

The background of the cover is a photograph of a modern building at dusk. The building features a prominent copper-colored metal overhang with three long, recessed linear lights. Below the overhang is a large glass entrance with multiple doors. The interior is visible through the glass, showing a well-lit space with a desk and a chair. To the right of the entrance, there are stone steps leading up to a higher level. The sky is a deep blue.

T FACILITIES SERVICES
ANNUAL REPORT 2017

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EXECUTIVE SUMMARY

The Facilities Services Department strives to advance the University of Tennessee's overall mission by maintaining and optimizing the physical resources and environments of the Main and Agricultural campuses.

The number one priority of Facilities Services is to create and maintain a clean, safe environment for students to learn, faculty to teach and perform research, and staff to work. Our dedicated staff of nearly 700 achieve this goal through their 5,500 years of combined service.

Facilities Services continually improves upon top industry practices in order to support the goal of providing the best possible services while also maintaining the best cost model, with our employees' vested loyalty and ownership in the work they provide to the state of Tennessee and to the UT Knoxville campus community.

As we look forward to the university's continued advancement, with the constant support of our department, we compiled a report of our achievements for the last year in this annual report as we strive to exceed our goals for the 2017-2018 academic year.

This report is presented to showcase the continuing initiatives of the University of Tennessee, Knoxville Facilities Services Department in our drive to become a Top 25 Facilities Department. We are committed to be in the forefront of achieving the university's goal to become a Top 25 Research Institution.

It takes a team of dedicated Facilities Services employees to provide the services worthy of the University of Tennessee. This is an introduction to our commitment to being that team.



FACILITIES SERVICES DEPARTMENT

The Facilities Services Department is the largest non-academic department on the University of Tennessee, Knoxville campus. Our department is responsible for the basic operation and continuous maintenance of most facilities on the Main and Agricultural campuses of the University of Tennessee.

Campus facilities include approximately 280 buildings, more than 15 million square feet of space, and roughly 910 acres of land.

In addition to these facilities we are also responsible for electrical substations that provide power to most of our campus buildings, and a central steam plant that provides heating and hot water in most campus spaces.

We currently have more than 660 employees distributed through several specialized units in our department. These units are Administration, Administrative & Support Services, Communication & Information Services, Construction Services, Design Services, Facilities Operations, Special Projects, Utilities Services, and Zone Maintenance.

Our specialized subunits include the STAR Team, Business Services, Central Supply, Plumbing & Heating Services, Electrical Services, Air Conditioning Services, Steam Plant, Landscape Services, Building Services, Building Finishes, Lock & Key Services, Sanitation Safety, Rapid Response Team, Communications & Public Relations, Employee Training & Development, IT Support & Maintenance, Project Coordination, Construction Team, Estimating Services, Stormwater Management, Landscape Response, Interior Design, GIS Projects, Archive & Space, Codes Enforcement, and Project Management.

Facilities Services staff members also oversee the university's environmental projects through the management of UT Recycling and the Office of Sustainability.

Key parts of our organization are operating continuously, 24 hours a day, 365 days a year, and we are always on call.

Anyone on campus can contact Facilities Services 24 hours a day using our "One Call" program at 946-7777. Someone is always available to provide customer service and support to the campus community.

Our goal is to always enhance and maintain campus environments that are highly conducive to learning and research.

FACILITIES VISION:

Our vision is to be recognized as a model facilities services organization by providing outstanding support and superior services to the university community.

This is accomplished by developing staff who are motivated, highly skilled and customer focused; by building diverse relationships based on mutual respect, effective communication, and shared goals; by creating innovated processes that will be effective, efficient and supported with the required resources and appropriate policies; and by becoming a trusted provider that promotes a clean, safe, and sustainable environment for UT.

FACILITIES MISSION:

Our mission is to provide, maintain, and optimize the physical resources and environments of the campus for the university community through the integration of people, technology, and innovative work practices in order to fully support and promote the University of Tennessee's VolVision, its long-range Master Plan, and its goal of becoming a Top 25 Research Institution.

FACILITIES VALUES:

We incorporate several important values into our daily operations. By embracing and enforcing these values, our department can better support the university's own standards in education, research and public service.

Quality – We strive to exceed the expectations of the community in the areas of our responsibility.

Reliability – We labor to retain customers who can count on us for an appropriate and consistent response (in a timely fashion) to their concerns, request, and problems.

Professionalism – We operate with the most highly skilled and knowledgeable staff, fostering teamwork, collaboration, and open communication – ultimately serving our customers with both integrity and respect.

Innovation – We continually seek our creative ways to improve our operations and the way we provide our services to meet our customers' ever changing needs.

Accountability – We perform in a manner at all times that makes us responsible and answerable to our customers, the university, the community, as well as to the people of the State of Tennessee.

Commitment – We are dedicated to an inclusive, safe, and sustainable work environment.

SELF-ASSESSMENT & BENCHMARKING

SIGHTLINES & FPI SURVEY

Improving self-assessment and benchmarking measures has been a key component of the Facilities Services reorganization.

The ability to monitor current campus facilities conditions and forecast future risks is crucial to maintaining a safe and enjoyable campus environment.

Engaging with Sightlines Facilities Asset Advisors, the University of Tennessee Facilities Services Department has embarked on rigorous benchmarking and analysis, ensuring that reorganization efforts address critical needs on campus.

See Appendix A for more detailed Sightlines information and Appendix B for detailed APPA FPI Report information.



ARCHIBUS SYSTEM



A primary component of Facilities Services increased accessibility, self-assessment, and benchmarking capabilities is the implementation of a custom Integrated Workplace Management System to replace the department's previous legacy system for requesting, tracking, and reviewing work orders. Archibus allows Facilities Services to better schedule, dispatch, manage, and report maintenance tasks efficiently using self-service capabilities to reduce operational costs and increase customer transparency and satisfaction.

The Archibus system gives our customers easier access to general work order information, broader access to more detailed reports, and real-time updates on work orders in our system. From there customers are also able to view or submit Project Requests, Key Requests, or Event Solicitations. Financial Officers are able to approve/reject work or provide substitute approvers when they know they will be out of the office.

DEPARTMENT ORGANIZATIONAL CHART



2017 ANNUAL REPORTS



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

FACILITIES SERVICES

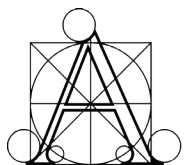
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ADMINISTRATION

Special Projects

Archibus

Continue to work with Archibus (our Integrated Workplace Management System) to maximize the capabilities of the system for use in capturing data, key performance indicators and maintain efficiency of responding to work requests. Field questions regarding Archibus from sub-units and the campus community, training and troubleshooting any issues with Archibus.



ARCHIBUS

PMs and Equipment: Working with unit PM Coordinators to verify equipment on campus with records currently in Archibus. Writing and assigning preventive maintenance tasks for the equipment. The preventive maintenance tasks then generate work requests to the respective subunits to perform interval maintenance to ensure the longevity of the equipment on campus.



Phase II of Archibus was implemented and we assisted with the testing of modules and training of employees. Work continues with subunits associated with these modules to upload any data

remaining in the legacy system. The new applications will provide our department with additional tools to use in our goal to expand our best practices.

Upgrade of Archibus: OIT will work on the upgrade of Archibus and once it is complete for a module, we will test them to ensure accuracy before going live with the upgrade. Introducing the mobile platform for access to Archibus from the field for our front line employees.

TNAPPA Conference

Assisted with the collaboration and preparation of the 2017 TNAPPA Conference hosted by the University of Tennessee, Knoxville Facilities Services Department. The subunit was responsible for acquiring all gifts, prizes and giveaways for the conference.

This conference brought together educational facilities professionals from across the state for networking, educational sessions, and information sharing.

Best Practices

Schedule and coordinate meetings with other Tennessee higher education facilities professionals to share best practices and innovative ideas.



Research

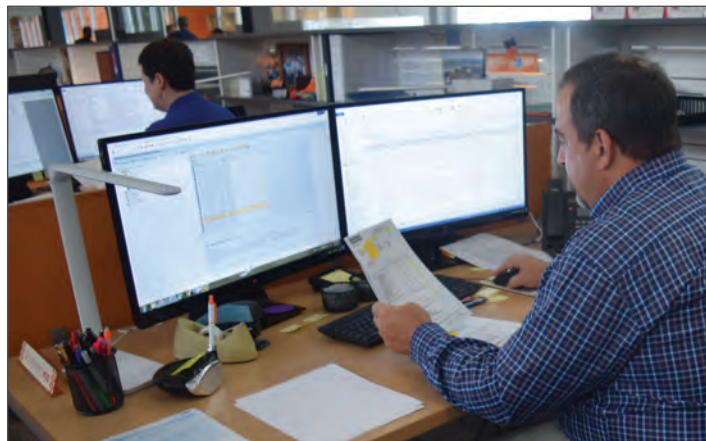
Ongoing research regarding innovations and best business practices within the facilities management industry. Analyze the research results to identify those items most applicable to improvements here at the University of Tennessee. The goal is to stay on the cutting edge of best industry practices.

ADMINISTRATIVE & SUPPORT SERVICES

The responsibilities of the Administrative & Support Services unit can be categorized into three primary areas: Financial Support Services, Material Procurement/Receiving, and Warehousing Services, and Personnel and Administrative Support Services. These primary areas of responsibilities are conducted within the Business Services Office and the Central Supply Office.

Business Services Office (BSO)

The Business Services Office is responsible for accomplishing personnel and financial support functions such as: comprehensive human resource and payroll functions, budget build and execution, accounts management, accounts payable and receivable, ledger reconciliations, travel requests and expense reimbursements, procurement card administration, contract administration, scholarship administration, asset management and movable equipment inventories, and maintaining multiple financial and administrative databases for the Facilities Services Department. The Business Services Office is responsible for the financial administration and execution of the annual Facilities Services Departmental Budget which encompasses over 40 E&G Cost Centers as well as A, I, and WBS restricted accounts. In addition, this office provides departmental information and guidance regarding university fiscal policies and procedures and serves as the central point of contact for all questions related to Facilities Services financial matters.



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There are three offices within the Business Services Office: Accounts Payable, Accounts Receivable, and Personnel & Administrative Support Services with responsibilities for each identified below.

Accounts Payable

Accounts Payable operates within the Business Services Office and is the area in which Facilities Services Expenses incurred are processed for payment for items purchased, received, services rendered, etc. These payments include invoices, transfer vouchers, procurement card payments, petty cash reimbursements, travel reimbursements, and requests for special payment and special remittance.



During FY 2017 (July 1, 2016 - June 30, 2017) the Accounts Payable subunit processed the following:

Total invoices during FY 2017: ~15,500 invoices

Total procurement card transactions: ~5,500

Total vendor service contracts created: 117

Total of procured goods and services payments during FY 2017: \$27.8 million

This subunit also acts as a liaison between Facilities Services units and vendors for payment questions or contracts related to the procurement of goods and services needed to maintain the University of Tennessee, Knoxville campus.

In addition, Accounts Payable is responsible for the following:

- Maintaining the Facilities Services Department vendor database, including vendor contracts and contract details.
- Creating vendor requests, updating vendors remit to addresses, and obtaining W-9s for applicable vendors.
- Overseeing the Facilities Services Department procurement card purchases, distributing all of the procurement card charges to the appropriate accounts and reconciling account charges per fiscal policies.
- Preparing travel documents such as Travel Requests, Travel Expense Statements, Conference and Seminar Registration Prepayment requests, Travel Advance Requests, and Direct Bill of Airfare and Car Rental applications.

Accounts Receivable

Accounts receivable represent debts owed to Facilities Services for maintenance, repairs, rentals and services provided to auxiliaries, departments, groups or individuals surrounding the University of Tennessee's Knoxville campus. These debts are considered short term and are normally expected to be paid to the university within 30 days after the Service Requests are completed. The Accounts Receivable subunit operates within the Business Services Office and is the area that invoices and collects Facilities Services maintenance, repairs and service receivables while following set UT policies and

standards for the administration and support of any and all UT Facilities Services work requests. Accounts receivables for Facilities Services can be broken down into three main categories: Auxiliary Charges, interdepartmental charges and project charges.

During FY 2017 (July 1, 2016 - June 30, 2017) the Accounts Receivable subunit processed the following auxiliaries, interdepartmental, and project recoverable charges and non-recoverable WRs:

Total Work Requests Processed: 38,553

Total Recoverable Work Requests: ~18,000

- Total Auxiliary Charges (includes Student Life, Athletics, Housing, Arena: \$3.8 Million
- Total Interdepartmental Transfer Vouchers from single Work Requests: \$6.5 Million
- Total Project Charges (Construction): \$7.8 Million

Total FY 2017 Accounts Receivable Recoveries: \$18.1 Million

Total FY 2017 Non-Recoverable Work Requests: \$9.7 Million

Utilities Receivable:



Another responsibility of the Facilities Services Accounts Receivable subunit is payment and processing of all utility charges on a monthly basis. Utility charges include the following activities: review and audit of utility bills from vendor(s), entering utility data into program for processing, review for accounting and metering accuracy, payment to vendor(s), interdepartmental and auxiliary billing.

Facilities Services Business Services Office audited, managed, and paid the following during FY 2017 (July 1, 2016 through June 30, 2017):

Facilities Services Business Services Office audited, managed, and paid the following during FY 2017 (July 1, 2016 through June 30, 2017):

Total Number of Buildings Served: 289

Total Square Footage Served: 15.36 Million

Total Utility invoices per fiscal year: ~2,400 (campus-wide)

Total Utility Recoveries (from Auxiliaries): \$16.4 Million

Total Utility payments during FY 2017 (UT campus-wide): \$33.1 Million

In addition, the Business Services Office maintains payments, charges, ledgers, and reports for all Utility Services including:

- Utility meter lists.
- Consumption and charges database and reports.
- Installation and tracking of all new campus construction needs and costs for utility applications.
- Processing of utility contracts, applications and agreements for wastewater capacity and grease control permits.
- Title V compliance certification and emissions fees records and payments.



FACILITIES SERVICES ANNUAL REPORTS

- Backflow testing requirements.
- Monthly and yearly budgets for all utilities.
- Reconciliation of utility account ledgers.

The Accounts Receivable subunit also maintains related fiscal records for the Facilities Service Department while providing detailed information and summaries, service and support to the university community.

Personnel & Administrative Support Services

The Personnel & Administrative Support Services subunit is where comprehensive HR and payroll functions for the Facilities Services Department are centralized. This subunit is responsible for coordinating and managing the ongoing Human Resource and payroll functions on behalf of the Facilities Services Department and provides critical support to the eight unit directors and the associate vice chancellor in performing these functions.

The subunit accomplishes comprehensive HR duties coordinating, managing and overseeing the recruiting, interviewing, and hiring of new staff, and assisting supervisors and staff with personnel and payroll issues. The subunit serves as a vital centralized link between the Facilities Services Department, UT Knoxville Finance and Administration, the UT Knoxville Office of Equity and Diversity, the UT Knoxville Human Resources Office, and the UT Treasurer's Office concerning personnel and payroll matters.

The subunit interprets, communicates, and advises unit directors and supervisory personnel on HR and payroll policies and procedures and provides direction and guidance in accomplishing personnel or payroll functions. The unit also coordinates and manages staffing services for more than 600 employees to include coordinating performance review evaluations, managing personnel or payroll changes, leave applications, promotions, and disciplinary procedures. The subunit prepares reports on staffing levels, career path progression and eligibility, employee certification requirements and eligibility, employee leave balances, and payroll expenditures for the unit directors' and employees' planning purposes.

