Energy Use Intensity (kbtu/sf/year)

Energy use intensity (EUI) is a measure of how much energy is consumed per square foot in campus buildings each year. Cutting down on energy use intensity requires efficient buildings and changes in Aggie behaviors that use energy.

Measurable Targets

Plan Layout

Achieve a 50% reduction in greenhouse gas emissions per weighted campus user by 2030; achieve net-zero emissions by 2050.

Texas A&M University is committed to achieving net-zero greenhouse gas emissions per weighted campus user by 2050.

02-1: Decrease campus energy use intensity.

Energy use intensity (EUI) is a measure of how much energy is consumed per square foot in campus buildings each year. Cutting down on energy use intensity requires efficient buildings and changes in Aggie behaviors that use energy.

How will we do it?

Campus buildings can decrease energy use by:

- Increasing effectiveness of air-side heat recove
- Updating building automation systems.
- Communicating system feedback to end users
- Upgrading laboratory fume hoods.
- Meaningfully integrating exterior shading solutions, such as that provided by trees or architectural features.

Aggies can cut energy use by:

- Turning off the lights when exiting a room.
- Turning off and unplugging devices prior to extended campus breaks.

Campus Gross Square Footage vs. Energy Consumption

While campus square footage is projected to increase 60% between fiscal years 2002 and 2020, energy consumption is predicted to decrease 20% over the same period. Energy savings can be attributed to improvements in the Central Heating and Power Plant, building-scale equipment upgrades, and improved Utility and Energy Services energy management practices.

Total Campus (million GSF)

Total Campus Consumption (trillion Btu)

How will we do it?

Campus buildings can decrease energy use by:

- **Increasing effectiveness of air-side heat recovery.**
- Updating building automation systems.
- Communicating system feedback to end users.
- Upgrading laboratory fume hoods.
- Meaningfully integrating exterior shading solutions, such as that provided by trees or architectural features.

Aggies can cut energy use by:

- **Turning off the lights when exiting a room.**
- **Turning off and unplugging devices prior to extended campus breaks.**

Actions

Plan at a Glance

05 BUILT ENVIRONMENT AND SITE DESIGN (CONTINUED)

NO.	TARGET	ACTIONS	KEY PLAYERS
05-2	**Develop public, civic spaces (interior or exterior) to represent a broader cross-section of the Aggie community.** 3 (2020) 6 (2025) Number of Public, Civic Spaces (Interior or Exterior) Developed	• The University will make an effort to select artwork and commission artists from diverse backgrounds.	*Led by:* • Office of the University Architect *Supported by:* • Council for the Built Environment
05-3	**Decrease potable water consumption within on-campus residences.** 6,700 (2017) 6,365 (SHORT TERM) 6,030 (MEDIUM TERM) Gallons of Water Consumed Annually per On-Campus Resident	*The Department of Residence Life will:* • Upgrade building systems and fixtures to support water efficiency. • Provide educational materials to on-campus residents on water consumption. *On-Campus Aggies will:* • Practice water-conserving behaviors such as taking shorter showers, running full loads of laundry, and turning of faucets when not in use. • Reporting leaks as soon as possible.	*Led by:* • Department of Residence Life *Supported by:* • On-Campus Residents

Deliver biodiverse, connective landscapes that integrate campus lands into the larger eco-region through site design criteria.

NO.	TARGET	ACTIONS	KEY PLAYERS
05-4	**Reduce irrigation's demand for potable water.** 537 (2017) 483 (SHORT TERM) 430 (MEDIUM TERM) Gallons of Potable Water Used Annually for Irrigation (in Millions)	• Transition non-heritage open spaces, such as traffic and parking lot islands as well as interstitial open spaces from turf grass into plantings with lower water demand. • Improve and expand weather sensors to better measure the frequency of irrigation's demand. • Increase soil percolation. • Transition pop-up spray heads to drip irrigation as possible.	*Led by:* • Facilities and Operations • Grounds Management *Supported by:* • Utilities and Energy Services • Office of the University Architect

Social Sustainability is woven into every aspect of the 2018 Sustainability Master Plan. Chapter 06 - Social Sustainability is the central location of social sustainability information and concepts, however each of the themes has topics within it that relate back to the social sustainability.

05 BUILT ENVIRONMENT AND SITE DESIGN (CONTINUED)

NO.	TARGET	ACTIONS	KEY PLAYERS
05-5	**Increase the use of non-potable water for irrigation.** 9-12 (2017 Treated Effluent) 10-13 (MEDIUM TERM Treated Effluent and Rainwater Recapture) 11-14 (LONG TERM Treated Effluent and Rainwater Recapture) Gallons of Non-Potable Water Used for Irrigation Annually (in Millions)	• Develop cistern guidelines to improve their effectiveness and increase their use on campus. • Consider earmarking funds for cistern maintenance. • Increase the use of drip irrigation and prepare it for non-potable water.	*Led by:* • Facilities and Operations • Grounds Management *Supported by:* • Utilities and Energy Services • Office of the University Architect
05-6	**Increase the percentage of campus land managed with Integrated Pest Management (IPM) strategies.** 7% (2017) 15% (SHORT TERM) 30% (MEDIUM TERM) Percentage of Campus Lands Managed with IPM Strategies	• Revise the IPM Plan to the latest metrics and standards. • Apply a revised IPM Plan to larger areas of campus lands.	*Led by:* • Facilities and Operations • Grounds Management

06 WASTE MANAGEMENT

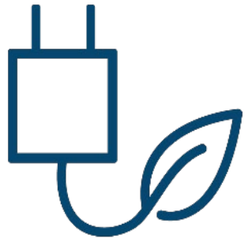
Achieve zero waste to landfill by 2050.

NO.	TARGET	ACTIONS	KEY PLAYERS
06-1	**Increase post-consumer composting in dining locations.** 1 (2017) 2 (MEDIUM TERM) 4 (LONG TERM) Number of On-Campus Dining Venues Engaged in Post-Consumer Composting	*Texas A&M and its dining vendor, will:* • Provide consistent signage in the MSC Upper Level Food Court to improve education on post-consumer composting. • Increase the availability of post-consumer composting to other campus dining facilities. *Because food service is contracted to a third party, Texas A&M:* • Must maintain strong contract language and oversight. • Consider compostable requirements for food retail partners (national chains) that want to locate on campus.	*Led by:* • Facilities and Dining Administration • University Dining • Retail Dining Vendors *Supported by:* • On-Campus Aggies

Texas A&M's
2018 Residence Life Sustainability Plan

Sustainability Themes

Physical Environment



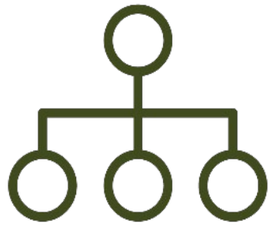
Energy Use and GHG Emissions

Campus Mobility

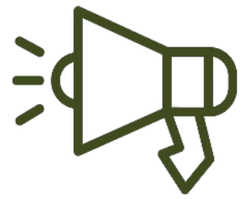
Stormwater Management

Built Environment and Site Design

Institutional Effort



Administrative Support



Education, Outreach, and Engagement

Pedagogy, Research, and Innovation

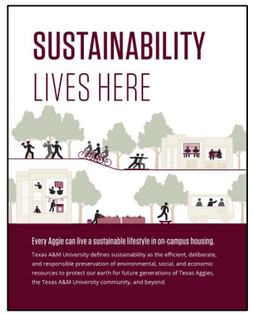
Social Sustainability

Waste Management

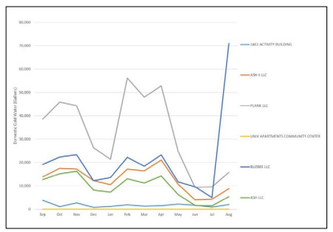
Four Deliverables

Document

Poster Series



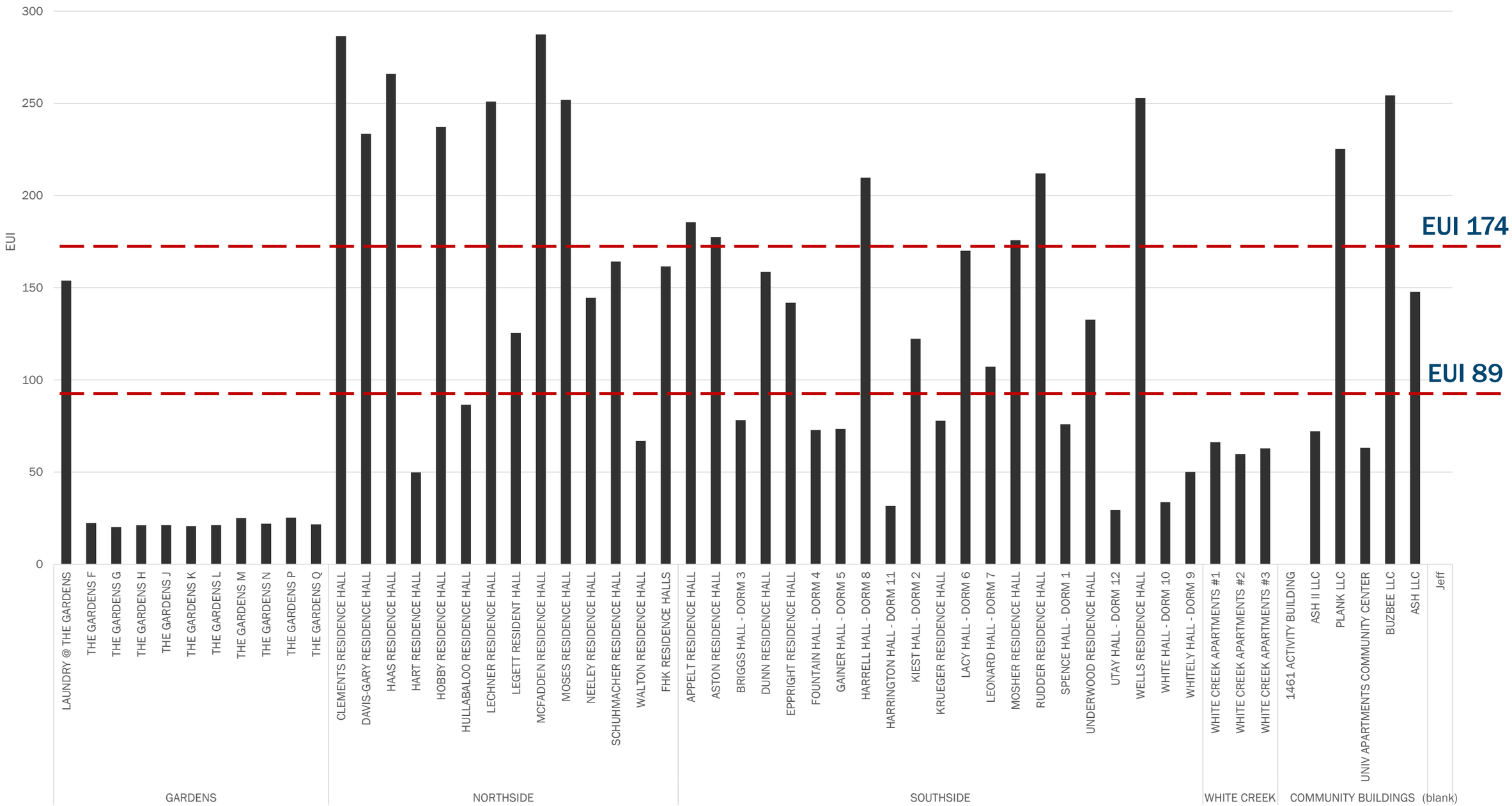
Brochure



Utility Dashboard

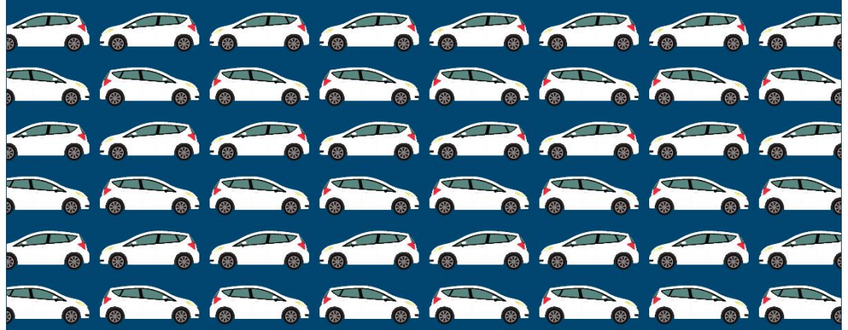
Goal #1: Prioritize Future Efforts

All DRL Facilities – EUI FY 2017



Goal #2a: Celebrate Existing Achievements

ON-CAMPUS RESIDENTS USED **499,478,919 KBTU**
OF ENERGY HEATING, COOLING, AND KEEPING
THE LIGHTS ON IN 2017.



THAT'S THE SAME AMOUNT OF ENERGY
THAT'S REQUIRED TO KEEP **8,580 AVERAGE CARS**
ON THE ROAD FOR A YEAR.

Did You Know?

Your room and board expenses include payments for utilities. The Department of Residence Life will have upgraded heating, ventilation, and air conditioning systems across most on-campus residence halls and apartments by 2022. These newer systems help keep energy consumption down and stabilize room and board expenses year-to-year.

HOW CAN YOU HELP CONSERVE ENERGY?

- **Turn off the lights** and devices when you leave a room.
- Set your **thermostat** when you're out for extended periods of time.
- **Unplug devices** when you leave for break.
- Run **full loads of laundry** in cold water.
- **Close the blinds** when it's hot outside to keep the sun out.
- Use **LED bulbs** in any lamps you bring into your room.

FOR MORE INFORMATION VISIT:
HTTP://RESLIFE.TAMU.EDU/LIVING/SUSTAINABILITY

Residence Life
DIVISION OF STUDENT AFFAIRS

ON-CAMPUS RESIDENTS USE
384.5 MILLION GALLONS
OF WATER EVERY 4 YEARS.

THAT'S ENOUGH WATER TO FILL **KYLE FIELD**.

Low-Flow Water Fixtures

Most on-campus residence halls and apartments have low-flow water using fixtures to minimize the consumption of potable water.

HOW CAN YOU HELP CONSERVE WATER?

- Cutting down **showers** to 5 minutes or less
- Only doing full loads of **laundry**
- Turning off the water while **brushing your teeth**

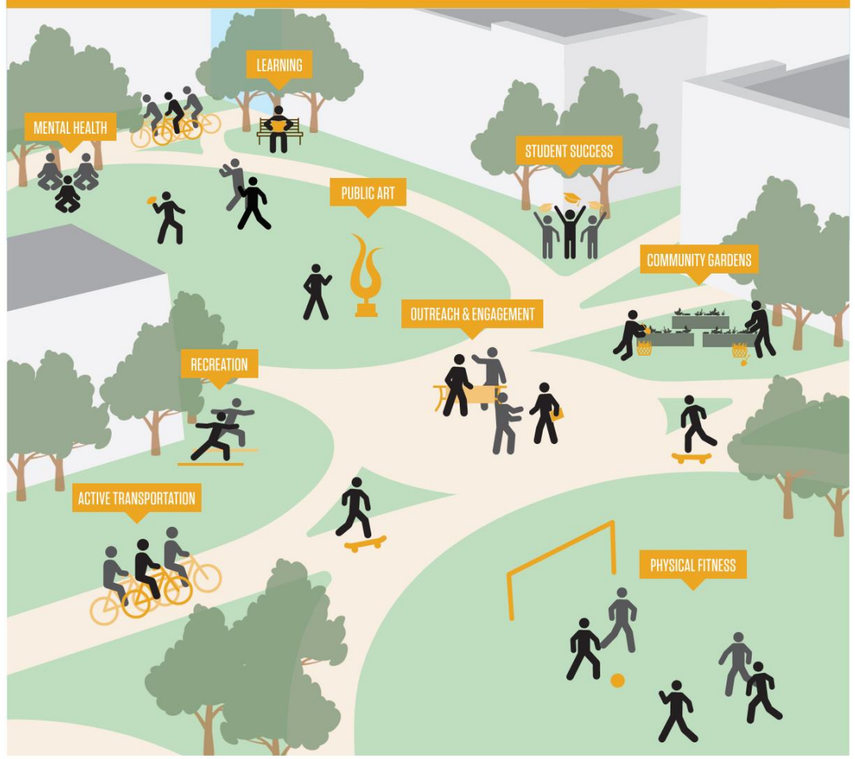
Letting the Department of Residence Life know if you spot a leak by submitting a **work request** at:
http://aggieworks.tamu.edu

FOR MORE INFORMATION VISIT:
HTTP://RESLIFE.TAMU.EDU/LIVING/SUSTAINABILITY/

Residence Life
DIVISION OF STUDENT AFFAIRS

Goal #2b: Increase Resident Knowledge

SOCIAL SUSTAINABILITY AT TEXAS A&M



What is Social Sustainability?

Social Sustainability focuses on the links and connections between society, the environment, and the economy and how they work together to achieve long-term prosperity and continued quality of life for all.

SOCIAL SUSTAINABILITY AT TEXAS A&M

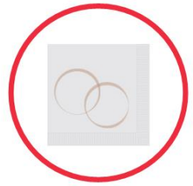
Social Sustainability initiatives at Texas A&M strive to create an environment where all Aggies succeed and are successful, happy, healthy, social, satisfied, and treated equitably. It is defined and built around four topics:

- **Equity, Diversity & Inclusion**
- **Voice & Engagement**
- **Health & Wellness**
- **External Engagement**

FOR MORE INFORMATION VISIT:
HTTP://RESLIFE.TAMU.EDU/LIVING/SUSTAINABILITY

Residence Life
DIVISION OF STUDENT AFFAIRS

CAN I RECYCLE THIS?
RECYCLING AT TEXAS A&M



NO

PAPER NAPKINS

Napkins cannot be recycled, so only take what you need.