During FY 2017 this subunit processed the following HR transactions:

Total New Hires Processed: 166

Total Terminations Processed: 205

Total Career Path and CPS Upgrades: 31

In addition, this subunit edited, corrected and audited 26 bi-weekly payrolls for more than 570 nonexempt employees during FY 2017 and performed 12 monthly payroll edits, corrections and audits for 47 exempt employees during FY 2017.

Central Supply Office

The Central Supply Office handles purchasing and warehousing functions for the Facilities Services Department. The Central Supply Warehouse is a consolidated, well-organized, state-of-the-art warehousing facility. Located in the Facilities Services Complex, it is the central receiving and issuing point for special order and stock replenishment purchases and maintains an inventory of commonly used stock items to support the Facilities Services units in providing maintenance and renovation services to the University of Tennessee, Knoxville campus.



Parts Warehousing

Around the year 2010, UT Knoxville campus administration recognized the need and importance of maintaining the campus assets (buildings, grounds, research labs and equipment, etc.). As part of the Top 25 goal-setting initiative, the Facilities Services administration began a department-wide overhaul and reorganization which included the push for an up-to-date, organized and maintained MRO Storeroom. As of July 2017, all warehousing locations are clearly marked and have undergone a comprehensive, hands-on physical inventory. The Central Supply Warehouse includes the following descriptives:

- Part Number
- Part Description(s)
- Part Type
- Part Location(s)
- Quantity on Hand
- Vendor(s)
- Cost Details
- Special Information



FACILITIES SERVICES ANNUAL REPORTS

Facilities Services Maintenance Supply is consolidated into six main parts and SKU locations for ease of service to the UT Knoxville campus. The total SKUs and inventory values for FY 2017 are listed below.

Central Supply Warehouse

Number of SKUs: 2,257

Number of Transactions: 10,065

Inventory Total Value: \$639,042.42

Custodial Services Warehouse

Number of SKUs: 95

Number of Transactions: 8,034

Inventory Total Value: \$189,128.99

Landscape Services Warehouse

Number of SKUs: 187

Number of Transactions: 356

Inventory Total Value: \$10,845.91

FY 2017 Totals

Number of Transactions: 18,455

Inventory Total Value: \$839,017.32

Central Supply's annual physical verification of inventory results are exceptional year after year. The FY 2017 results are as follows:

Inventory Parts Count Accuracy FY 2017: 99.38% of items without discrepancy.

Total Dollar Value Accuracy FY 2017: 99.9% accuracy for \$639,042.42.



Goods and Services Procurement

The Central Supply Office Buying Group operates as an extension of the UT Purchasing Department and has delegated purchasing authority up to \$25K. The Central Supply buyers adhere to all UT Fiscal Policies for contracts and purchases and have extensive training and expertise with bidding opportunities and Market Place transactions. During FY 2017, Central Supply buyers were responsible for the following purchases:

Total Purchase Orders fulfilled: 12,485

Total vendors utilized for procurement of goods and services FY 2017: 1,874

Total of goods and services procured during FY 2017: \$27.8 million

\$27.8 million



The products and services that the Central Supply Office Buyers procure facilitates the effective operation of the University of Tennessee Knoxville Campus.

Central Supply Office Vehicle Operations

After the Facilities Services Department moved to the Sutherland Avenue Facilities Services Complex, the Central Supply Office implemented a transportation program to deliver parts, SKUs and personnel from the off-site Sutherland Avenue location to the UT Knoxville campus.



Central Supply Office Vehicle Operations has implemented a schedule that allows van operations from 6 a.m. to 6 p.m. on a daily basis to best serve the Facilities Services shops maintenance and support program, and campus community.

Administrative & Support Services Unit Highlights

Facilities Services Business Service Office, Central Supply and HR Administrative Support Services has accomplished many goals throughout the FY 2017 period. Some of the highlights are:

- Total Work Requests and Projects Processed for Payments: 38,553
- Total Financial Transactions (Invoices & PCard Purchases) Processed: ~21,000
- Total of procured goods and services payments during FY 2017: \$27.8 million
- Total FY 2017 Accounts Receivable Recoveries: \$18.1 Million (includes projects)
- Total FY 2017 Non-Recoverable Work Requests: \$9.7 Million
- Total Utility payments during FY 2017 (UT Campus-wide): \$33.1 Million



Total of Financial Transactions Processed during FY2017: \$88.7 Million (FY17 WRs Invoices+ FY17 Procurements + FY17 Utilities).

- Inventory Parts Accuracy FY 2017: 99.38% of items without discrepancy.
- Total Dollar Value Accuracy FY 2017: 99.9% accuracy for \$639,042.42.

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COMMUNICATIONS & INFORMATION SERVICES

Employee Training & Development

Partnerships

Environmental Health & Safety (UT System)

Perhaps the closest partnership of 2016 was with Environmental Health & Safety. As the arbiter for campus safety, their policies and procedures are of interest and importance as we examine how to train our employees on safe work practices and to improve the safety record of Facilities Services. We worked with EHS to deliver confined space training and alternative vehicle training, and to inspect our shops and warehouses.



Human Resources (UT Knoxville)

During 2016 we consulted with the Knoxville campus Human Resources team as we redesigned our Facilities Services New Employee Orientation. This ensures that our new Facilities Services employees are thoroughly and efficiently oriented to work for the university.

Collaborations



In addition to external partnerships in 2016/2017, Training & Development effectively collaborated with internal Facilities Services units to provide training and services to our employees. Highlights of this collaboration include:

Building Services – Instructor training for the Custodial Certification Program and aerial work platform single occupancy lift training provided by Allied Toyotalift.

Special Projects – Archibus Define Equipment and Preventative Maintenance module training.

Accomplishments

New Employee Orientation – Facilities Services takes pride in its attentive process of welcoming and orienting new employees. As the largest non-academic department on campus, we hire a significant number of people every year. In an effort to enhance the experience for new employees, as well as create a more efficient process for the Training & Development team, in 2016 we redesigned the schedule, content, and flow of the Facilities Services New Employee Orientation program.



In addition to overhauling the process for new full-time regular employees, we streamlined the onboarding process for temporary employees and student assistants.

Custodial Certification Program – Training & Development made several improvements during 2016 after assuming full ownership of the program. To ensure student and instructor success, the program was limited to one per year and scheduled during spring and summer months to avoid coinciding with football season and winter weather. Identifying new instructors and developing mandatory instructor training was a primary goal. Other improvements include producing an instructor reference manual, standardized study guides, course syllabus, testing after each module, and providing course evaluations.



2016 Respiratory Protection Program – Specific work tasks



require 160 employees from Utilities Services, Zone Maintenance, Paint & Sign Services, and Sanitation Safety to use a respirator for protection from exposure to hazardous atmospheres. Training & Development schedules medical evaluations, provides fit testing, PPE and respiratory protection training for affected employees. Fit testing was offered monthly to medically

approved employees (with exception of July and August). Data was collected from fit tested employees on the frequency of respirator use and tasks performed while working.

Safety – Several initiatives aimed at reducing the risk of injury to Facilities Services personnel were undertaken in 2016/2017, including:

- Periodic compilation of provided injury/illness data.
- Confined Space Entry procedure revision in collaboration with the EHS Department and the City of Knoxville Fire Department.
- Installation of mobile equipment/pedestrian safety improvements to the new Facilities Services warehouse facility.
- The use of high-visibility personal protective equipment for selected night time operations.

Career Paths – Development of all unit career paths continues.

OSHA Compliance Training – We reported a 3% increase in compliance at the end of calendar year 2016.

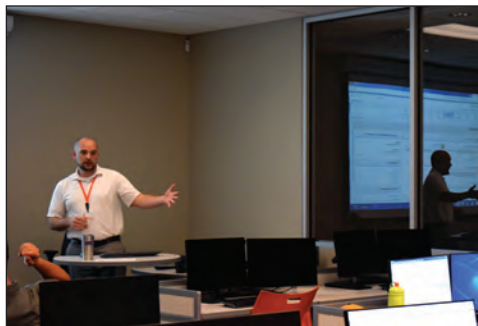
Other accomplishments include the following:

- Developed Standard Operating Procedure (SOP) template, process, and guidelines.

FACILITIES SERVICES ANNUAL REPORTS

- Offered Computer Lab Help Sessions targeted at off-shift employees with questions about basic work related tasks, i.e. email, pay statements, leave requests, OSHA training.

New Employee – Ian Miller was hired as the Training Specialist Assistant in January 2017. He works alongside the Training Specialists in conducting New Employee Orientation and works with both Landscape and Building Services. His focus is on further development of Landscape Academy as well as acting as the training liaison for the second and third shift Building Services supervisors and staff.



Office of Sustainability

Energy Projects

Green Revolving Fund: As of June 30, 2017, \$520,000 has been allocated to the fund. The fund manager, Derek Bailey, has expanded the work outside to provide energy savings to auxiliary services, with the latest project as of August 2017 being the G-10 parking garage light swap to LED lighting.



Peak Energy Use Campaign: A marketing campaign to inform campus of higher energy rates during certain times of the day and seasons.

POWER Challenge: A dorm energy, water and recycling competition held annually (12th annual) and this past FY we avoided more than \$75k in energy costs.

Battery Storage Study for Hodges Library to reduce peak energy cost throughout the year.

Greenhouse Gas Emission Reductions: It takes nine months to collect all the data, so we report the previous FY and the below information is from FY 16 (net reductions).

- FY 15 to FY 16 reductions: 107,882 metric tons CO₂e (Carbon Dioxide equivalent).
 - This is our largest year to year reduction since data collection began in 2008.
- 48.19% overall GHG reduction of metric tons CO₂e since FY baseline 2008.
- Emission Targets as stated in the Climate Action Plan.
 - By FY 20-21, reduce/offset GHG emissions to 20% below FY 07-08 levels.
 - By FY 30-31, reduce/offset GHG emissions to 40% below FY 07-08 levels.

- As of August 2017, we are 13 years ahead of schedule.
- By FY 40-41, reduce/offset GHG emissions to 60% below FY 07-08 levels.
- By FY 50-51, reduce/offset GHG emissions to 80% below FY 07-08 levels.
- By FY 60-61, achieve climate neutrality (zero net GHG emissions).

Awards

EPA Green Power Excellence National Award Winner. Only institution in the Southeast region and SEC to win award.

TVA Green Power Switch Outstanding Commitment.

EPA Green Power Partnership Conference Leader; SEC.

Grants

TWRA Aquatic Habitat Grant, \$800.

Rankings

STARS Silver Rating (Sustainability Tracking, Assessment and Rating System).

#1 in the Nation for Green Power Purchasing (EPA Green Power Program).

#1 in the SEC for Green Power Purchasing (EPA Green Power Program).



Engagement



Student Volunteers: 1,425 students participated in the Office of Sustainability led, funded, and partnered volunteer service opportunities and events, with an average of four hours per student per opportunity.

Campus Sustainability Day, Earth Month Celebration, and the Environmental Leadership Award events hosted more than 1,700 students, faculty, staff, and the public throughout the year. These events connect various environmental centers and student groups to the UT Knoxville campus population.

FACILITIES SERVICES ANNUAL REPORTS

Infrastructure

Second Annual Arbor Day Tree Planting with 1,100 trees planted using 70 volunteers.



Two wetlands installed at UT Gardens.

35 bottle filling stations installed throughout campus, 153 total as of August 2017. To date since 2014, 5.9 million water bottles have been avoided.

Two additional solar arrays installed at 11th Street Parking Garage.

14 hand dryers installed in Haslam Business Building and Hodges Library to reduce paper towel consumption, fuel cost and labor hours.

Experience Learning

Our office partnered with 10 specific courses/programs, providing real world experiences for:

- 210 undergraduate students
- Six graduate students
- Six doctoral students

Courses partnered with to conduct sustainability research/projects/service learning:

Undergraduate

GEOG 311 and GEOG 111 (2016): Our Data Analysis Coordinator worked with students to map our bike rack, water bottle refill stations, and waste receptacles across campus (an annual inventory).

GEOG 311 (Spring 2017): Bike rack, waste receptacles, water bottle refill stations, building sign inventory.

PSYC 482 (2016): We are conducting conceptual surveys to gain insight into energy reduction practices, fleet management behavior insight, environmental literacy, sustainability culture and transportation decisions related to mass transit.

BIOL 106 (2016): Worked with students to develop projects related to biodiversity on campus.

MABE (2016): Install power instruments and commission

data acquisition system for measuring the total electrical load and the total HVAC power draw of the Hodges Library and to create a VFB benchtop kit designed and built by MABE students for fulfillment of Capstone requirements.



Industrial and Systems Engineering (2016): Providing insight and assistance to students who are identifying locations for solar panel and green roof installations.

P200 (2016): A sustainability ethics course and the students are working to revamp the Mug

Project by conducting surveys and audits at all campus POD markets.

Graduate

MABE (2016): Simulate a load profile and in parallel document the electrical load profile for Hodges Library. Use estimates and field data to map the performance of the VFB as load changes and quantify the power system reliability.

Sports Management Case Study (2016): Focuses on the sustainability initiatives and plans for Neyland Stadium.

Doctoral

Bredesen Center (2016): PhD students are assisting the Climate Action Plan energy working group to investigate new energy technologies aimed to reduce energy consumption

Non-Categorical Facts

Student Design/Research Fund Projects (\$100,000/year):

- Battery Storage Model created for Hodges Library via MABE.
- Will lead to the 1st ever Building Energy Model in FY 17.



- Sustainability Portal Development in partnership with the UT Knoxville Green Economy Initiative.
 - Will lead to the first ever portal of its kind in academia specific to sustainability.

Approval to install the educational wind turbine at Facilities Services Complex.

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IT Support & Maintenance

During the last year, the subunit has completed the relocation of the Facilities Services Department from Volunteer Boulevard to the Facilities Services Complex on Sutherland Avenue. This move included 162 user workstations and Training Lab Workstations along with 19 networked printer/copier/scanners.



IT Support & Maintenance has increased the department's public touchdown workstations from nine to 28 with the addition of computers purchased on this year's Computer Upgrade Program. IT Support is in the process of installing 66 new computers received in this year's Computer Upgrade Program.



The group continues to support 107 department mobile devices across campus along with 259 Motorola two-way radios.

The classification of 1,189 network attached devices were finished per OIT requirements.

Per the new 2017 license agreement with Adobe, staff members have begun to upgrade 107 users to Adobe Creative Cloud.

The subunit continues to assist Electrical Services with the upgrade of Building Access and Fire Alarm systems for University of Tennessee buildings.

IT Support & Maintenance completed upgrade projects including the replacement of all Facilities Services Time Clocks and assisting Telephone Services with the replacement of all Facilities Services DSL modems.



Communications & Public Relations

TNAPPA Conference 2017



UT Knoxville hosted the 2017 TNAPPA Conference in May. The communications coordinator took on the lead planning role for

the conference and all associated committees. More than 72 vendors participated in the event and 253 participants from 19 different schools and organizations attended. The conference golf tournament had the highest participation rate of any previous state conference. The conference netted \$44,000 for the TNAPPA organization, exceeding estimates by \$14,000.



During the planning process the communications coordinator was responsible for the creation of all printed materials, event scheduling, location and material rentals, coordination of transportation, organization of registration and all associated materials, ordering meals, coordinating entertainment and key speakers, conference app creation, accommodations, and budget. In addition the coordinator acted as the point of contact for all vendors, participants and committee members.