SOMETIMES

PIZZA BOXES

Flatten all boxes first. While **clean cardboard can be recycled**, greasy cardboard must be landfilled.

YES

MAGAZINES & PAPER

White and colored paper, index cards, and envelopes with windows or labels can all be recycled.

SOMETIMES

BATTERIES

Alkaline batteries are **not recyclable on campus**. Try using rechargeable batteries and recycle them at MSC or Evans Library.

YES

PLASTIC BOTTLES

Make sure the plastic bottle is empty before placing it in the recycling bin.

SOMETIMES

ALUMINUM FOIL

Aluminum foil can be recycled **only if it is clean from food**. If there is food waste on the foil it should be landfilled.

YES

INK CARTAGES

Place empty cartages in their original boxes and place in or near a paper recycling bin in your hallway or loading dock.

SOMETIMES

TO-GO HOT BEVERAGE CUPS

Most of these cups have a coating on them that makes them non-recyclable.

FOR MORE INFORMATION VISIT:
HTTP://RESLIFE.TAMU.EDU/LIVING/SUSTAINABILITY/

Residence Life
DIVISION OF STUDENT AFFAIRS

Goal #3: Identify Opportunities for Residence Life to Advance Texas A&M

CAMPUS TARGET: Decrease campus EUI.

192	183	174
Today	Short Term	Medium Term

Energy Use Intensity (kBTU / SF / year)

136

EUI of Residence Halls and Apartments in FY 2017

(excluding buildings under construction and common buildings in FY 2017)

02 SOCIAL SUSTAINABILITY

A campus environment is comprised of both built elements and social constructs in which people live their daily lives. Residence Life has a unique opportunity to promote the importance of wellness, engagement, service, equity, and inclusion to its community of residents.

Health and Wellness
Residents have access to services and amenities that keep them healthy and feeling great about themselves – both physically and mentally. These amenities include the Student Recreation Center, the bike share program, counseling and health services, All Faiths Chapel, life skills programs, and dining options.

Voice and Influence
Residents have opportunities to shape their campus living experience through the Residential Housing Association and Community Councils. Opportunities include leading fellow students and the community, creating engaging programming for residents, advocating for hall improvements, and other student leadership opportunities.

External Engagement
Selfless Service is a Core Value at Texas A&M. Whether it's the Big Event, Service Learning, or programs run through Residence Life such as durable goods donation during move-out, on-campus residents stay active in the community to make Aggieland a better place.

Equity, Diversity, and Inclusion
Encouraging Respect, Acceptance & Support Through Education (ERASE) is a student social justice and diversity committee dedicated to creating a more inclusive on-campus community. The group is grounded in respect and appreciation for all individuals and provides education on conscious and unconscious bias.

Sustainability at Texas A&M focuses on the connections between people, the economy, and the environment and how those connections work together to achieve long-term prosperity and continued quality of life. Social Sustainability is an equally weighted theme to environmental and economic aspects of sustainability. In this integrated model, Social Sustainability is not an isolated subject, but instead a thread that ties Aggies into all sustainability initiatives. To this end, Social Sustainability topics are woven throughout this document as well as centralized in this chapter. The Social Sustainability icon below highlights content in other chapters that connects to the recommendations within this topic.

Social Sustainability at Texas A&M blends traditional social policy areas such as equity, diversity, and inclusion with social issues such as justice, economic opportunity, participation and influence, community and global needs, and wellbeing and quality of life. At a campus-scale, Social Sustainability is defined and built around four topics. The content at left highlights how these four topics manifest within the Department of Residence Life.

Social Sustainability in this Document

Recommendations associated with Social Sustainability are marked with the icon below to connect their content to the ideas of this chapter.

Social Sustainability Icon

02-1: Increase connectivity between on-campus housing and recreation facilities.

Students reported the importance of living active and healthy lifestyles and that space for physical and mental health activities is highly important. All six focus groups expressed concern about the connection between on-campus housing neighborhoods and the Student Recreation Center. Student concerns focused on the remoteness of the Student Recreation Center to all of the housing neighborhoods, especially the White Creek Apartments. It is hoped that the new White Creek Community Center will meet some of the community's recreation needs with the addition of new basketball and volleyball courts. The recent passing of a student fee will fund additional recreation centers on campus, which will begin to address the remoteness of the Student Recreation Center for other housing neighborhoods in the longer term.

For more information on this recommendation, see Section 05 - Campus Mobility.

02-2: Develop a public art program in the residence halls that better represents current on-campus residents.

While public art appeared lower on the sustainable amenities activity completed by on-campus residents and DRL staff than most other amenities, the resulting conversations revealed that students and staff didn't immediately make the connection between public art and sustainability. Follow-up questions, however, revealed that residents have a strong interest in creating spaces around their neighborhoods that represent their communities and cultures.

Some students commented on the importance of representation in the public realm, and that public art on campus currently lacks diversity. These focus group conversations were similar to discussions the planning team had in discussing public art on a campus scale in both the 2017 CMP and 2018 SMP. While few participants in either of those processes immediately saw the link between public art and sustainability, discussion always lead to the conclusions shared by 2018 RLSP participants - campus's public image should reflect both the legacy of the institution as well as the current composition of the Aggie community.

02-3: Increase the number of applicants to DRL's Hall Improvement Program.

To utilize their influence on the built environment, any member of a Community Council can fill out a Hall Improvement Form to make a permanent change to their community for the improvement of their hall or apartment. This form is hosted online through the Residential Housing Association (RHA) and financial support is provided by the Department of Residence Life. While the form is available online, some residents appeared unaware of this opportunity to shape their built environment in focus groups. Increased messaging via social media platforms and other DRL communications tools might increase the subscription rate to the Hall Improvement Program.

DRL staff participants indicated that while small projects such as requests for vacuum cleaners, cooking utensils, ping pong tables, and other similar elements can be responded to quickly, larger hall

Share Ideas, Express Concerns, and Participate in the Community

On-campus residents can exercise their voice and influence by:

- Engaging in the Community Councils' and Residential Housing Association's activities.
- Applying for Hall Improvement Funds.
- Becoming Resident Advisors (RAs).
- Taking on a leadership role in 1 of 7 DRL-sponsored student organizations.
- Participating in the annual UChallenge.

Opportunities for residents to use their voice and influence are plentiful, but not all students are aware the opportunities exist.

02 SOCIAL SUSTAINABILITY

A campus environment is comprised of both built elements and social constructs in which people live their daily lives. Residence Life has a unique opportunity to promote the importance of wellness, engagement, service, equity, and inclusion to its community of residents.

ACTION ITEM

Health and Wellness
Residents have access to services and amenities that keep them healthy and feeling great about themselves – both physically and mentally. These amenities include the Student Recreation Center, the bike share program, counseling and health services, All Faiths Chapel, life skills programs, and dining options.

Voice and Influence
Residents have opportunities to shape their campus living experience through the Residential Housing Association and Community Councils. Opportunities include leading fellow students and the community, creating engaging programming for residents, advocating for hall improvements, and other student leadership opportunities.

External Engagement
Selfless Service is a Core Value at Texas A&M. Whether it's the Big Event, Service Learning, or programs run through Residence Life such as durable goods donation during move-out, on-campus residents stay active in the community to make Aggieland a better place.

Equity, Diversity, and Inclusion
Encouraging Respect, Acceptance & Support Through Education (ERASE) is a student social justice and diversity committee dedicated to creating a more inclusive on-campus community. The group is grounded in respect and appreciation for all individuals and provides education on conscious and unconscious bias.

Sustainability at Texas A&M focuses on the connections between people, the economy, and the environment and how those connections work together to achieve long-term prosperity and continued quality of life. Social Sustainability is an equally weighted theme to environmental and economic aspects of sustainability. In this integrated model, Social Sustainability is not an isolated subject, but instead a thread that ties Aggies into all sustainability initiatives. To this end, Social Sustainability topics are woven throughout this document as well as centralized in this chapter. The Social Sustainability icon below highlights content in other chapters that connects to the recommendations within this topic.

Social Sustainability at Texas A&M blends traditional social policy areas such as equity, diversity, and inclusion with social issues such as justice, economic opportunity, participation and influence, community and global needs, and wellbeing and quality of life. At a campus-scale, Social Sustainability is defined and built around four topics. The content at left highlights how these four topics manifest within the Department of Residence Life.

Social Sustainability in this Document

Recommendations associated with Social Sustainability are marked with the icon below to connect their content to the ideas of this chapter.

Social Sustainability Icon

02-1: Increase connectivity between on-campus housing and recreation facilities.

Students reported the importance of living active and healthy lifestyles and that space for physical and mental health activities is highly important. All six focus groups expressed concern about the connection between on-campus housing neighborhoods and the Student Recreation Center. Student concerns focused on the remoteness of the Student Recreation Center to all of the housing neighborhoods, especially the White Creek Apartments. It is hoped that the new White Creek Community Center will meet some of the community's recreation needs with the addition of new basketball and volleyball courts. The recent passing of a student fee will fund additional recreation centers on campus, which will begin to address the remoteness of the Student Recreation Center for other housing neighborhoods in the longer term.

For more information on this recommendation, see Section 05 - Campus Mobility.

02-2: Develop a public art program in the residence halls that better represents current on-campus residents.

While public art appeared lower on the sustainable amenities activity completed by on-campus residents and DRL staff than most other amenities, the resulting conversations revealed that students and staff didn't immediately make the connection between public art and sustainability. Follow-up questions, however, revealed that residents have a strong interest in creating spaces around their neighborhoods that represent their communities and cultures.

Some students commented on the importance of representation in the public realm, and that public art on campus currently lacks diversity. These focus group conversations were similar to discussions the planning team had in discussing public art on a campus scale in both the 2017 CMP and 2018 SMP. While few participants in either of those processes immediately saw the link between public art and sustainability, discussion always lead to the conclusions shared by 2018 RLSP participants - campus's public image should reflect both the legacy of the institution as well as the current composition of the Aggie community.

02-3: Increase the number of applicants to DRL's Hall Improvement Program.

To utilize their influence on the built environment, any member of a Community Council can fill out a Hall Improvement Form to make a permanent change to their community for the improvement of their hall or apartment. This form is hosted online through the Residential Housing Association (RHA) and financial support is provided by the Department of Residence Life. While the form is available online, some residents appeared unaware of this opportunity to shape their built environment in focus groups. Increased messaging via social media platforms and other DRL communications tools might increase the subscription rate to the Hall Improvement Program.

DRL staff participants indicated that while small projects such as requests for vacuum cleaners, cooking utensils, ping pong tables, and other similar elements can be responded to quickly, larger hall

Share Ideas, Express Concerns, and Participate in the Community

On-campus residents can exercise their voice and influence by:

- Engaging in the Community Councils' and Residential Housing Association's activities.
- Applying for Hall Improvement Funds.
- Becoming Resident Advisors (RAs).
- Taking on a leadership role in 1 of 7 DRL-sponsored student organizations.
- Participating in the annual UChallenge.

Opportunities for residents to use their voice and influence are plentiful, but not all students are aware the opportunities exist.

PROGRESS CHECKLIST

This executive summary tool is intended to support the Texas A&M University Department of Residence Life in evaluating its progress in advancing the recommendations within this Residence Life Sustainability Plan. This "at a glance" summary will allow the department to document snapshots in time during implementation and identify priority areas for future improvement. In addition to tracking the percentage of completion for each recommendation, this checklist includes "defer to next fiscal year," and "not pursued" options. These choices support DRL in distinguishing recommendations that should continue to be considered in future from recommendations that will not be advanced because of changes in circumstances or priority that can not be predicted at the time of publication.

02 SOCIAL SUSTAINABILITY

	PAGE #	0%	25%	50%	75%	100%	DEFER TO NEXT FY	NOT PURSUED	NOTES
02-1: Increase connectivity between on-campus housing and recreation facilities.	7	○	○	○	○	○	○	○	
02-2: Develop a public art program in the residence halls that better represents current on-campus residents.	7	○	○	○	○	○	○	○	
02-3: Increase the number of applicants to DRL's Hall Improvement Program.	7	○	○	○	○	○	○	○	
02-4: Increase the frequency of sustainability-related requests in applications to DRL's Hall Improvement Program.	8	○	○	○	○	○	○	○	
02-5: Increase the amount of durable goods donated at move-out.	9	○	○	○	○	○	○	○	
02-6: Increase proactive communication on Social Sustainability topics.	9	○	○	○	○	○	○	○	

03 ENERGY USE & GREENHOUSE GAS EMISSIONS

	PAGE #	0%	25%	50%	75%	100%	DEFER TO NEXT FY	NOT PURSUED	NOTES
03-1: Complete planned energy efficiency upgrades.	16	○	○	○	○	○	○	○	
03-2: Consider additional strategies to decrease the EUI of Davis-Gary and Moses Residence Halls.	17	○	○	○	○	○	○	○	

03 ENERGY USE & GREENHOUSE GAS EMISSIONS (continued)

	PAGE #	0%	25%	50%	75%	100%	DEFER TO NEXT FY	NOT PURSUED	NOTES
03-3: Continue to evaluate Corps of Cadets dorms post-renovation to ensure efficient EUIs are being achieved in all facilities.	18	○	○	○	○	○	○	○	
03-4: Evaluate which halls have the lowest summer energy use intensity and consider moving summer occupants to facilities with the lowest summer EUIs.	20	○	○	○	○	○	○	○	
03-5: Evaluate and implement strategies to simulate energy bills for residents to encourage conservation.	21	○	○	○	○	○	○	○	
03-6: Calculate EUI for each building annually.	22	○	○	○	○	○	○	○	
03-7: Decrease DRL's EUI from a FY2017 baseline of 136 to 123 by FY2022.	22	○	○	○	○	○	○	○	

04 STORMWATER MANAGEMENT

	PAGE #	0%	25%	50%	75%	100%	DEFER TO NEXT FY	NOT PURSUED	NOTES
04-1: Continue to support campus-wide efforts to achieve better stormwater management by embracing strategies articulated by the 2017 Campus Master Plan.	24	○	○	○	○	○	○	○	

05 CAMPUS MOBILITY

Collaborate with Transportation Services to:

	PAGE #	0%	25%	50%	75%	100%	DEFER TO NEXT FY	NOT PURSUED	NOTES
05-1: Create equitable access to on-campus destinations including the Student Recreation Center across on-campus communities.	28	○	○	○	○	○	○	○	
05-2: Create equitable access to off-campus destinations including the grocery store and First Friday in Bryan across on-campus communities.	28	○	○	○	○	○	○	○	
05-3: Consider adding bikeshare as an opt-in fee for on-campus residents.	28	○	○	○	○	○	○	○	
05-4: Continue evaluating how to balance recommendations of the 2017 Campus Master Plan with on-campus residents' parking needs.	29	○	○	○	○	○	○	○	

Integrating Efforts

Built Environment and Site Design

Reduce potable water use intensity.

TARGET: Decrease on-campus resident domestic water use.

6,700	6,365	6,030
	(-5%)	(-10%)
2017	Short Term	Medium Term

Water Use Intensity (Gallons / Bed)

Public Art

2017 Texas A&M Campus Master Plan

Efforts should be made to represent a broader cross-section of students, faculty, and staff in … public art; it is challenging for underrepresented members of the campus community to feel valued and included when their social and cultural identities are not reflected in the institution's public image.

2018 Texas A&M Sustainability Master Plan

Target 05-2: Develop public, civic spaces (interior or exterior) to represent a broader cross-section of the Aggie community.

3

Short Term

6

Medium Term

Number of Public, Civic Spaces (Interior or Exterior) Developed

2018 Residence Life Sustainability Plan

Action 02-2: Develop a public art program in the residence halls that better represents current on-campus residents.


HOME OF THE 12TH MAN
THE WAR HYMN MONUMENT
2016

Lessons Learned

Plan to plan.

Stakeholder Entities

- UES
- Diversity Working Group
- Sustainability and Environmental Management
- Chartwells
- SSC Services
- Transportation Services
- Residence Life
- Student Affairs
- Corps of Cadets
- Health Services
- Athletics
- Disability Services
- Faculty Senate
- Staff Council
- Procurement
- HR
- Environmental Health & Safety
- Office of the University Architect
- Office of the Provost
- Division of Research
- Rec Sports
- **Others?**

Plan to plan.