The coordinator maintains a role on the TNAPPA board as the organization's website editor and will assist where needed with the upcoming conference hosted by UT Chattanooga.

Office of Emergency Management

The communications coordinator is involved with the Facilities Services portion of emergency management in various levels. The coordinator acts as the Emergency Operations Center Coordinator for the department, as well as support for the call center.



The subunit is also responsible for the upkeep of the department's Emergency Response Plan that ties into campus-wide emergency response. The coordinator also acts as the campus-wide Public Information Officer for Facilities Services related emergencies.

FACILITIES SERVICES ANNUAL REPORTS

Website Development & Maintenance

The communications coordinator is responsible for the content development, organization and maintenance of the Facilities Services Department website, as well as several other related campus or organization sites including the Cone Zone site, Master Plan site, and TNAPPA site.



Facilities Services Annual Report

The Facilities Services Annual Report is one of the large-scale projects the Communications & Public Relations subunit completes on an annual basis. Last year's document details a department overview, unit summaries, and unit/subunit annual reports. The communications coordinator and student assistants worked with each Facilities Services subunit to update their summary and annual review information for the document. Each year the report is published on the department website.

Facilities Fundamentals Workshops



Communications & PR launched the Facilities Fundamentals Workshop program in 2015 and has overseen and managed the continuation of the project. The department has successfully hosted eight workshops including Spring Cleaning, Tree Maintenance, Help-

ful Tips for the DIY Gardener, Everyday Sustainability for Home & Work, Professional Tips for the Interior Painter, UT Zero Waste Principles and Practices, Plumbing & Heating Essentials, and Pest Control.

The communications coordinator plans and organizes these workshops from beginning to end. This includes scheduling space, publicizing the event, creating content, producing workshop videos, and sending out supplementary materials and surveys after the workshops. Feedback from workshop participants has been overwhelmingly positive.

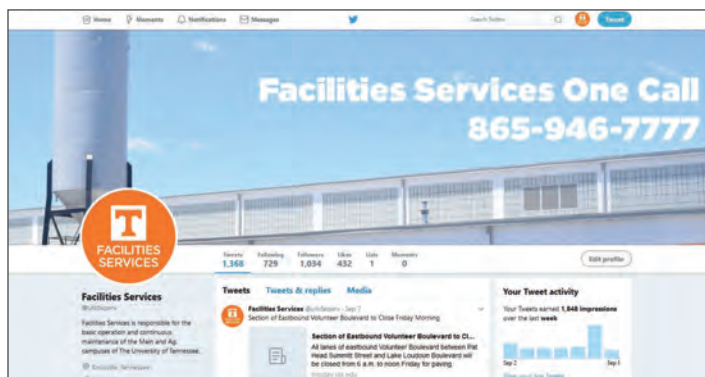
Social Media Outreach



The Communications & PR subunit is responsible for the management of the department's six different social media platforms – Twitter, Instagram, Facebook, YouTube, Pinterest, and Google+.

The reach of the department's existing social media accounts expand-

ed significantly during the past 12 months. The FS Twitter account now has 1,037 followers compared to 781 in August 2016, the Instagram account now has 429 followers compared to 264 in August 2016, and Facebook likes have increased to 430 from 346. These platforms are used to promote department events, announcements, notices, and accomplishments. Each month the subunit produces analytics of each of the social media sites to track the department's progress and reach.



Employee Recognition Programs

The communications coordinator organizes and promotes departmental recognition programs. These programs include Employee of the Month, Chuck Thompson Outstanding Employees Award, and Exceptional Team. Gift cards are given to Employee of the Month and Exceptional Team



members each month and the coordinator organizing all details associated with the programs. The coordinator also organizes the annual Chuck Thompson Awards by chairing the selection committee, compiling all nominations, ordering awards and scheduling the event.

American School & University

During the course of the year the subunit organized, created, and submitted nine separate portfolios featuring campus buildings for American School & University publications. The portfolios consisted of architectural-style images, which the communications coordinator organized and shot with the assistance of UT Photography, project data, site plans, and manufacturer lists.

Portfolios were submitted to two different Magazines – Educational Interiors and Architectural Portfolios. All of the University of Tennessee submissions were selected for publication in both magazines. These projects included Mossman Building, Facilities Services Complex, Stokely Hall (2), Volunteer Boulevard Streetscape, Volunteer Garage, Stokely Hall Dining Facility, and Student Union Phase I Dining.

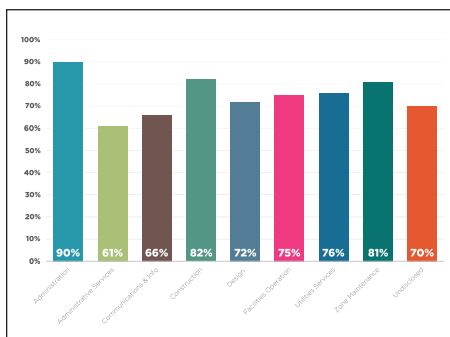
FACILITIES SERVICES ANNUAL REPORTS

Department Events



The department's two annual large scale events are organized by the communications coordinator. The Fourth of July Picnic and Holiday Parties are planned and executed by the subunit. This includes space and event rentals, food orders, soliciting prizes, transportation, and hosting. An additional holiday party has been added to accommodate third shift employees and it takes place the same day as the first shift event. This year's attendance of both the Fourth of July Picnic and Holiday Party were slightly higher than previous years.

Satisfaction Surveys



In March 2017 the Communications & PR subunit conducted and tabulated the Facilities Services Employee Satisfaction Survey to evaluate the perspectives and opinions of the department's employees regarding their daily work experience. More than 214 employees participated in the 2017 survey, a significant increase from 120 in 2016, and the subunit compiled the results into a detailed report. Communications & PR will conduct the survey again in 2018.

The subunit also conducted customer satisfaction surveys among building representatives and building occupants. A report was drafted with the results that were compared to the baseline surveys conducted in 2015.

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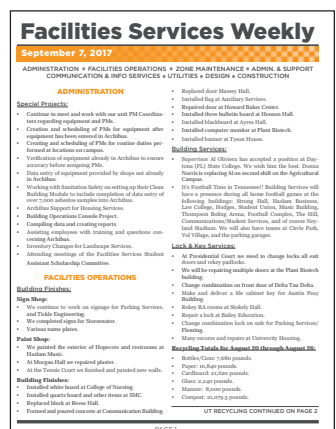
APPA FPI Survey

Each year, the communications coordinator is responsible for the completion of the 450-question APPA FPI Survey. The coordinator gathers all the necessary information from Facilities, as well as other campus units.



Newsletters

The Communications & PR subunit has continued to maintain and expand upon the content in both Facilities Services Weekly and the Facilitator. The bi-monthly newsletter has consistently been more than 18 pages, and Facilities Weekly has steady participation from all of the Facilities subunits. The design of the weekly newsletter was also recently updated. Distribution lists for both newsletters continue to grow in 2017.



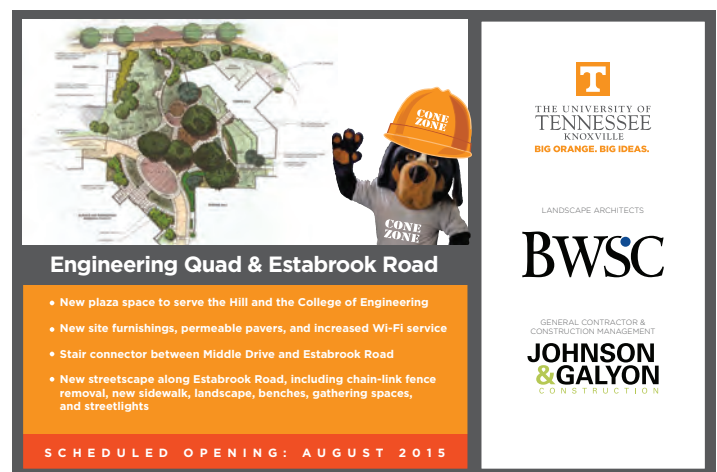
Building Representative List

The subunit continues to update the campus-wide Building Representative List three times annually. This affords Facilities Services the ability to keep a more accurate list for both maintenance and emergency preparedness.

The subunit also maintains an emergency contact list for the use of the Office of Emergency Management and UTPD. Once the list is updated it is posted to the Facilities Services website.

Cone Zone Website and Physical Signs

The Cone Zone website is now managed and maintained by the communications coordinator. The site was redesigned for increased usability and was launched in August 2016. Cone Zone is updated monthly with new content and project images.



The subunit has also taken on the task of keeping detailed records of physical Cone Zone signs on campus. An interactive map has been created that links to photos of the signs in the designated map areas. This map will be used to update signs in disrepair and to keep track of signs that may be out of date.

FACILITIES SERVICES ANNUAL REPORTS

CONSTRUCTION SERVICES

Overview



The Construction Services unit completed 650 projects during the 2016-2017 academic year including 23 classroom improvement projects.

Classroom improvement projects took place in several buildings on campus with some buildings having multiple room projects take place. These improvement projects took place in Morgan Hall, McCord Hall, HPER, Perkins Hall, Henson Hall, Humanities, Art & Architecture, Ferris Hall, College of Nursing, Bailey Education Complex, Dougherty Engineering, Jessie Harris, Walters Life Sciences, Earth & Planetary Sciences, Alumni Memorial, Communications & Student Services, Early Learning Center, Law Complex, John Tickle Engineering Building, and the Presidential Court Building.

Building Security Upgrades

Construction Services personnel completed building security upgrades in Brenda Lawson, Pratt Pavilion, Min Kao, Lindsey Nelson Stadium, and Sherrie Lee Parker Softball Stadium.

Renovations



The unit completed a number of renovations in buildings during the academic year. Renovations took place in the Law Complex, Communications Building, JIAMS, TANDEC, Senter Hall, the solar array at 11th Street Parking

Garage, Hess Hall, Clement Hall, Morgan Hall, Student Services, Conference Center Building, Art & Architecture, College of Nursing, SERF labs, Andy Holt Tower, Min Kao, Strong Hall bridge, Hesler Biology Greenhouses, Stokley Management Center, Haslam Business, Thompson Boling Arena Dining, Howard Baker Center, Frieson Black Culture Center, Blount Hall, and the Business Incubator Building.



ADA Projects

Projects included automatic door operators, ramps, and sidewalk ramps at Melrose Hall, Dunford Hall, Dabney-Buehler Hall, South College, and the Student Union.

Floor, Paint & Railings

The Construction Services unit completed 142 carpet and flooring installations across campus, as well as 311 painting projects.

Roofing Projects

Roofing projects were completed at the following buildings:

Jessie Harris, Hesler Biology, Joe Johnson Animal Facility, Crops Genetics, Veterinary Teaching Hospital, Radiological Safety, Ayres Hall, Dougherty Engineering, Nielsen Physics, Austin Peay, Pratt Pavilion, Perkins Hall, Ferris Hall, Science Engineering Building, Law Complex, Blount Hall, Brenda Lawson Athletic, Howard Baker Center, Allan Jones Aquatic Center, Ayres Hall, Communications Building, and Student Services.



Project Coordination

The yearly cleaning and restoration of five bronze statues: General Neyland, Pat Summitt, "Monty" the dinosaur, Euro-pa, and the Torchbearer.

The low pressure washing of G-10 parking garage.

Numerous security upgrades.

Lab upgrades in Dougherty Engineering.

Numerous on-call events for campus.

Yearly participants in Fire Watch at Thompson Boling Arena for Women's and Men's Basketball games, concerts and special events.

Pressure washed entrances to campus.

Raised floors at College of Nursing and Dabney-Buehler Hall because of settlement.

Raised corner of building at Crop Genetics using push pins because of settlement.

Reconstructed roof at Circle Park information booth to match the other roofs on campus using clay tile.

FACILITIES SERVICES ANNUAL REPORTS

DESIGN SERVICES

Capital Project Management

Completed FY2017

Volunteer Garage G16; Stokely Family Residence Hall; ADA Improvements at the Communications/Student Services Building; ELI Conference Center; Humanities and Social Sciences Complex HVAC Improvements Phase IV Communications Facility; Laboratory Renovations (Senter Greenhouse); West Campus Phase 1; West Campus Phase 2; Jesse Harris Fire Safety Upgrades; 1610 University Ave. Fit-Out; 1525 University Ave. Fit-Out; Hodges Library Veterans Center and One Stop Expansion; Strong Hall; Barksdale Tennis Stadium Improvements; Tom Black Track Additions and LaPorte Stadium Improvements, Phase 1; Scoreboards; Thompson Boling Arena Roofing.



Ongoing FY2018

Haslam Fields Expansion Phase 3; AGR Fraternity; Lake Avenue Parking Garage; UTIA Garden Pavilion; BEES Entry Renovation; Kefauver Wing Demolition; Science and Engineering Infrastructure Upgrades; Student Union; Clarence Brown Theatre ADA Improvements; Chiller Systems Improvements; UT Knoxville Steam Line Replacement Project; West Campus Phase 3; West Campus Dining; Fire Upgrades for Perkins Hall, College of Nursing, Dabney-Buehler Hall, Nielsen Physics, Austin Peay; Hodges Library Improvements to rooms 130, 146, 306, and 326; Facilities Services Complex; Engineering Services Facility; Basler Boathouse Improvements; Mossman Building; Thompson Boling Arena Renovations and Fall Protection Measures; Tom Black Track Renovations and LaPorte Stadium Improvements, Phase 2; UTSI Improvements; Neyland Stadium Improvements, Exterior Painting; Golf Team Facility.



Campus Project Management

Completed FY2017

Conference Center Upgrades; Athletics Tegano Plaques; Andy Holt Tower fourth floor Renovation; JIAM Move; Clement Hall Courtyard Improvements; Dunford Hall Landscape Renovations; Metron Center Way Entry Landscape and Irrigation.

Ongoing FY2018

Student Enrollment, Student Services Building; Andy Holt Tower Renovations; Administration Parking Garage Replacement; Neyland Parking Garage Renovation; Speech and Hearing ADA Access; Phi Sigma Kappa Site Drainage; James D. Hoskins Renovation; Wayfinding Signage Implementation; Facilities Services Complex Landscape & Irrigation; Lake Ave. Parking Lot Improvements; RecSports Masterplan; Ecology and Evolutionary Biology Bat House; Landscape Vision and Site Standards Update; Circle Park Parking Booth; Hodges Library Miles Reading Room.



Miscellaneous Project Management

Ongoing FY2018

SE Stadium Improvements Surveys; monthly/quarterly/annual sprinkler inspections of campus buildings, and ongoing hood cleaning and inspections of all Aramark food facilities and of all Fraternity and Sorority houses.

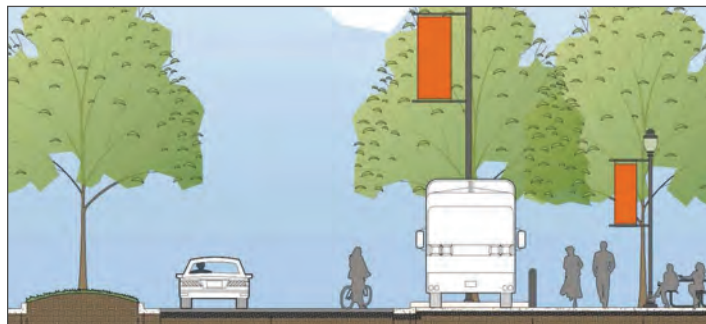
Beautification Project Management

Completed FY2017

Volunteer Blvd. Streetscape Improvements, Phase 1-B1; Estabrook Road/2nd Creek Streetscape Improvements; Andy Holt Mall Expansion Project Statement.