Stakeholder Mapping

	Physical Environment				Waste Mgmt	Social Sustainability	Institutional Efforts		
	Energy Use & GHG Emissions	Stormwater Mgmt	Campus Mobility	Built Environment / Site Design	Waste Mgmt	Social Sustainability	Admin Support	Education, Outreach, & Engagement	Pedagogy, Research, & Innovation
UES	X	X		X	X			X	
Diversity Working Group						X	X	X	X
Dept. of Multicultural Services						X	X	X	X
Sustainability and Environmental Management	X				X			X	
Chartwells					X	X	X		
SSC Services	X	X		X	X			?	
Transportation Services	X	?	X				X	?	
Residence Life	X			X	X	X		X	

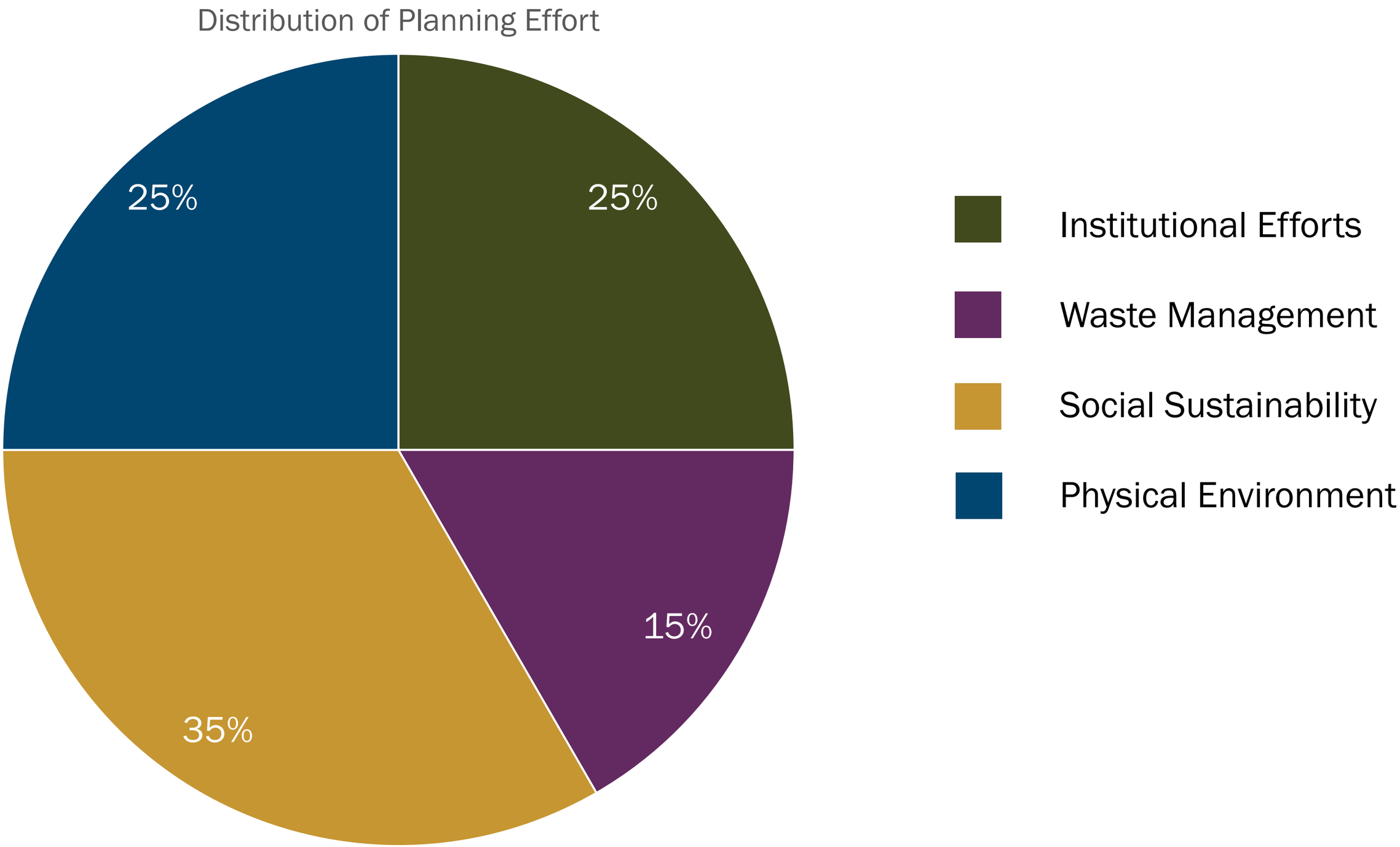
Plan to plan.

Stakeholder Mapping

Physical Environment		
Name	**Title**	**Dept**
Mr. Bill Cox	Assistant Director	Facilities and Dining Administration
Dr. Carol Binzer	Director	Residence Life and Housing
Mr. Chris Meyer	Associate Vice President	Office of Safety and Security
Mr. Dan Mizer	Senior Associate Director	Residence Life and Housing
Ms. Debbie Hoffmann	Associate Director	Transportation Services
Ms. Jasmine Wang	Undergraduate Student	Speaker of Student Senate
Mr. Jeff Heye	Resident Regional Manager-EDCS	SSC Service Solutions for Higher Education
Mr. Jeff Truss	Assistant Director	Environmental Health and Safety
Mr. Jim Riley	Executive Director	Utilities & Energy Services
Ms. Tracey Foreman	Assistant Director	Disability Services
Mr. Kenny Kimball	Assistant Director	Transportation Services
Ms. Courtney Hill	Director of Marketing and Guest Experience	Chartwells
Mr. Les Williams	Director	Utilities & Energy Services
Ms. Lila Gonzales	University Architect	Office of the University Architect
Mr. Peter Lange	Associate Vice President	Transportation Services
Mr. Richard Gentry	Regional Vice President	SSC Service Solutions for Higher Education
Mr. Matt Fry	Assistant Vice President	Vice President for Research
Mr. Don Crawford	Resident Regional Manager-Grounds	SSC Service Solutions for Higher Education
Mr. TJ Marcum	Manager	Athletics

Social Sustainability		
Name	**Title**	**Dept**
Dr. Angie Hill Price	Speaker of Faculty Senate	Engineering Technology
Dr. Carol Binzer	Director	Residence Life and Housing
Ms. Casey Ricketts	University Staff Council Delegate	College of Education & Human Development
Mr. Chris Emmerson	Assistant Commandant	Office of the Commandant
Ms. Courtney Hill	Director of Marketing and Guest Experience	Chartwells
Ms. Jasmine Wang	Speaker of Student Senate	Undergraduate Student
Mr. Jason Kurten	Assistant Director	Dept of Recreational Sports
Dr. Jennifer Reyes	Director	VP & Associate Provost for Diversity
Mr. Joe Hartsoe	Student Development Specialist III	Disability Services
Ms. Lilia Gonzales	University Architect	Office of the University Architect
Dr. Maggie Gartner	Executive Director	Student Counseling Services
Mr. Matthew Etchells	President Graduate & Professional Student Council	Graduate Student
Dr. Nancy De Leon	Associate Director	Human Resources & Organizational Effectiveness
Ms. Sarah Boreen	Customer Relations Manager	SSC Service Solutions for Higher Education
Ms. Barbara Musgrove	Public Relations/Marketing-Graphic Designer	SSC Service Solutions for Higher Education
Dr. Tonya Driver	Director	Multicultural Services
Ms. Jaimie Masterson	Associate Director	Assoc VP External Relations
Dr. Martha Dannenbaum	Director	Student Health Services
Mr. Dustin Kemp	Program Assistant	Honors Program
Mr. Carlo Chunga	Undergraduate Student	Student Government

Topics will take different timelines to mature.



Vocabulary Matters.

HEALTH AND WELLNESS

EVERGREEN GOALS

Long-term (really LONG-TERM), Visionary, No timeline, Relies on consensus of working groups to set the direction

Create a cultural of wellness that solely focuses on physical health, dietary choice, and mental well-being.

Create a cultural of wellness recognizes all eight dimensions of wellness.

Create a culture of wellness that recognizes all eight dimensions of wellness, but focuses heavily on physical and emotional.

Or share your goals!

TARGETS

Incremental steps, Measurable, Sets a timeline, Relies on existing data to set the benchmark

Increase STUDENT participation in mental health programs by 25% by 2025.

Increase student, faculty, and staff participation in physical health or recreation programs by 25% by 2025.

Increase STUDENT participation in a Dietary Choice program by 25% by 2025.

Increase FACULTY AND STAFF participation in mental health programs by 25% by 2025.

Increase student, faculty, and staff participation in physical health or recreation programs by 25% by 2025.

Increase FACULTY AND STAFF participation in a Dietary Choice program by 25% by 2025.

Increase intellectual wellness programs by 10% by 2020.

Increase financial wellness programs by 10% by 2020.

Increase occupational wellness programs by 10% by 2020.

Increase spiritual wellness programs by 10% by 2020.

Or share your targets!

Vocabulary Matters.

HEALTH AND WELLNESS

EVERGREEN GOALS

Long-term (really LONG-TERM), Visionary, No timeline, Relies on consensus of working groups to set the direction

- Create a culture of wellness that solely focuses on physical health, dietary choice, and mental well-being.
- Create a culture of wellness recognizes all eight dimensions of wellness.
- Create a culture of wellness that recognizes all eight dimensions of wellness, but focuses heavily on physical and emotional.

Or share your goals!

TARGETS

Incremental steps, Measurable, Sets a timeline, Relies on existing data to set the benchmark

- Increase STUDENT participation in mental health programs by 25% by 2025.
- Increase student, faculty, and staff participation in physical health or recreation programs by 25% by 2025.
- Increase STUDENT participation in a Dietary Choice program by 25% by 2025.
- Increase FACULTY AND STAFF participation in mental health programs by 25% by 2025.
- Increase student, faculty, and staff participation in physical health or recreation programs by 25% by 2025.
- Increase FACULTY AND STAFF participation in a Dietary Choice program by 25% by 2025.
- Increase intellectual wellness programs by 10% by 2020.
- Increase financial wellness programs by 10% by 2020.
- Increase occupational wellness programs by 10% by 2020.
- Increase spiritual wellness programs by 10% by 2020.
- Reduce incidences of chronic disease in 25% of faculty/staff

EQUITY, DIVERSITY AND INCLUSION

EVERGREEN GOALS

Long-term (really LONG-TERM), Visionary, No timeline, Relies on consensus of working groups to set the direction

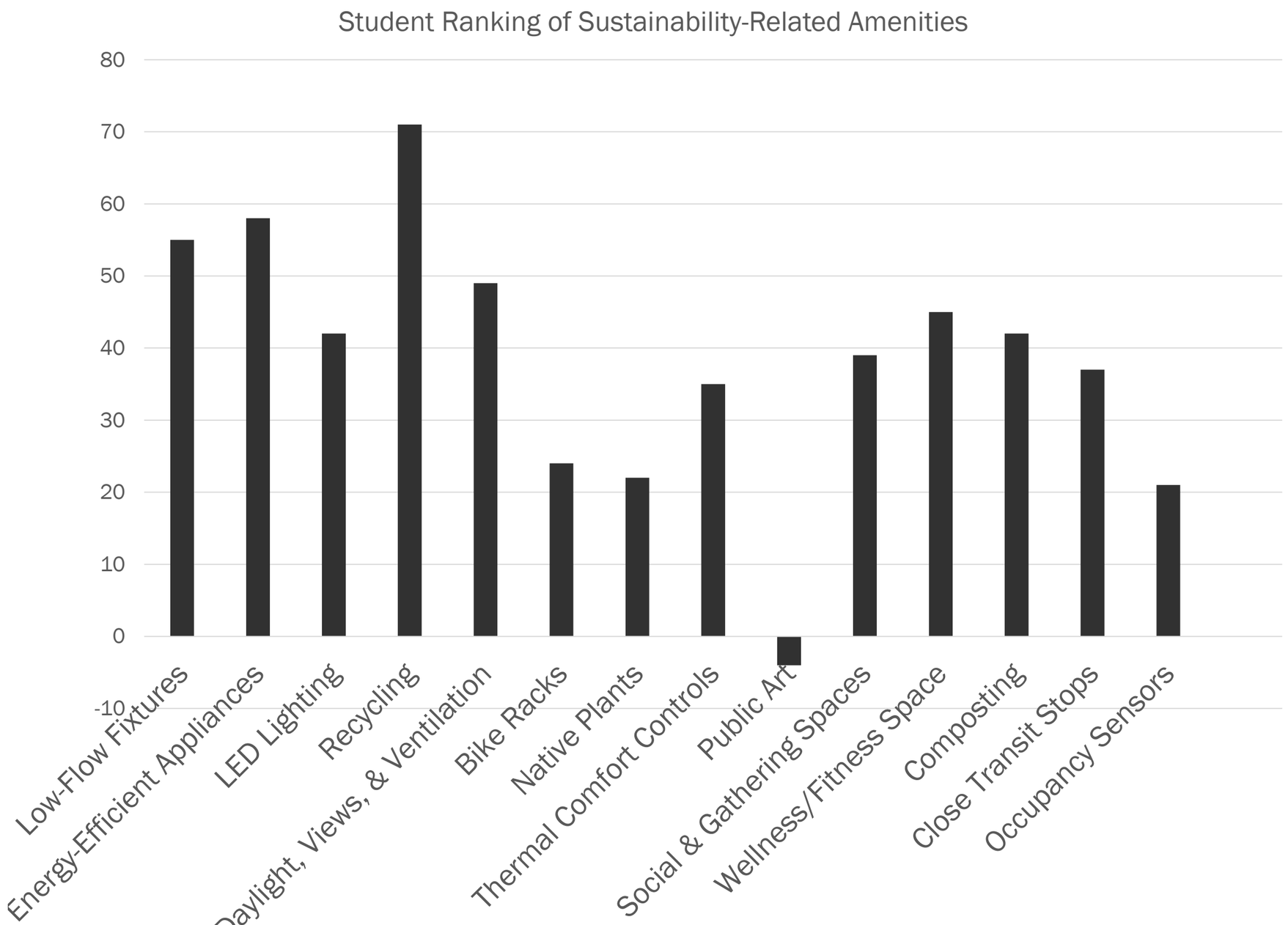
- Texas A&M promotes and maintains a welcoming, inclusive, equitable community where people feel connected and successful.
- As Texas A&M's community becomes more diverse, it is imperative to promote responsible stewardship of fiscal, natural and human resources.
- Texas A&M actively promotes equal access and opportunity to all populations (today and tomorrow).
- Texas A&M demonstrates consistent behaviors, attitudes, and policies that come together in a system that welcomes, supports, nurtures everyone.
- Texas A&M is an environment where the opportunity to fully participate does not depend on elements of an individuals identity.
- Being a good Aggie is cultivating a University that values Equity, Diversity, and Inclusion.

TARGETS

Incremental steps, Measurable, Sets a timeline, Relies on existing data to set the benchmark

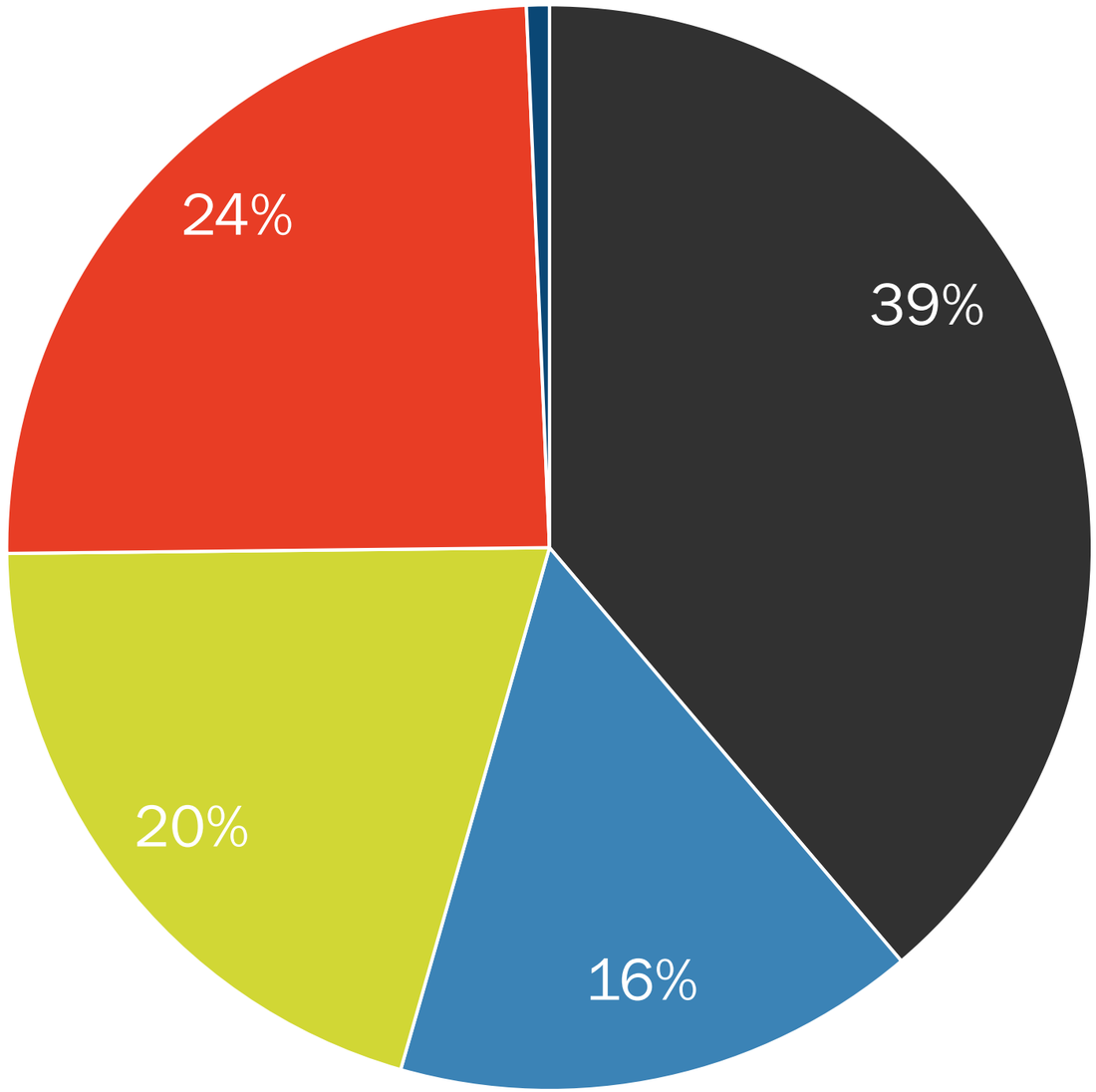
- Close the gaps in student success rates for students of underrepresented groups by 2025.
- Increase support/resources by 50% in order to address implicit bias with all members of the campus by 2025 .
- Increase support/resources by 25% to better support Faculty and Staff from underrepresented groups by 2025.
- Require education/training for ALL students regarding Equity, Diversity, and Inclusion by 2025.
- Increase support/resources by 25% for minority students, specifically those who are first-generation college students, by 2025.
- Increase programs and trainings by 25% for faculty to learn how to better support students from underrepresented groups, or non-traditional students by 2025.
- Implement mandatory Implicit Bias training for ALL University and College-level leadership by 2020.
- Reduce disparities in race/ethnicity and gender retention rates by 25% by 2025.
- Implement Pay Equity audits biannually for all faculty and professional staff by 2025.
- 100% of University-owned classrooms are standard with technology to aid those with disabilities by 2025.
- 100% of campus buildings are fully accessible to those with physical disabilities by 2025.
- Establish access to intergenerational care on or near campus by 2020.
- Undergraduate population is representative of Texas High School Graduate demographics by 2025
- Increase funding of Diversity Seed Grants by 50% by 2025.
- 100% of Academic and Administrative Units incorporate EDI into Strategic Planning

Student voices carry weight.