Ongoing FY2018

Volunteer Blvd. Streetscape Improvements, Phase 1-B2.



FACILITIES SERVICES ANNUAL REPORTS

Interior Design

Completed FY2017

Morgan Hall rooms 119, 126, 212B, 219; HPER rooms 239, 31A, 322, 390, and second floor; Nielsen room 401; Dunford fourth floor, awning, and signage; Blount Hall first, third and fourth floors; Baker Center first and third floors; Andy Holt Tower fifth and sixth floors; Conference Center Building; ELI graphics and signage; Student Life Offices; Hesler room 424; Melrose room 101 and third floor; Art & Architecture room 111; Bailey Education rooms 203 and 238; Buehler Hall room 415; Dougherty Engineering room 416; Law Complex room 85; Nursing room 107; Vet Teaching room A118; Walters Life Sciences rooms M307, M309, M311, M401, and M415; Stokely Management Center G2.

Ongoing FY2018

Melrose Pride Center; Andy Holt Tower eighth floor; Jesse Harris rooms 114, 243, 244, 413, 414, 424, and 425; Austin Peay room 203; Buehler Hall room 555; Communications rooms 208, 251, 314, and 317; Earth & Planetary Sciences rooms 223, 302, 400, and 413; Min Kao room 622; Nielsen Physics room 608; Nursing rooms 315 and 317; Morgan Hall room 212A; SERF; South College; Hesler; HPER; Melrose.

Space & Archives

Annual campus survey (March-August 2017) – Gathered information from all departments across campus for the assignable space they currently occupy. Information such as responsible cost center, fund ID, area type, door number, occupant, and any possible structural changes were recorded.



Conducted building audits (measuring and recording of structural changes) – 72 audits across 50 different buildings.

Scanned building specs and closeouts – 649 binders/reports across 120 projects.

Created new small scale drawings of 13 existing buildings.

New small scale drawings of 10 new buildings.

Scanned existing drawings of 66 existing buildings.

Stormwater Management

Underwent an audit of our MS4 program by TDEC. Received great feedback including the comment that we have the most organized Stormwater program that they have ever audited.

Created a Stormwater banking system to grant projects more flexible options to achieve stormwater compliance.

Conducted a Benthic Macro-Invertebrate survey in 2nd Creek, 3rd Creek, and East fork 3rd Creek.

Hosted a 5k race for Stormwater awareness. Had 194 attendees and many volunteers.

Submitted the annual MS4 report to TDEC.

Submitted the annual TMSP report to TDEC for the steam plant.

Updated and re-issued the Stormwater Best Management Practices Manual.

Conducted two rounds (leaf on/leaf off) of Dry Weather Outfall Screenings on our 64 Stormwater Outfalls that discharge into waters of the State.



Conducted water quality sampling in 2nd Creek, 3rd Creek, and East fork 3rd Creek; generated a stream monitoring report.

Hosted two River Rescue sites (2nd Creek, 3rd Creek) during the county wide event.

Conducted two invasive plant removal events on 2nd Creek in the

riparian zone.

Conducted 82 Stormwater Compliance inspections.

Issued seven Notices of Violation for projects out of compliance.

Reviewed/approved nine Stormwater pollution prevention plans.

Responded to four publicly reported construction site issues.

GIS Mapping

Initiated UT's BIM Implementation Plan.

Developed a web-map application to assist the Office of Emergency Management with situational awareness during an emergency situation on campus.



Developed a mobile field collection tool to assist during the bi-annual outfall inventory.

Worked with Parking and Transit Services and the Geography Department with Phase 1 of an inventory of parking signs throughout campus during the 2017 summer semester. Work will continue during 2018 summer.



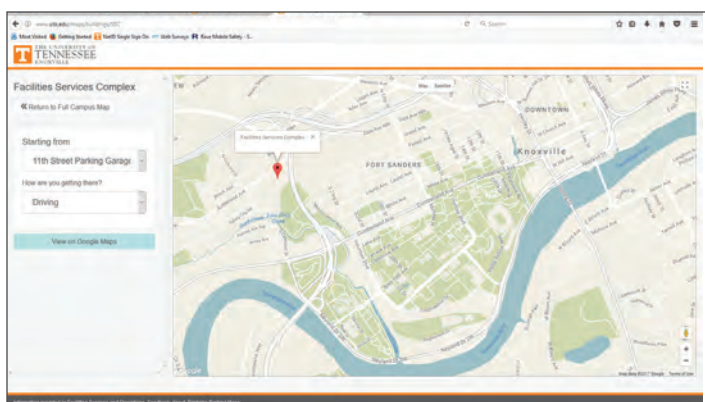
FACILITIES SERVICES ANNUAL REPORTS

Collaborated with the Geography Department to initiate an inventory of all new wayfinding signs installed throughout campus by Facilities Services. This work was done as an educational tool for Geography students during a GIS class.

Provided GIS support for a new road paving program study.

Joined staff from the Geography Department and UT Libraries to discuss creating an Open Data website. The purpose of this site will be to host relevant GIS data free to download for students and staff.

Assisted the Office of Communications to launch a new campus online web map application.



Maintained all existing campus GIS data up-to-date and created new data as needed.

Provided GIS support to the Office of Emergency Management, UT Police Department, Housing and Facilities Services.

FACILITIES OPERATIONS

Building Finishes

Paint Services



The Paint Services portion of the subunit has painted common areas and classrooms in 40-plus buildings during the 2016-17 academic year.

Major projects include Science & Engineering main stairwells, TREC phase II, common areas at Hesler Biology, the exterior of White Avenue Daycare, common areas at the HPER building, classrooms at Melrose, and the completion of the exterior windows at South College. Plaster and sheetrock repairs were also completed in several campus buildings.



Sign Services

The Sign Services portion of the subunit has been working on the new wayfinding signage throughout campus in addition to all other service requests.

Building Finishes



Throughout the year Building Finishes has poured and repaired concrete at several buildings, repaired campus sidewalks, and installed items in buildings all throughout the Main and Agricultural campuses. This portion of the subunit also repaired concrete steps, completed block and brick repairs, and installed wayfinding signage and Cone Zone signs.

Building Services

Accomplishments (July 2016 – June 2017):

The Building Services subunit maintains more than 12,000,000 square feet of academic and athletic space for the University of Tennessee, Knoxville and University of Tennessee facilities around or on the Knoxville campus. Building Services provides 24 hour per day, 7 day a week service when and where it is needed. This includes all athletic events, concerts, and university functions.



Building Services holds a Cleaning Certification Program for employees which is a 22-week education program on professional custodial techniques. Employees who complete both sections of the program successfully are

submitted for a 9% pay increase.

Building Services has added Strong Hall to its cleaning portfolio. In addition, Building Services provides set ups for our multi-use buildings.

FACILITIES SERVICES ANNUAL REPORTS

The subunit has 13 supervisors and 260 employees.

Building Services has successfully standardized cleaning products used by the subunit, resulting in reduced inventory levels.

Building Services is committed to keeping the university safe from disease and viruses. We use hospital grade disinfectants and have begun proactively treating heavily occupied areas for germs.

 **Hospital
Grade
Disinfectants**

Recycling is an important part of what Building Services employees participate in. During the past year, recycling numbers have grown and solid waste numbers have dropped in spite of the university's continued growth.

Landscape Services


**20,000
Flowers
12,000
Tulip Bulbs**

Seasonal flowers: Installation of 20,000 seasonal flowers and 12,000 tulip bulbs.

Execution of campus wide turf fertilization, weed control, aeration, and over-seeding program.

Install infrastructure for central control capabilities of campus irrigation systems.

Progress toward obtaining Tree Campus USA and Bee Campus USA certifications.

Second Creek Reforestation: Develop and execute plan for native tree and plant installation with student volunteers.

Campus wide snow/ice treatment and removal.

Circle Park: Ongoing turf maintenance and repair during and following football tailgate season.

Facilities Services Complex: Assist construction team with installation of new patio and compressor pad. Install first phase of landscape and irrigation. Assisted with excavation for flag pole installations.

Lake Avenue Parking Improvements: Provide building demolition, site preparation, and landscape improvements associated with construction of new parking lot at 2104 Lake Avenue.

McClung Museum: Remove hazardous brick walkway and excavate for new concrete sidewalk. Install irrigation system for new turf.

1610 University Avenue: Excavate for concrete pad and installation of outdoor furniture and bike hoops.



Campus wide fungicide treatments to turf areas for control of brown patch disease.

White Hall: Excavate for chilled water line repair and repair landscape and irrigation.

Irrigation upgrades at Student Services/Communications Building, McClung Museum, and Pedestrian Mall (continued).

Sorority Village: Assist with excavation and landscape repairs associated with geo-thermal system repairs.

Sorority Village: Prep and event support for sorority recruitment events.

Housing: Spruce-up landscape at dormitories prior to student move-in.



907 Mountcastle: Completed demolition of house, grade and gravel lot.

Provide excavation and site restoration for ongoing campus-wide underground utility repairs (high voltage, steam, water, telephone).

Provide excavation and site restoration for electric switch gear installation at White Avenue/Sixteenth Street.

Provide excavation and site restoration for ADA ramp installation on campus walks.

Cherokee Farm: Provided year-round landscape property maintenance to include the Knoxville city greenway expansion.

Cherokee Farm/JIAMS: Provide assistance with ground-breaking ceremonies and prep for visit by Board of Trustees and Legacy Parks Foundation.

Ellington/Plant Biotech: Prep for Board of Trustees visit.

Strong Hall Project: Unloaded rock boulders for Geology to be incorporated into new landscape.

Assist contractor with tree limb removal for equipment clearance on Volunteer Blvd. steam system upgrades and Humanities communication duct bank installation.

Emerald Ash borer: Treatment of ash trees throughout campus for protection against EAB.

FACILITIES SERVICES ANNUAL REPORTS

Sorority Village: Provided landscape maintenance to common areas and 12 sorority houses.

Hazardous tree removal across campus.

Tree pruning as needed throughout campus to provide clearance around security cameras, campus lighting, signage, and bus stops.



Campus wide clean-up due to storms April 21 through 23.

TNAPPA: Prep areas of campus being used for the conference May 15 and 16.

Destination Imagination: Prep and assistance for events May 18 through 30.

AHT P1 Garage: Install landscape renovation.

Art & Architecture: Removal of dead juniper on green roof due to summer 2016 drought.

Prep and clean-up associated with Orange and White Game.

Pat Summitt Plaza: Add soil to plaza planters and install ornamental grasses. Provide daily attention to the plaza (June 25 through July 15).

Clement Hall: Excavate west green space for new outdoor plaza, irrigation and landscape improvements.

Orange & White Residence Halls: Coordinate contract administration for bid and installation of irrigation and landscape.

Facilities Fundamentals: Assisted with landscape instructional video productions.



Asphalt pothole repair.

Bush hog mowing along non-UT properties adjacent to campus.

Thompson Boling Arena: Remove 12 tandem loads of river boulders under west ramp for plaza expansion.

Repurposed rock to remediate erosion along Second Creek.

Landscape Academy: Ongoing development of training and SOP curriculum.

Bailey Education Complex (west entry): Assist the Agriculture Bio-Systems Engineering Department with rain garden installation.

Student Services/Communications Building: Turf and irrigation installation along north side of building.

Campus wide construction: Provided daily support to contractors and Facilities Services to ensure construction quality.

Humanities: Assist with concrete pad installation for portable gameday restroom trailers.

Lot S-30: Parking lot turf renovation to improve aesthetics and gameday tailgating.

Pre/Post football game preparation and cleanup throughout campus.

App State Game (September 1, 2016): Pre and post-game support of game day tailgating. NOTE: Thursday evening game required complete campus clean-up before start of classes on Friday at 7 a.m.

4848 Lyons View: Prep property for luncheon event on September 2.

Prep and Clean-up associated with Homecoming bonfire, parade, and events.

Lawson Sports Complex: Install planters and landscape as temporary solution to steam line heat near main entrance.

Campus-wide street sweeping.

Landscape Irrigation Systems: Monitor, repair, adjust, and winterize campus-wide.

Leaf removal: 175 tons of leaves campus-wide taken to compost site.

Preparation for visits by UT Board of Trustees, ESPN SEC Nation, and government dignitaries.

White Avenue ELC: Install timber wall and safe surface material on playground.

Remove old building signs where new ones have been installed.

Inventory and develop a plan for street tree replacements during winter months.

Inventory rose population throughout campus to develop a Rose Rosette virus management plan.

Excavate for new concrete bike pads at 1610 University.

Sod repairs throughout campus to include Ayres Hall and Blueberry Falls.

Emergency roadway repair campus wide caused by improper compaction during utility infrastructure improvements by contractors.

175 Tons

of Leaves
Composted

FACILITIES SERVICES ANNUAL REPORTS

Tree cleanup associated with storm events.

Systemic insecticide treatment of hackberry and river birch for aphids over parking/seating areas.

Update tree inventory database.

Destination Imagination: Assist with preparation and clean-up.

North Concord property: Cut grass around parking lot and spray weeds in pavement cracks.

Blueberry Falls: Replace irrigation and landscape plantings due to steam line repairs.

JIAMS: Excavate for alterations to existing acid recovery tank.

TREC: Minor landscape alterations to transition with new Volunteer Blvd. streetscape.

Install tree cables and safety pruning on Ayres Hill.

Assist with remediation of Tickle Engineering Building lawn due to underground communication service installation.

Natalie Haslam Music: Landscape upgrade to south entry steps.

Fleming Warehouse: Grade north side of building to improve drainage and provide emergency evacuation egress.

Thompson Boling Arena: Assist with Monster Jam dirt clean-up at east and west service area.

Lead four-day campus wide tour for state facilities management contract bidders.

Academic/Research Support

Bailey Education Complex: Assist Biosystems Engineering department with installation of stormwater rain garden project.



Dr. Bass Anthropology Facility: Provide removal of fallen trees, fence repair, service road maintenance, and service to skid steer loader. Assist construction team off-load research structure.

Assist Urban Forestry class with basic rope setup for climbing instruction.

Hosted Arbor Day celebration and planted 1,000 trees along Second Creek with student volunteers.

Continue treatment of Ash trees for Emerald Ash borer and demonstration for Dr. Lambden's Entomology class.

Coordinating talks with Urban Forestry and Facilities Services staff to develop tree inventory data collection tools, i.e. PDA, laptop, GPS, etc.



Assist Department of Civil Engineering with maintenance of silva cell research project on Agricultural campus.

Academic Research: Assist the Department of Biosystems Engineering and Soil Science with commercial mower roll-over protection system research.

Tickle Engineering Building: Provided assistance and materials (rock/sand) for water filtration research.

Strong Hall Project: Coordinate meetings with faculty to finalize native plantings to be incorporated into new landscape.

Training

Landscape Academy: Conduct sessions with new and existing staff and continue development of upper level curriculum.

Landscape staff holding a Tennessee Department of Agriculture Pesticide Certification attended the Ag Extension Turf and Ornamental Field Day and Knox County Extension Grounds Management Short Courses.

Heavy equipment staff attended OSHA training to include Trench Safety and Trench/Excavation Competent Person.

Conduct departmental snow removal training and SOP review.