Student voices carry weight.

How easy is it for you to recycle in your residence hall?



ALL ON-CAMPUS RESPONDENTS

- Very easy, I do it all the time.
- Very easy, but I don’t recycle.
- I’ve heard you can recycle, but I’m not sure how to.
- Do we have recycling?!
- No Response

Student voices carry weight.

What is your vision for a sustainable on-campus living experience?

“that all Aggies are aware of our surroundings and what we can do to make a change”

“more convenient, available, and better labeled recycling”

“an environment for students to better themselves and the world we live in”

“improved administrative + social sustainability support”

Show it in print.

Achieve a 50% reduction in Greenhouse Gas Emissions by 2030; Achieve net-zero by 2050.

As a signatory for the Presidents' Climate Leadership Commitments, the University is required to establish a neutrality target date and plan to achieve it as quickly as possible. Texas A&M University has committed to achieving net-zero greenhouse gas emissions by 2050.

03.1: Decrease demand for natural gas.

? ? ?

Today 2025 2040

Gallons of Natural Gas Used Annually

<UES to advise what metric(s) to track and timeline. Target and metrics listed are suggestions only>

How will we do it?

Keeping indoor spaces cool in Texas's hot climate is an energy intensive process that can most efficiently serve the growing campus by maximizing the use of heat pump chillers that will decrease demand for natural gas, reduce the need for cooling tower makeup water and chemical water treatment, and minimize campus's greenhouse gas emissions. The following actions will help Texas A&M optimize on-campus energy production:

- Replace equipment that is past its industry recommended service life.
- Increase use of heat pump chillers.
- Upgrade existing cooling towers.

More information on the actions above can be found in the 2017 UES Master Plan.

03.2: Decrease campus energy use intensity.

192 (2017) **183** (2020) **174** (2025)

Campus Source Energy Use Intensity (kbtu/sf/year)

<EUI targets set based on page 17-3 of the 2017 UES Master Plan. Target only extends to 2020; UES to validated 2025 target. Current assumption maintains 5% Source EUI improvement every 5 years>

How will we do it?

Energy use intensity is a measure of how much energy the square footage of campus buildings uses per year. Cutting down on energy use intensity requires efficient buildings and changes in Aggie energy use behaviors. Campus buildings cut down energy use by:

- Increasing effectiveness of air-side heat recovery
- Updating building automation systems.
- Communicating system feedback to end users.
- Upgrading laboratory fume hoods.

Aggies can cut energy use by:

- Turning off the lights when exiting a room.
- Turnoff and unplug devices prior to extended campus breaks.

Types of Greenhouse Gas Emissions

Scope 1 Emissions
Emissions from sources controlled by Texas A&M, primarily from building and campus scale energy equipment.

Scope 2 Emissions
Emissions from the consumption of purchased electricity, steam, or other energy sources generated upstream.

Scope 3 Emissions
Emissions that are a consequence of Texas A&M's operations that are not owned or controlled by the organization.

Greenhouse gas emissions come in three types or scopes depending on who owns the emitting asset. Scope 1 emissions include on-campus energy-generating equipment while Scope 2 emissions come from energy purchased from utilities. Scope 3 includes emissions related to commuting, University related travel, and purchased.

03.3: Increase use of renewable energy.

15% (2017) **20%** (2030) **25%** (2040)

Percentage of Campus Electricity Consumption Sourced from Renewable Energy

How will we do it?

While Texas A&M produces no renewable energy on campus, the University purchases approximately half of campus's annual electricity demand from the Electrical Reliability Council of Texas (ERCOT) grid which includes energy generated from wind power. Given the volume of electricity Texas A&M purchases from ERCOT today, 15% of on-campus electricity is powered from renewable sources. To increase the amount of electricity powered by renewable sources:

- Structure appropriately oriented new construction to accommodate solar panels in future.
- Investigate Power Purchase Agreements (PPA) as a way to finance on-campus panels.
- Investigate Renewable Energy Certificates (RECs) as a way to increase renewable energy purchases.
- <additional action items as suggested by working group or SAC>

Equivalency graphic: if EUI drops from 192 to 174, that's the same as removing X cars from the road for a year
<need a percentage split of EUI to electricity vs. gas and other fuel sources>

1,712
Number of On-campus Fume Hoods Supporting Laboratory Teaching and Research

$3.1M
Estimated Annual Cost to Run Campus Fume Hoods

40% - 65%
Energy Savings Possible from Upgrading Fume Hoods

DRAFT 2

Show it in print.

Achieve a 50% reduction in greenhouse gas emissions per weighted campus user by 2030; achieve net-zero emissions by 2050.

Texas A&M University is committed to achieving net-zero greenhouse gas emissions per weighted campus user by 2050.

02-1: Decrease campus energy use intensity.

192 (2017) **182** (SHORT TERM) **174** (MEDIUM TERM)

Campus Source Energy Use Intensity (kbtu/sf/year)

Energy use intensity (EUI) is a measure of how much energy is consumed per square foot in campus buildings each year. Cutting down on energy use intensity requires efficient buildings and changes in Aggie behaviors that use energy.

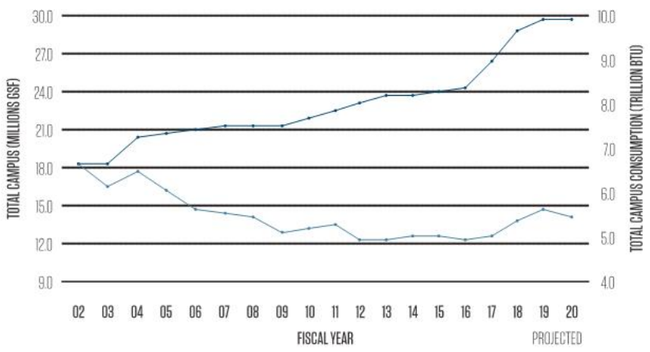
How will we do it?

Campus buildings can decrease energy use by:

- Increasing effectiveness of air-side heat recovery.
- Updating building automation systems.
- Communicating system feedback to end users.
- Upgrading laboratory fume hoods.
- Meaningfully integrating exterior shading solutions, such as that provided by trees or architectural features.

Aggies can cut energy use by:

- Turning off the lights when exiting a room.
- Turning off and unplugging devices prior to extended campus breaks.



Campus Gross Square Footage vs. Energy Consumption

While campus square footage is projected to increase 60% between fiscal years 2002 and 2020, energy consumption is predicted to decrease 20% over the same period. Energy savings can be attributed to improvements in the Central Heating and Power Plant, building-scale equipment upgrades, and improved Utility and Energy Services energy management practices.

Total Campus (million GSF)

Total Campus Consumption (trillion Btu)

Types of Greenhouse Gas Emissions

Greenhouse gas emissions come in three types or scopes depending on who owns the emitting asset.

Scope 1

Emissions from sources controlled by Texas A&M, primarily from building and campus energy equipment that burns fossil fuels and the campus fleet vehicles.

Scope 2

Emissions from the consumption of purchased electricity, steam, or other energy sources generated upstream from Texas A&M.

Scope 3

Emissions that are a consequence of Texas A&M's operations that are not owned or controlled by the organization, such as the emissions associated with commuting and University travel.

02-2: Decrease Scope 1 and Scope 2 greenhouse gas emissions per weighted campus user.

5.81 (2017) **5.52** (SHORT TERM) **5.23** (MEDIUM TERM)

Metric Tons of Carbon Dioxide Equivalent ($MTCO_2e$) per Weighted Campus User

The energy used for campus operations is either produced on campus and contributes to Scope 1 GHG emissions or purchased from the Energy Reliability Council of Texas (ERCOT) grid and contributes to Scope 2 GHG emissions. Since FY 2008, energy produced on campus has produced fewer GHG emissions than energy purchased from ERCOT.