FACILITIES SERVICES ANNUAL REPORTS

Lock & Key Services

Major Moves and Projects



Two large keying setups Lock & Key Services completed during the fiscal year were the new Strong Hall and Stokely Hall. These moves resulted in vacated areas such as Earth & Planetary Sciences and the Neyland Biology Annex. Departments moving into these areas

required rekeying to meet specific needs.

Lock & Key Services is also in the process of setting up the Dougherty Engineering Building which was built in the 1960s and is still under its original keying plan that is in need of an update.

Large Scale Projects

South Carrick Hall: Rekeying of fourth floor.

Conference Center Building: Construction project installing all locks and keying Suite 120.

Humanities & Social Science Building: Replacing of exit doors and new hardware installed.

John D. Tickle Engineering Building: Converting classroom hardware to thumb turns to improve security in case of lockdown situations.

Lock & Key Services also implemented the process of migrating all key requests from paper to a new online system.



Rapid Response Team

Spring Cleanup



Spring Cleanup is a special event held for nine weeks annually as an effort to declutter academic buildings by moving items no longer needed. Staff from Rapid Response Team work building by building to help simplify the process. Computer and laboratory equipment, furniture, office supplies,

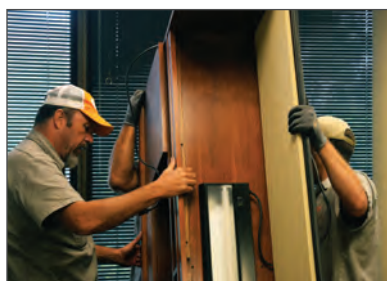
paper files, and more can be recycled, discarded, or sent to UT Warehousing.

Special Events

RRT is responsible for setup and tear down of special events on campus. This includes delivery and setup of tables, chairs, stages, and containers for recycling and trash.

During the 2016-17 academic year more than 750 work requests were performed by RRT.

Surplus Moves



RRT performs moves of unwanted items to the Surplus Warehouse from offices and buildings on campus. The team also moves items requested from the Surplus Warehouse to offices and buildings.

Banners

Installation and maintenance of banners for the Main and Agricultural campuses is the responsibility of RRT.

Relocations

RRT performs whole building and office relocations. New building moves consist of complete move-in of equipment, furniture, supplies, and personnel into facilities.



Rapid Response Team handled the moves at Strong Hall (SERF, Stadium, Dabney-Buehler Hall, Earth & Planetary Science) and JIAMS Phase II (SERF and Dabney-Buehler Hall).

Classroom "Clean out"

When a classroom is scheduled for a construction project, RRT removes all furniture, desks, etc. from the space and take items to storage until construction project is complete. Once the project is finished, RRT returns items back to the classroom.

Sanitation Safety

Overview

Sanitation Safety is responsible for Pest Control and Asbestos, Lead, and Mold Abatement for each of the 250+ buildings on and off campus.

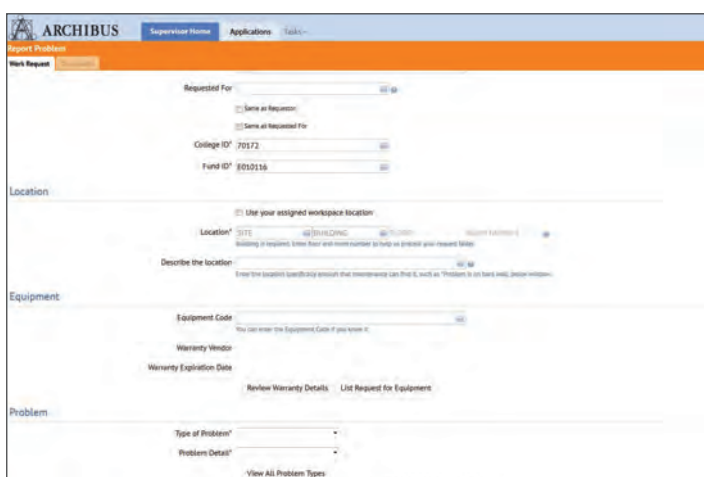
Each member of the subunit holds multiple State and/or Federal Licenses and Certifications, which requires personnel to complete multiple hours of refresher training every year.



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Employees also take the opportunity to seek out additional training via workshops and seminars to better their understanding of their own work and to learn how to communicate more effectively with customers.

The subunit is headed by a supervisor licensed by the State of Tennessee as a Commercial Pest Control Operator. Each of the technicians are Certified Basic Wildlife Control Operators and Certified Applicators. Services provided include insect, rodent, feral cats and dogs, termite, bird, odor, and biological control. Sanitation Safety has managed these services on and off campus for more than 35 years. The Archibus system enables prompt response to trouble calls. Each year employees process and complete scores of work requests, the large majority of which are self-generated, Preventative maintenance work requests.



2016-17 Academic Year

During the last fiscal year, the subunit processed approximately 2,500 work requests. Each building the team is responsible for has either a weekly, monthly, quarterly, or annual treatment, in addition to regular work requests submitted by our customers. While the Pest Control portion of the subunit's staffing numbers have stayed the same, the service level provided to our customers has not diminished, despite the fact that the square footage we manage has greatly increased.

Asbestos Abatement: Samples have been taken campus-wide to determine the type, location, and quantity of asbestos in our buildings. The Sanitation Safety subunit coordinates asbestos abatement when said materials are found during a renovation or maintenance project being conducted by the Facilities Services Department. Facilities Operations has three individuals on campus who are state licensed as asbestos abatement supervisors, inspectors, designers, and monitors.



UT Recycling

Zero Waste Game Days

This was the third year for Zero Waste efforts at major sporting events. Efforts to divert 90% of waste from the landfill include recycling, composting, and donation of leftover food.

Football 2016:

UT Recycling recycled 241,385 pounds of material during the 2016 season-just from the games. 52% of material was diverted from the landfill by means of recycling, composting, and donating. A season best diversion rate of 65% was achieved during one game.



UT Recycling ranked fifth in the nation in the total recycling category during game days in 2016. During the 2016 season, the average attendee recycled 0.35lbs per person. UT was fourth in the SEC conference for the waste minimization category. UT was third in the SEC conference for greenhouse gas reduction during the 2016 season. UT was second in Organics Reduction in the SEC conference.

Volunteers contributed an average of 90 hours of service per home football game.

Basketball 2017:

UT Recycling provided zero waste stations for two home basketball games this spring. An average diversion rate of 75% was achieved at these games.



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RecycleMania 2017

In the SEC UT placed fourth in waste minimization per capita, third in paper recycling per capita, fourth in cardboard recycling per capita and first in plastic and can recycling per capita. During this eight week competition, UT's campus reduced greenhouse gas emissions by 515 metric tons, which is equivalent to 101 cars off the road/45 households. UT ranked third in the SEC for total recycling with a total of 402,164 pounds UT ranked first in the SEC for food/organics recycling, double that of the second place school.



Special Events

UT Recycling promoted recycling and sustainability by hosting documentary screenings and a lecture series. UT Recycling hosted an art show at the UT Recycling Public Drop-off. There were more than 20 art pieces and 60 attendees. In March UT Recycling hosted a Public Drop-off awareness day to raise awareness about all of the unique items that can be recycled at 2121 Stephenson drive dock 24. Promotion of the campus mail program in which offices can mail broken electronics and batteries, as well as the mug project which is honored by all of campus except Chick-fil-A, was continual throughout the year. UT Recycling approached offices on campus, in person, to discuss recycling options for their offices. UT Recycling provided presentations and trainings for students, faculty, and staff this year both at the recycling warehouse and on campus. Zero-waste lunch rushes to educated students about composting were held at Stokely Hall dining facility and Southern Kitchen. Southern Kitchen now has front of house composting.



Zero-Waste Events (Striving to Achieve a 90%+ diversion rate): Volapalooza, First Year Picnic, Chancellor's Appreciation Picnic, Picnic on the Plaza, TEDx talk, TNAPPA,

Chancellor Davenport's Welcome Dinner, Women in STEM Symposium, Facilities Services Fourth of July Training and Picnic, and many more.

Waste Audits: UT Recycling performed multiple waste audits to determine what materials to target for additional recycling infrastructure and education. Buildings and areas audited include Hodges Library, Student Union, Steam Plant Hill, and the Facilities Services Complex.

UT Recycling worked with multiple volunteer groups to host Campus Clean-ups/litter recycling pick up.

Move Out (Fall 2016): During fall move out, 237 pounds of clothing, 15 pounds of bedding, 116 pounds of non-perishable food, 21 pounds of cleaning supplies, and 49 pounds of household items were donated.

Move Out (Spring 2017): During Spring move out, UT Recycling worked with GoodWill and Smokey's Pantry to donate 18,800 pounds of clothing and household goods, as well as nearly 2,000 pounds of food.



Move in 2016: UT Recycling staff assisted students and their families during move in weekend by collecting overflow waste, and recovering materials that are thrown away that could be donated or recycled.

More than 20 tons of cardboard were recycled from move-in week alone.

Destination Imagination: UT Recycling employees helped direct waste disposal so that over 100 tons of material was diverted from the landfill.

Orientation Breakfasts and Lunches: UT Recycling staff were stationed at every lunch at the TN Terrace and every lunch and dinner at Student Union to make the orientations zero waste events. Everything was composted and recycled.

Social Media

The subunit's Facebook, Instagram, and Snapchat are very active in promoting the work of UT Recycling.

Requests

Between July 2016 and June 2017 UT Recycling completed more than 1,130 requests.

UT Recycling is starting the process of re-labeling bins all throughout campus to make signage consistent and easier to understand.



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Material Totals

UT Recycling recycled, composted and donated a total of 3311.39 tons from July 2016 to June 2017, resulting in a 30.15% diversion rate from the regular landfill. Of that total, 32.37 tons were universal waste and special wastes, including cooking oils, light bulbs, ballasts, and batteries which are regulated wastes.



The largest portion of the total above went to the UT Composting Facility. 1372.04 tons of food waste, leaves, wood chips, manure, and bedding were composted at the UT Composting Facility by our own UT Recycling staff. Nearly 200 cubic yards of finished compost were used on campus for gardens and other uses.

Students

UT Recycling employed a total of 36 students throughout the year. Work Study accounted for 19 of those students and they earned \$23,908.33. Students paid by Facilities Services totaled 11 who earned a total of \$35,887.70. Finally, six students paid through the Student Environmental Initiatives Fund earned \$28,644.40. The total earned by students was \$88,440.43. This is supporting our own economy by helping them pay for their schools as well as providing them with valuable work experience and often class credit for working with UT Recycling.



Awards

UT Recycling won the 2017 Higher Education Recycler of the Year Award from the Tennessee Recycling Coalition.

UTILITIES SERVICES

The Utilities Services unit is made up of four major groups: Air Conditioning Services, Electrical Services, Plumbing Services, and the Steam Plant.

This unit is responsible for the day-to-day design, operation, and maintenance of the Steam Plant, and all other utility systems on the UT Knoxville campus. Included are several, university owned, large distribution systems. Such as the 13.2 kilovolt electrical distribution system, a large high pressure steam distribution system, chilled water distribution systems, domestic water distribution system, sanitary and storm systems and various building systems including fire alarm and building security systems.

Utilities Services maintains all large air conditioning and refrigeration equipment, high voltage electrical equipment, main switchboards, high pressure steam regulators and metering for water and electricity.

The Utilities Services unit also assists in the construction, planning, design, and coordination of utilities for major projects and the coordination of service outages for those projects as well as regular maintenance or system repairs.

The group works closely with the City of Knoxville as well as the Knoxville Utilities Board for the coordination and maintenance of public utilities on campus such as sanitary sewer, water, natural gas, and electricity.

Air Conditioning Services

Overview

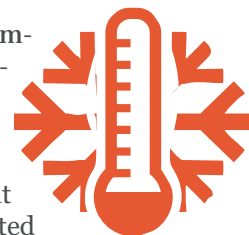
The past year has seen many major improvements to several heating, ventilation, and air conditioning (HVAC) systems serving all areas of campus and off-campus auxiliary buildings. Major equipment repair and replacement along with preventative and requested maintenance and emergency repair items.

The subunit continually supports academics, athletics, food service areas, and research laboratories in multiple areas of campus with service and repairs.

All mechanics on staff are EPA-registered and certified to properly handle refrigerant gases and are trained to perform complicated repairs on essential equipment.

The controls group maintains, repairs, and replaces building automation controls (BAC) in all campus buildings including pneumatic and electronic.

Air Conditioning Services also performs hydronic and air balance services to help each system operate at peak efficiency to help save energy. The water treatment team is responsible for water quality in all closed and open hydronic water systems as well as maintaining all of the equipment necessary for chemical distribution.



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They also have to comply with state and federal regulations in the handling of chemical products. The personnel in Air Conditioning Services are on call to respond to any emergency on campus at any time.



Major Projects

Listed below are some of the major projects we have completed in the past year.

Purchased and installed a replacement chiller in Hodges Library for redundancy to prevent loss of chilled water service to the building.

Changed out wooden cooling towers on the Reese Hall Chiller House with cooling towers salvaged from the old University Center.

Changed obsolete reciprocating air compressor with an energy efficient multi-stage scroll machine that serves Walters Life Sciences and acts as back-up to Hesler Biology Building. Also installed new refrigerated dryer and buffer tank.

Replaced original secondary chilled water pump and added a second pump for system redundancy in the Science and Engineering Research Facility (SERF) Chiller House that serves Dougherty Engineering Building with two new pumps for redundancy of chilled water service to the building.

Changed out obsolete variable air volume (VAV) controllers on floors five and six of Middle Dabney Building.

Repurposed salvaged chiller from Hoskins Chiller House to Hoskins Library for chilled water service to Hoskins and Senter Hall while the Mossman Building is under construction.

Replaced 100% outside air unit in the Early Learning Center on Lake Ave. with a unit that has humidity control capabilities.

Changed out two direct exchange (DX) air handlers in the lower level of the HPER Building with chilled water and heating water coils for humidity control.

Changed out DX air handler in the suite 223 of Perkins Hall with unit containing chilled water and heating water coils for humidity control.

Changed out building automation system (BAS) controller at 1610 University Ave. Building with a web based control system.

Replaced rusted vent stack on boiler #1 at the Steam Plant.

Installing three compressed air buffer tanks in the compressed air system at the Plant Biotech Building.

Installing an interceptor/receiver tank in the central vacuum system at the JAIM Building to protect the laboratory system vacuum pump.

Salvaged a 1,000 ton chiller from the University Center and installed it in the first position of the SERF Chiller House and made necessary connections to the chilled water loop.

Began replacing small split and package air conditioning units containing R22 with new units containing R410a.

Replaced 27 obsolete water source heat pump units dated from 1987 in the Middlebrook Building.

Replaced original heat exchangers and re-built pumps for building heating water in Walters Life Sciences Building.

Re-placing original heat exchangers for building heat in Hodges Library.

Replacing DX air handler serving laboratory room 332B in Dabney Hall with new chilled water air handler.

Repairing central outside air unit serving the building at 1610 University Ave. Replacing energy wheel and outside air damper unit.

Replaced three expansion tanks in the heating water loop at the Joint Institute for Advanced Materials (JIAM) Building.

Replacing two heat pumps unit at 2106 Terrace Ave. that were damaged by water flooding the basement of the house.

Re-placing obsolete air handling unit (AHU) #10 at Communications Building with new air handler sized for better efficiency.

Replaced obsolete split system and steam coil serving the office area of Fleet Management.



Replacing obsolete air cooled chiller, dated 1997, serving the Auxiliary Services Building. Chiller will be downsized to improve efficiency and energy savings.