How will we do it?

The following actions will help Texas A&M optimize on-campus energy production and purchases:

- Investigate strategies to minimize peak demand to maximize opportunities for on-campus production to meet energy needs.
- Investigate strategies to increase capacity for on-campus energy production.
- Replace equipment that is past its industry recommended service life.
- Increase use of heat pump chillers.
- Upgrade existing cooling towers.

More information on the actions above can be found in the 2017 Utilities & Energy Services Master Plan.

For every 0.58 $MTCO_2e$ reduction per weighted campus user, the equivalent of 6,394 cars are removed from the road for a year.

1,712

Number of On-campus Fume Hoods Supporting Laboratory Teaching and Research

$3.1M

Estimated Annual Cost to Run Campus Fume Hoods

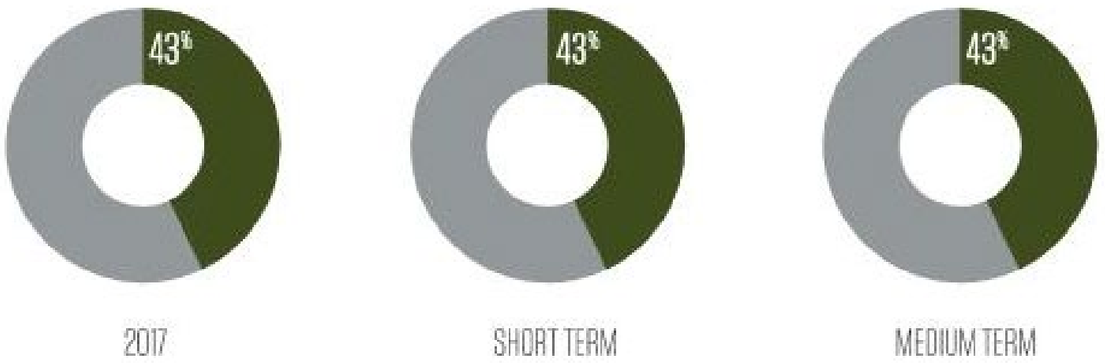
40% - 65%

Energy Savings Possible from Upgrading Fume Hoods

FINAL PUBLICATION

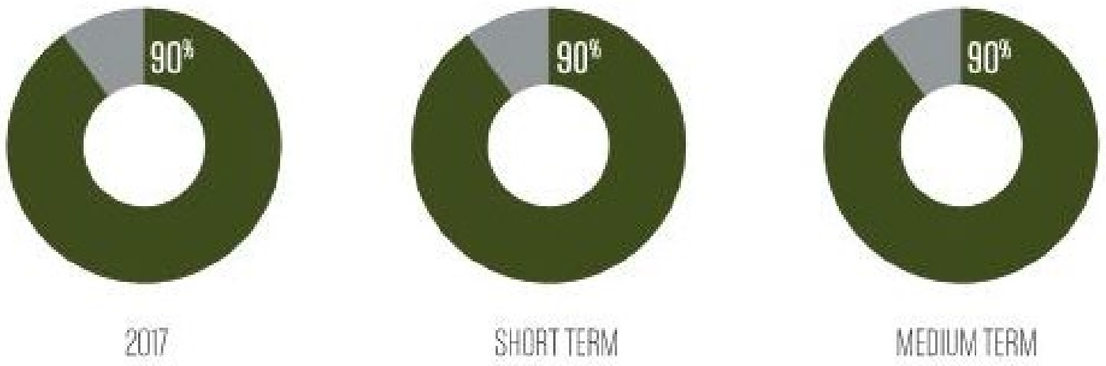
Celebrate existing work; encourage advancement.

10-6: Maintain the percentage of researchers that are engaged in sustainability research.



Percentage of Researchers Engaged in Sustainability Research

10-7: Maintain the percentage of departments that are engaged in sustainability research.



Percentage of Departments Engaged in Sustainability Research

Celebrate existing work; encourage advancement.

10-6: Maintain the percentage of researchers that are engaged in sustainability research.

Percentage of Researchers Engaged in Sustainability Research

10-7: Maintain the percentage of departments that are engaged in sustainability research.

Percentage of Departments Engaged in Sustainability Research

10-3: Increase the percentage of students who take a course with a sustainable learning outcome.

Percentage of Students Taking Courses with Sustainable Learning Outcomes

Many hands make light work.

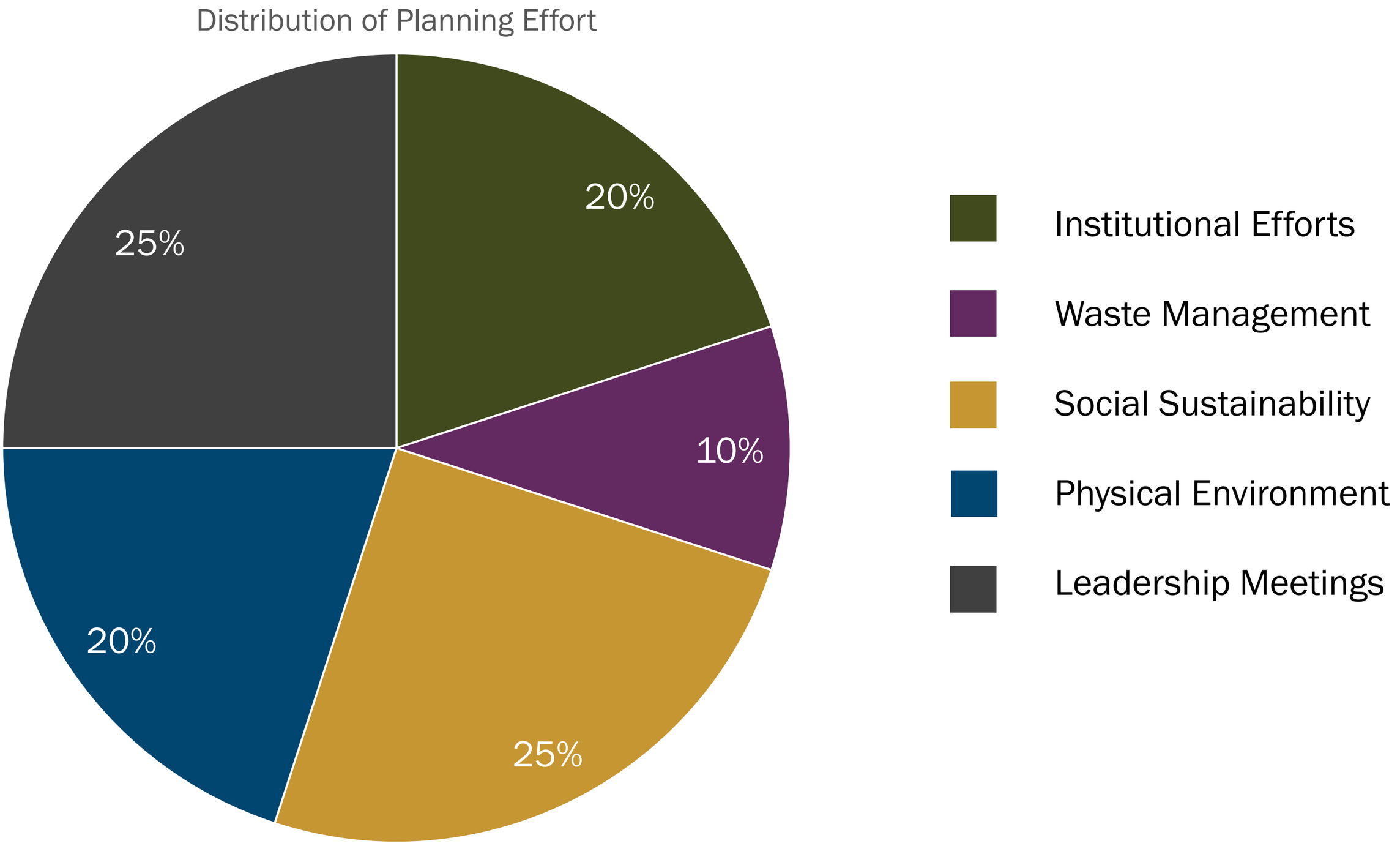
3

Office of Sustainability Staff Members

54

Working Group Participants

Keep leadership engaged.



Thank you!

Questions?

Find us after the webinar:
Carol Binzer – carolb@tamu.edu
Kelly Wellman – kwellman@tamu.edu
Allison Wilson – awilson@asg-architects.com

The 2018 Texas A&M Sustainability Master Plan and 2018 Residence Life Sustainability Plan are available online at:

2018 SMP: http://sustainability.tamu.edu/Data/Sites/1/downloads/2018SMP.PDF

2018 RLSP: https://reslife.tamu.edu/wp-content/uploads/SUSTAINABILITY_ResLife_Sustainability_Plan.pdf