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Replacing obsolete air cooled chiller, dated 2004, serving the Jessie Harris Building. The chiller will be up-sized to increase capacity for future expansion of service to building.

Replacing obsolete reciprocating 30 horsepower control air compressor at Hodges Library with a new multi-stage scroll air compressor for higher energy efficiency.

Installed new expansion tanks and make-up water system in the heating water loop serving Blount Hall.

Installed new scroll type air compressor in Food Safety Building to replace obsolete reciprocating air compressor for laboratory supply air and increase energy efficiency.

Replacing obsolete heat exchangers in the Communication/Andy Holt Chiller House.

Replacing obsolete heat exchangers serving the heating water loops in the Stokely Management Building for air handling units and perimeter induction heating units.

We have replaced numerous obsolete pumps serving campus buildings and have added pumps to systems to create more redundancy to prevent service interruptions in systems we maintain.

Engineered and installed de-stratification fans in the Allan Jones Intercollegiate Aquatic Center for improved air quality for fans and athletes.

Electrical Services

Overview

Electrical Services is composed of three units: Electrical, Electronic Low Voltage, and High Voltage.

The Electrical Services unit maintains secondary voltage power distribution systems, performing such utility functions as: Installation of new electrical circuits; Maintenance and repair of building switchboards; Repair of indoor and outdoor lighting systems; General troubleshooting and repair of electrical distribution systems. The Electrical Services unit installs and maintains permanent systems such as fire alarms, clocks, bell systems, electronic access controls and many other low voltage systems.



The High Voltage Unit operates and maintains extensive 13.2KV high voltage power distribution systems. This unit performs such functions as: Repair or replacement of underground or overhead distribution lines; Rerouting of power distribution to back-up circuits during emergencies.

Electrical Distribution System:

Electrical Services is responsible for the maintenance and operation of all electrical distribution systems owned by the Knoxville campus. This unit installs and maintains an underground distribution system containing more than 60 miles of cable. This includes all primary and secondary systems located on the Main and Agricultural campuses and the secondary systems of rental properties located off campus. Therefore, all power outages required in any university building for renovation or maintenance work being performed by outside contractors must be scheduled through the Utilities Services unit. The actual discontinuance and restoration of power will be performed by Facilities Services employees with the assistance of the Knoxville Utilities Board as necessary.

Current Projects

UT Main Substation – Gas Insulated Switchgear

Utilities Services is scheduled to replace the main 18th Street substation outdoor infrastructure with gas insulated switchgear (GIS) at the end of fall 2017. This project was the concept of Facilities personnel and will greatly improve the appearance and operational safety of the facility and will greatly enhance system reliability and operational safety. This will also extend maintenance cycles from two to five years, lowering frequency of scheduled outages due to maintenance.



Electrical System Design



Facilities personnel are always reviewing 13.2KV electrical distribution system design for efficient and reliable performance of normal and emergency operations. This leads to improvements

as new pad mount switchgear standards and installations, implementation of DOE 2016 transformer standards, and other enhancements which greatly increases reliability and flexibility of present and future systems, allowing easy expansion for future projects and power demands. The Utilities unit could not make these improvements without the intimate historical knowledge, passion and vision of the personnel involved with the daily management and operation of the system.

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UT Laurel Substation Expansion



This year Utilities Services completed the second phase expansion of the substation distribution infrastructure at the Laurel substation with gas insulated switchgear (GIS) to accommodate future demand by new projects north of Cumberland Avenue. This expansion will also

reduce power loading of existing distribution circuits and will allow for redundancy of the electrical distribution system, increase overall reliability, and reduce the possibility of unscheduled outages for all campus properties. The concept for this expansion was incorporated into the original building design by Facilities personnel with a vision toward improvements and understanding of the Campus Master Plan. This approach reduced the overall complexity and cost of the implementation/construction of new electrical distribution system equipment.

Supervisory Control and Data Acquisition



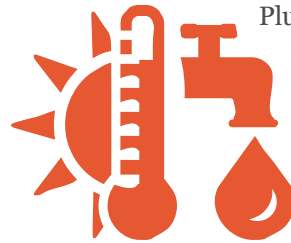
The Supervisory Control and Data Acquisition (SCADA) system is currently being expanded to improve distribution system management, monitoring and control. The first step in expanding and implementing this technology is the installation of radio communication system and new metering for both electricity and water, which is currently underway. The ultimate goal of this system is to improve the acquisition of data for energy management and to greatly reduce or eliminate the possibility of unscheduled outages due to better monitoring and system redundancy.

New Building Access System

There is currently an ongoing project to install new building access hardware and software on campus. This is Ethernet based to improve field communication, security, and access management. The new system will allow campus personnel to quickly interface building access for faster security response.

Plumbing & Heating Services

Overview



Plumbing & Heating Services performs routine, periodic utility maintenance on domestic and non-potable water systems (Including sewers and storm sewers), low pressure distribution systems within buildings, and high pressure steam distribution lines. It also provides special project services.

Services provided include:

Responding to emergencies, such as burst pipes.

Monthly rodding of main sewer lines at University Housing and Food Services.

Periodic cleaning and lubrication of blending valves.

Periodic cleaning and annual testing of steam traps and water reducing stations.

Periodic maintenance of backflow preventers.

Periodic lubrication, bi-annual testing, and operation of fire hydrants.

Periodic cleaning and maintenance of circulating, condensate return and sump pumps.

Installation and replacement of restroom fixtures.

Insulation or replacement of pipes within buildings and underground.

Replacement of large hot water tanks with small instantaneous steam heaters.

High pressure steam distribution system.

Installation and maintenance of grease traps and coordination of grease trap design with Knoxville Utilities Board.

Assisting Air Conditioning Services with pipe and equipment installation and repair.

Installation and repair of geothermal system piping in Sorority Village.

Maintenance, fabrication, and installation of hand rails on campus.



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Miscellaneous welding projects on campus where needed.

Installation, maintenance, and repair of gas lines up to 2" diameter.

Water Fountains: Plumbing & Heating Services is responsible for the installation and replacement of water fountains and water bottle fillers. All water fountains are tested regularly.



Current and Completed Projects

Found and repaired leak in Alpha Delta Pi Sorority geothermal field loop line.

Install new piping and connection in Scientific Engineering Research Facility (SERF) for the domestic water system. This improved circulation to the cold rooms as a backup for processed chilled water.

Install new domestic water and fire line mains from the street to the building. Including building a new backflow and water station for the domestic in the building.

Install new water service and backflows for irrigation at Communications and Student Services lawn area.

Install new sanitary drain in Hodges Library from Starbucks to main drain.

Rework piping at Alpha Delta Pi Sorority geothermal distribution header in Mechanical room.

Dismantled old booster pumps and installed new energy efficient pumping system and new water station at McClung Tower.

Repaired breaks in main sewer line from Bailey Educational Building.

Installed new drain line from Austin Peay gutter and installed new trench drain to prevent flooding.

Replaced leaking glass acid drain piping in Dabney Hall with new poly acid drain.

Installed steam feed to Senter Hall from main steam loop at Hoskins Library to replace an old independent boiler.

Re-pipe and install new heat converters to the central greenhouse.

Replaced old heat converter and tank storage at Ellington Plant Science with instantaneous steam water heater including rerouting water and steam piping.

Replaced steam heat converter for building water heat at Walters Life Science.

Found and repaired steam leak at Blueberry Falls.

Assisted in excavation and repair of sink hole in sorority parking area.

Repaired main drain at Carrick Hall.

Replaced 60 feet of water main trunk line in Carrick Hall basement.

Repaired and replaced main drain stack in Reese Hall.

Replaced/installed new grease trap at Conference Center Building and rerouted piping for the new location.

Repaired steam line on Middle Drive.

Coordinated the repair of fire line break at Stokely Management Center.

Repaired condensate line on Johnny Majors Drive.



Installed new piping for the installation of a new chiller at Thompson Boling Arena.

Repaired/replaced gas line feed to Dabney Buehler Hall.

Installed exhaust piping for emergency generator at the Plant Biotech building and Facilities Services Complex.

Rebuilt piping for building heat at Humes Hall.

Repaired condensate leak at the Gate 21 amphitheater.

Repaired domestic main feed to the Clarence Brown Theatre.

Coordinate steam replacement project from Hodges Library to Dunford Hall.

Repaired sewer main coming from the Steam Plant.

Repaired water main break on Morgan Circle.

Replaced gas line and extended gas service to Agricultural Research barn for heat.

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Steam Plant

Overview

The Steam Plant is responsible for the maintenance and operation of the central steam plant which serves both the Main and Agricultural campuses. More than 153 buildings, containing more than 8,000,000 square feet of space, are served by the Steam Plant. Steam is used for heating and domestic hot water in these facilities, as well as to operate sterilizers, autoclaves, etc. More than 11 miles of underground steam pipe and return lines crisscross the main and agricultural campuses.

739,472,944lbs of steam
35,300MW of electricity



In the 2016-2017 reporting year, the Steam Plant produced 739,472,944 pounds of steam and generated more than 35,300 Megawatt hours of electricity.

Major components of the Steam Plant include:

One converted coal boiler fired with a natural gas/diesel boiler rated at 100,000 pounds per hour each, one boiler that can burn natural gas or oil. Rated for 70,000 pounds per hour on natural gas. One natural gas fired turbine generator rated at 5MW with heat recovery boiler. The heat recovery boiler is rated at 23,000 pounds per hour with turbine exhaust and can boost capacity to 110,000 pounds per hour with auxiliary duct burner.



Two natural gas compressors that boost fuel pressure to the turbine to 200 psig.

Water treatment and testing equipment. Water must be treated before being introduced into the boilers to prevent the build-up of scale corrosion. Water is tested and treated continuously, and the process also allows for the identification of problems with the steam distribution system.

Emergency generator: The Steam Plant has a 900 horsepower, 2 megawatt, 4,160 volt emergency generator which can

power the plant during an electrical outage. The generator is powered by fuel oil. The 6,000 gallon tank ensures that the plant can operate for several days in the event of a severe electrical emergency.

Current/Recent Projects



Removed coal scales from #1, #2, and #3 old coal boilers.

Removed bottom of coal bunkers.

Removed coal distributors from front of #1 boiler.

Pressure washed and cleaned with solvent, fuel oil tanks on the

hill to prep for painting, painted fuel oil tanks.

Cleaned turbine lube oil cooling fans.

Installed new lighting around boilers.

Installed new printer in control room.

Installed new heater in welding room.

Repaired steam trap at MCCA.

Replace belts on roof fan.

Drain and clean out boilers to prepare for inspection, get boilers ready for operation after inspection.

Worked on logic in DCS this is an ongoing procedure whenever changed to plant are made, new field devices are installed or upgraded.

Worked on brine pump for de-alkalizers.

Installed new chemical pump controller.

Installed new flow meter to generator.

Installed new 75HP instrument air compressor and associated equipment, ran conduit, installed switches, driers, etc.

Worked on steam driven feed water pumps governor.

Cut up old stack from #1 boiler and placed in metal scrap dumpster.

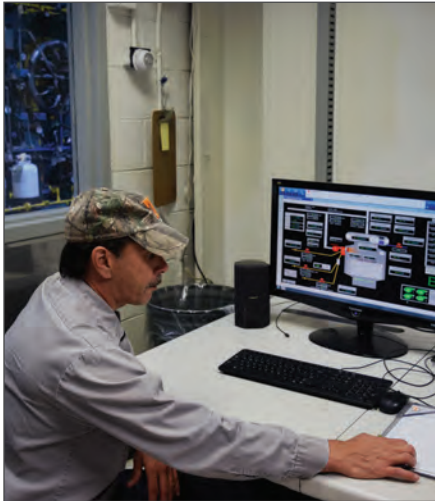
Cut exhaust stack from old generator to manageable pieces.

Installed conduit for Supervisory Control and Data Acquisition (SCADA) system for new gas meters.

Cleaned and sealed floors in basement area.



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Ran new power from UPS panel to secretary's office.

Repaired fire eye on #2 boiler.

Replaced #4 boiler low water float switch.

Painted in basement area.

Worked on DA level control.

Repair heater piping at #5 boiler.

Demolished old forced draft fan and housing.

Removed old concrete from forced draft fan base, leveled concrete.

Worked on implementing SCADA with new KUB gas meters.

Worked on brine tank level controls.

Installed welder plug in fan room.

Installed new gas flow meter on #1 boiler.

Repaired coupling on instrument air compressor motor.

Ran power to new lights at condensate tanks.

Installed new roof fan.

Fabricated stand for controller for chemical injection.

Fabricated new ladder for tunnel entrance.

Made new handle for drain valve at fuel oil tanks.

Made new support brace for water ionizer tank, plumbed in new tank.

Repaired emergency lighting in control room.

Installed 75 foot of guardrail at high pressure gas meters.

Worked with contractor to retune #2 and #3 boilers.

Made repairs to steam flow meter transmitter sensing lines.

Put bearings in condensate pump.

Replaced maxon gas valve on #4 boiler.

Replaced 50 feet 4" PVC drain line with cast pipe.

Replaced gas flow meter on #3 boiler.



ZONE MAINTENANCE

With the reorganization of Facilities Services in 2012, more resources have been provided to Zone Maintenance personnel empowering them to perform more tasks without being required to call on others. This has provided more efficient and effective service to the campus community.

One Call Shift



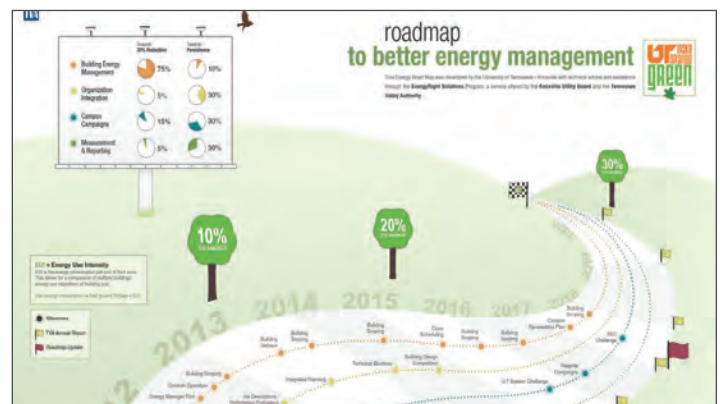
The Zone Maintenance One Call shift is in full operation. There is a minimum of two people on site at all times during the shift. Having two individuals on site enables the unit to better handle repairs requiring multiple workers. Personnel are also able to better handle repair requests during peak times. One person can stay with a problem while the other handles calls.

"Droppable" tasks are assigned for slow periods.

This shift also provided enhanced off-hour coverage for the Zone Maintenance unit. Three people are assigned to each shift (first, second and third). These shifts rotate seven days on, four days off, eight on, two off, and repeat every fourth week.

STAR Team (Special Team to Assist Research)

The STAR Team is a specialized team responsible for providing a more focused service function to the research community. This is accomplished by assisting new and existing researchers, with changes in programming requirements and with day-to-day problems that may arise.



This team also took over the responsibility for the TVA Energy Road Map which includes energy auditing of buildings, and is leading the way to predictive maintenance techniques with vibration analysis, shaft alignment, and thermal analysis.

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STAR Team also takes the lead in developing projects for the Student Environmental Initiatives Revolving Fund. The team has identified several projects with expenditures nearing \$350,000 and savings of more than \$215,000 per year. These savings route back to the funding of additional utilities savings projects.

Emergency Management

Zone Maintenance personnel take an active daily role in emergency management, serving as emergency planning coordinators. In this role, the Maintenance Specialists take the lead in emergency response on a building-by-building basis, working with emergency responders to help assure the safety of building occupants.



In addition, some zone foremen are serving as zone coordinators and are tasked with a more overarching role in emergency response. As other individuals rotate out of Zone Coordinator appointments, more of these positions will be filled by Zone Maintenance.

The unit has also purchased and provisioned meals ready to eat, water, safety equipment, heaters, emergency generators, and other equipment that might be necessary during an emergency. Zone Maintenance has a 1,000-gallon trailer-mounted fuel tank. This trailer will be used to deliver diesel fuel to emergency generators and other equipment on campus during an emergency.

Zone Maintenance personnel also serve on the Emergency Management Steering Committee, which writes the emergency management response plan and coordinates with other groups to prepare for disasters. Working relations have been established with university, city, and county police departments, fire departments, and rescue teams. On campus, these relationships extend to housing and student life personnel.



Zone Maintenance Inspections Initiative

Building inspections encompass several different levels. Two employees have primary duties of inspecting the condition of buildings and employee performance. Senior-level employees are used in this initiative in order to provide on-the-spot training should any deficiency arise.

Having this responsibility at a senior level also provides the opportunity to rotate the responsibility to different employees even in the event of vacancies or searches.

Other inspections are completed using a peer network of Maintenance Specialists. This entails maintenance specialists in neighboring locations to inspect each other's buildings. This network can be increased so that foremen also inspect each other's buildings, etc. These inspections are used to combat situations in which a person in the same environment for a period of time may become accustomed to seeing certain issues, and may therefore cease to recognize problems.

Zone Maintenance Smart Devices

With the Archibus system, smart devices, such as tablets, are being issued to most employees. This allows them to receive and report on work assignments, request parts, and also request support. All of these tasks can be completed from the field without the need to be tied to a desktop computer.



Building Level Authority

A major initiative, in concert with the Archibus system, is that issues encountered by customers are routed directly to a building's maintenance specialist without the need to route through several levels of review. This results in quicker problem resolution and reduces the workload on several levels of review while decreasing the number of response requests required from central shops.



Providing Maintenance Specialists with more building level authority reduces the number of work requests generated by Zone Maintenance to the central shops.

Critical Parts Inventory

The unit will begin to keep deeper inventory parts on hand for equipment that has critical impact on the campus, especially if it is a piece of equipment where long lead times can hamper operations for a long period of time.

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Zone Maintenance Career Ladder



Revise career ladder to allow movement to higher levels based on demonstrated skill coupled with test and/or certifications.

Customer Service Training

All throughout campus Zone Maintenance employees are complimented on the exemplary job that they do and the quality of

service that comes from the group. Still, the unit has a desire to take the level of service even higher.

In 2015 Zone Maintenance employees completed a series of customer service training conducted by UT Employee and Organizational Development. This training was tailored specifically for Zone Maintenance and addressed standards and best practices to use as personnel interact with the campus community. Another goal of the training was to encourage the uniformity in how Zone Maintenance personnel respond to customers and how customer concerns are handled.

Zone Maintenance Initiatives Summary

Initiatives have an emphasis on improving services to the campus. Improved training from the Inspection and Zero Failures initiative will result in fewer equipment failures going forward, resulting in lower costs and better service to the campus.

Improved training will ultimately result in fewer employees per square foot, lowering costs.

Overall, these inspections will help the Zone Maintenance unit provide better service to the campus community. The following are the expectations of the initiatives:

- Inspectors will notice things others may have become used to seeing.
- Emphasis is not necessarily on employee performance.

- Inspectors will be able to point out needs (training, materials, and tools) and potential deficiencies in materials and workmanship.
- Improvements in performance, if needed.
- Foremen, repurposed from existing positions, will be able to identify training needs and provide training, when able, on the spot and at the time the deficiency is found.
- Foremen are designing the program from scratch. The scorecard, similar to restaurants, will be on display in the building.
- Equalization for basis building condition (i.e., employee score not penalized due to building deferred maintenance conditions outside of the employee's authority to correct).
- Rewards to excellent scores and build a greater sense of pride.

Zone Maintenance Zero Failure Initiative



The Zero Failure Initiative within Zone Maintenance is a focus on certain components and/or modes of failure that should not be expected if normal expected maintenance is performed. Zero failure does not automatically point at the maintenance specialist, but will require an evaluation of the failure in each of the categories to determine if failure is the result of a manufacturing or design flaw, misapplication, needed training, poor performance by a maintenance specialist, or other.

The goal of this initiative is to minimize these failures by improving the quality of materials and tools the unit receives, improving the training if that is determined to be the root case, and improve employee performance where indicated.

The desired outcome of this program is to investigate any failures categorized into the zero failure category and determine why a given failure occurred. Such investigations may uncover a need for additional training or tools, in addition to parts or equipment performance.

To date this initiative has identified training needs for employees that were repurposed from other areas of Facilities Services. This has culminated with ZM allowing other seasoned employees to spend more time mentoring the employees new to the tasks. For example, premature bearings failures in air handlers were occurring in one of the newer campus buildings. Additional training was provided for installation procedures while transitioning to a different bearing manufacturer.



FACILITIES SERVICES ANNUAL REPORTS

Zone Maintenance General Initiatives

Square footage per employee was low in comparison to peers. To improve this ratio the unit was not filling positions as they became vacant.

Employees per supervisor is low in comparison to peers. ZM has improved this by moving three foremen to non-supervisory roles and will further improve as vacancies occur.

Budgets will be tight in the coming year(s).

A redistribution of zones included the combination of Zone 2 with Zones 4 and 5, the expansion of Zone 9 into Zone 3, Zone 3 outlying buildings, and One Call Shift personnel absorbed into Zone 8. These changes freed up two foremen for inspections, and eliminated another foreman.

Zone Maintenance is now well within the ratio of its peers and positions are being filled as they become vacant. Management is continuing to evaluate this ratio and will make adjustments where needed.

Zone Maintenance & Archibus

The Archibus management system provides Zone Maintenance with information the unit has not had in the past. It is able to provide the management data and reporting the group did not have access to.

With the system, work requests are routed directly from the requester to the personnel in the buildings. This direct routing results in shorter response times. Requesters will be able to provide feedback on how their request was handled. In addition, requesters will also be able to track the progress of their work request.

**Archibus
Module
Training**



For more information about each
Facilities Services unit and subunit
go to **fs.utk.edu**



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

FACILITIES SERVICES

APPENDICES

A

SIGHTLINES

B

APPA FPI REPORT

APPENDIX A - SIGHTLINES

Sightlines: Helping educational facilities better manage their facilities investments

Return on Physical Assets (ROPA) Report for 2016 – Benchmarking and analysis to provide peer comparisons and a more informed allocation of resources, reduction in operating costs, and improvement in service.



Peer Institutions

ROPA+ Analysis includes E&G space totalling 7M GSF



Institution	Location
University of Florida	Gainesville, Florida
University of Kentucky	Fayette, Kentucky
University of Missouri Columbia	Columbia, Missouri
Mississippi State University	Starkville, Mississippi
University of Arkansas	Fayetteville, Arkansas
The University of Alabama (Tuscaloosa)	University, Mississippi
The University of Mississippi	Tuscaloosa, Alabama
Louisiana State University	Baton Rouge, Louisiana
University of Georgia	Athens, Georgia
Auburn University	Auburn, Alabama



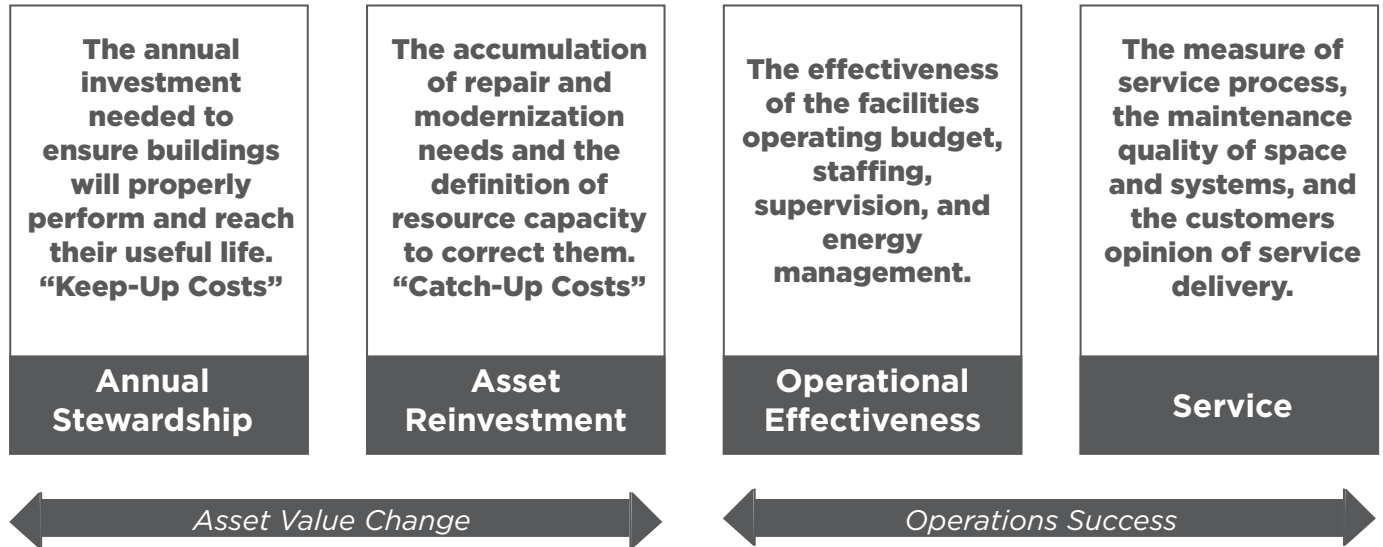
Comparative Considerations

Size, technical complexity, region, geographic location, and setting are all factors included in the selection of peer institutions.

APPENDIX A - SIGHTLINES

A Vocabulary for Measurement

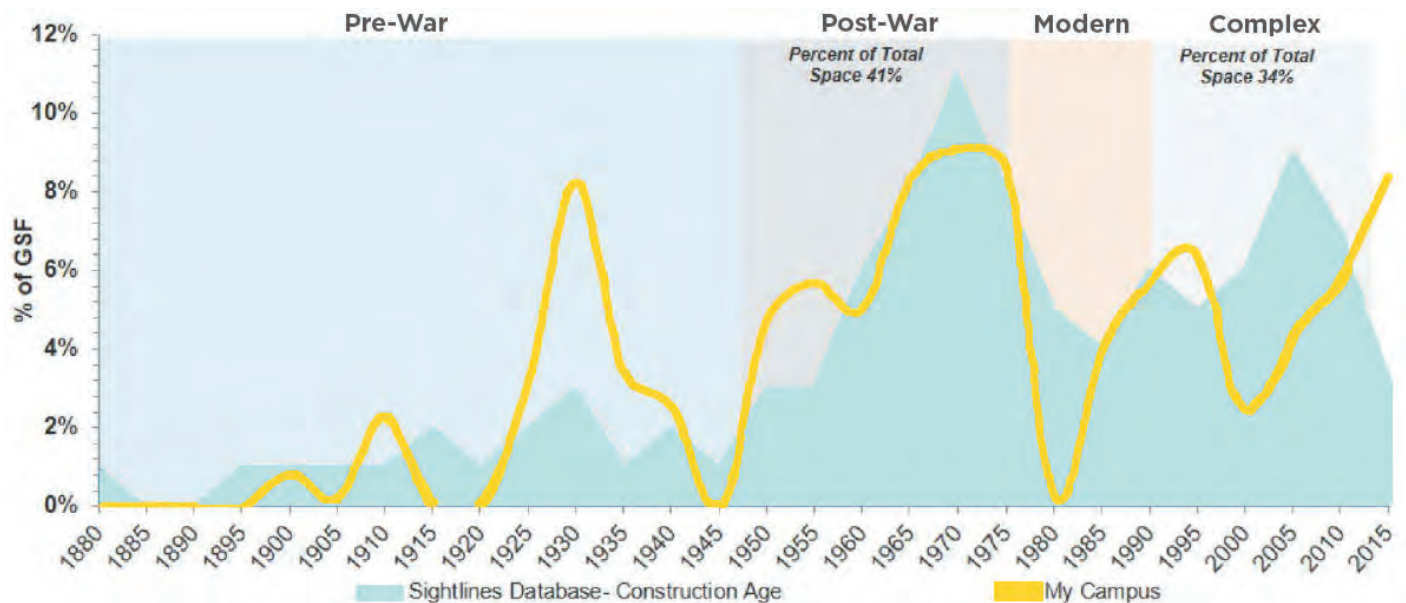
The Return on Physical Assets - ROPA™



Putting Your Campus Building Age in Context

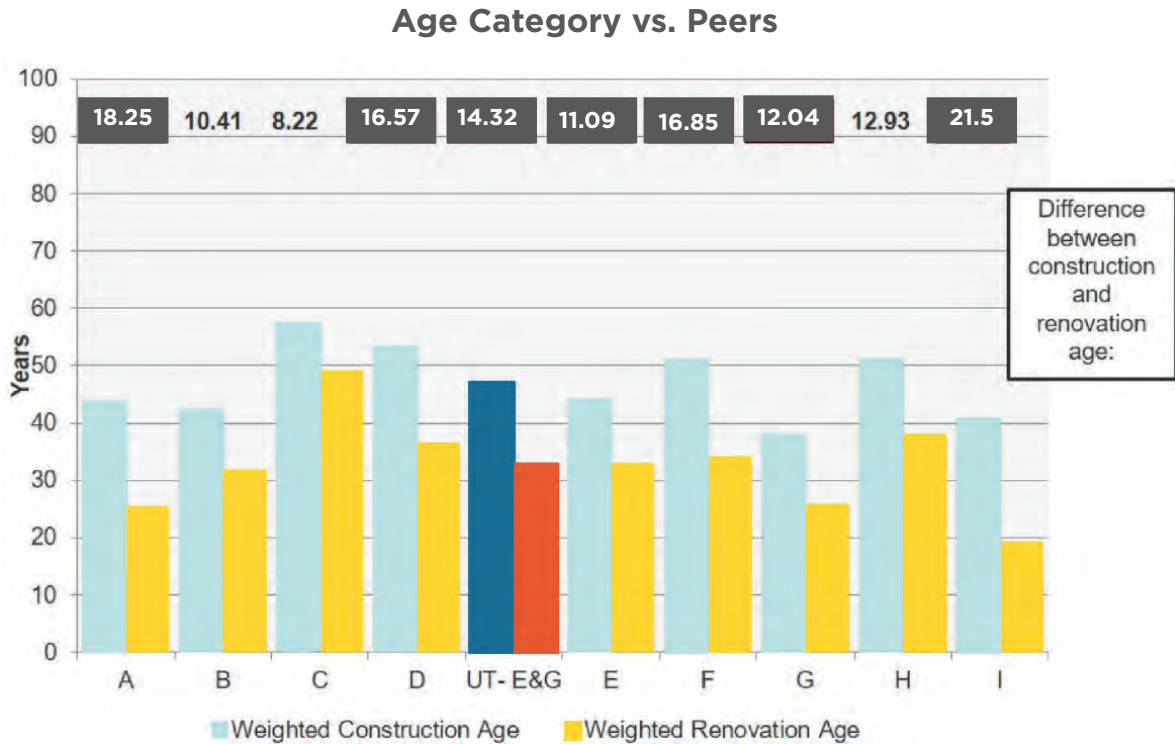
The campus age drives the overall risk profile

Pre-War	Post-War	Modern	Complex
<ul style="list-style-type: none">Built before 1951Durable ConstructionOlder but typically lasts longer	<ul style="list-style-type: none">Built from 1951 to 1975Lower-quality ConstructionAlready needing more repairs and renovations	<ul style="list-style-type: none">Built from 1976 to 1990Quick-flash constructionLow-quality building components	<ul style="list-style-type: none">Built in 1991 and newerTechnically complex spacesHigher-quality, more expensive to maintain, and repair



APPENDIX A - SIGHTLINES

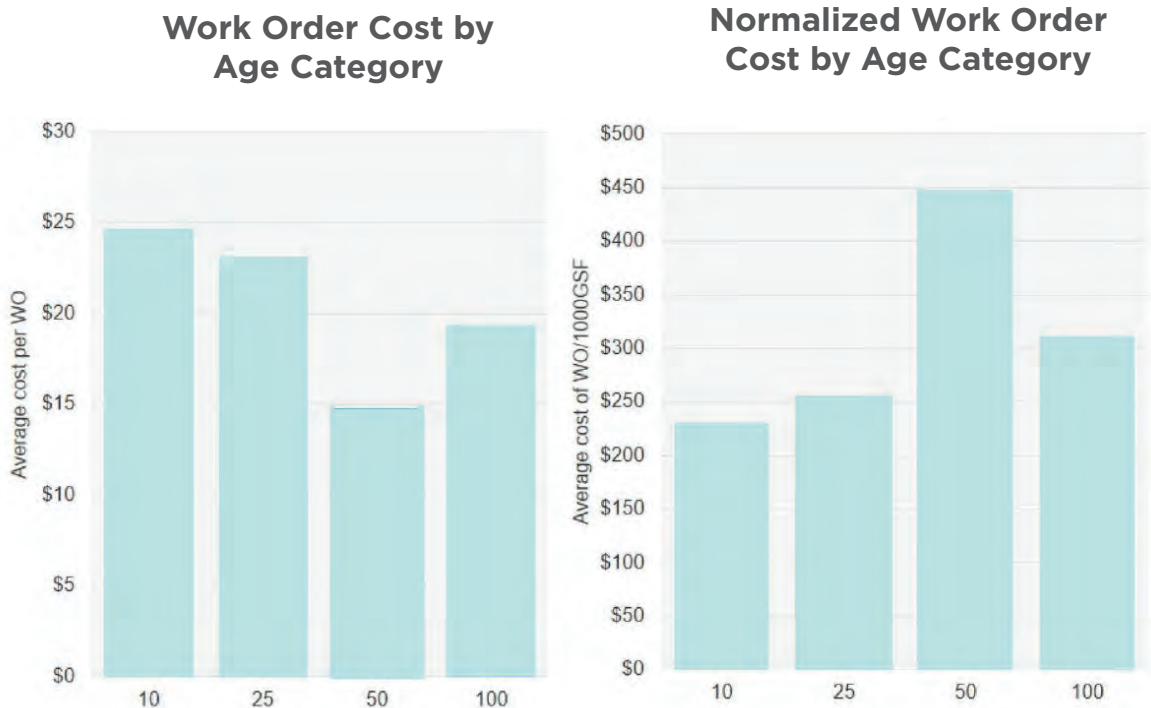
Renovations have reduced Campus Age



* Highlighted buildings have over 25% difference between construction and renovation ages

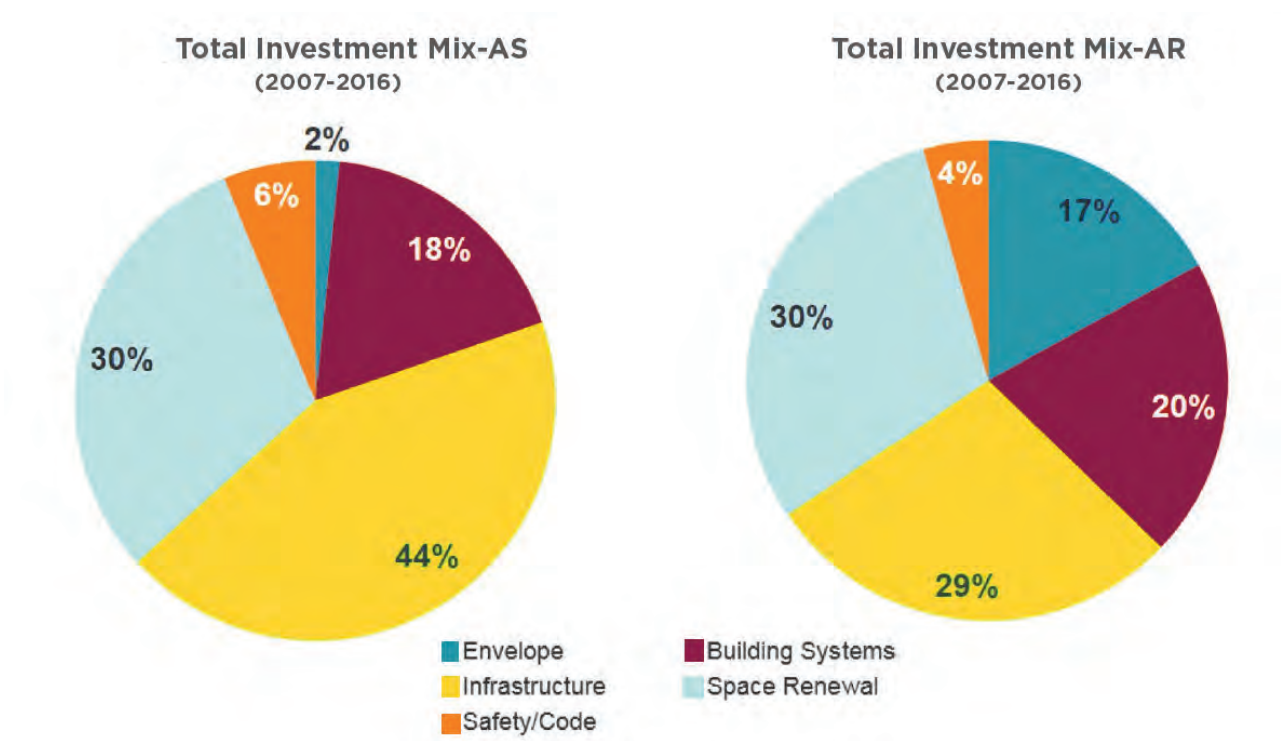
Work Order Cost by Age Category

Older Buildings have a higher work order cost per GSF



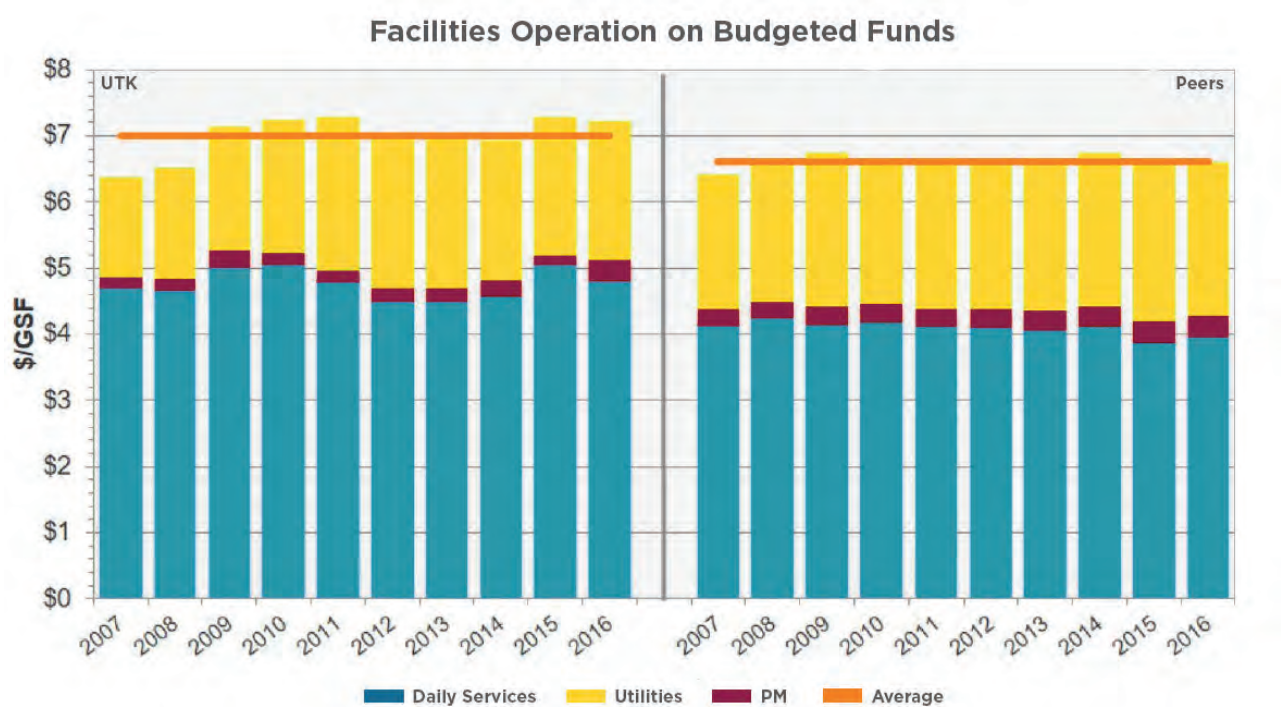
APPENDIX A - SIGHTLINES

Mostly Spending in Space Renewal & Infrastructure



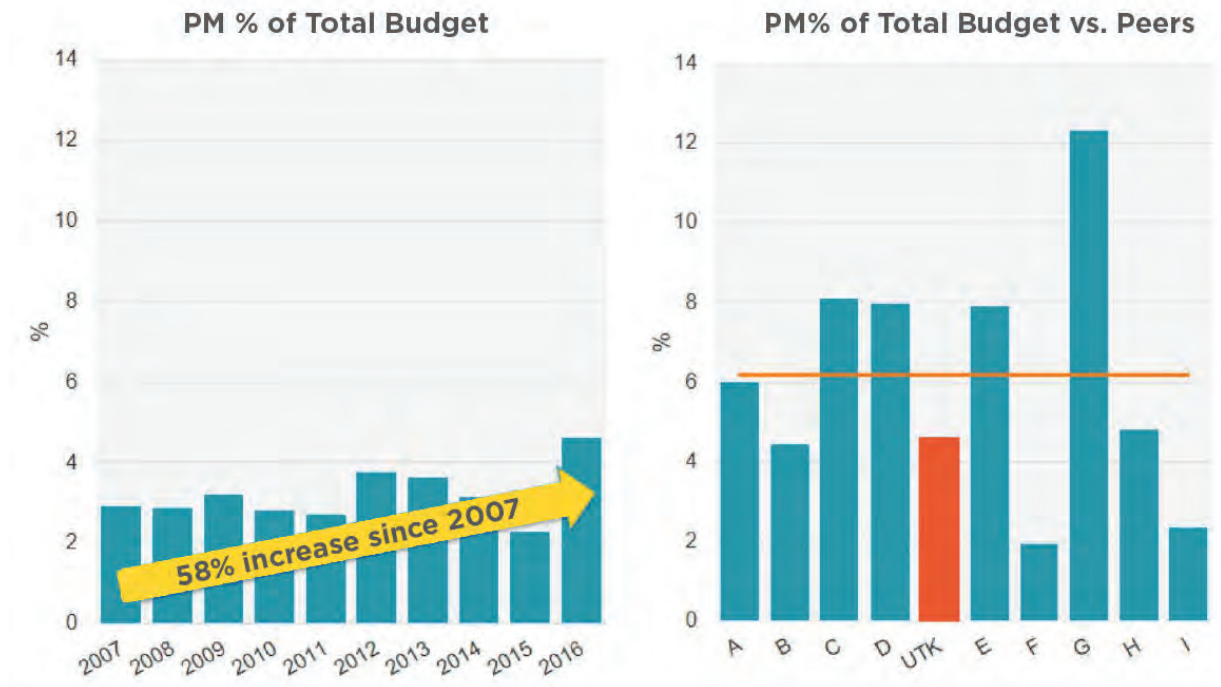
Facilities Operating Expenditures vs. Peers

Budgeted dollars are similar to peers



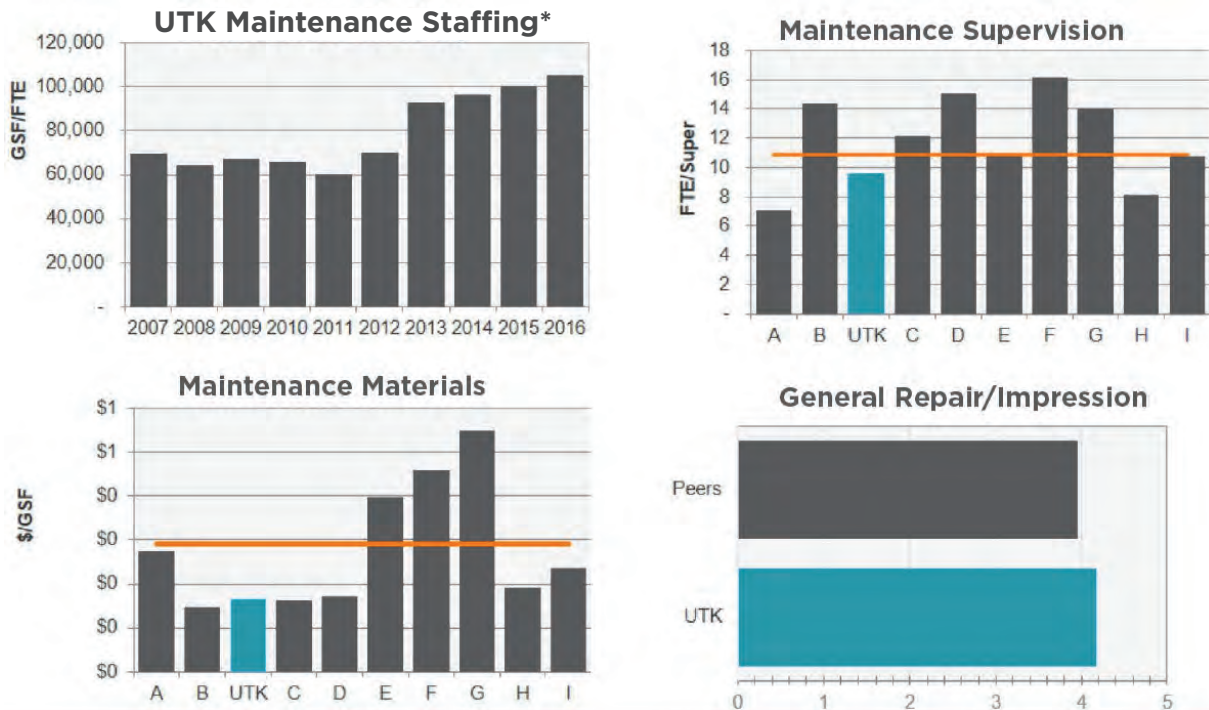
APPENDIX A - SIGHTLINES

Highest PM Spending in Last 9 Years



Maintenance; Covering More, Spending Less

Performance is stronger than peers



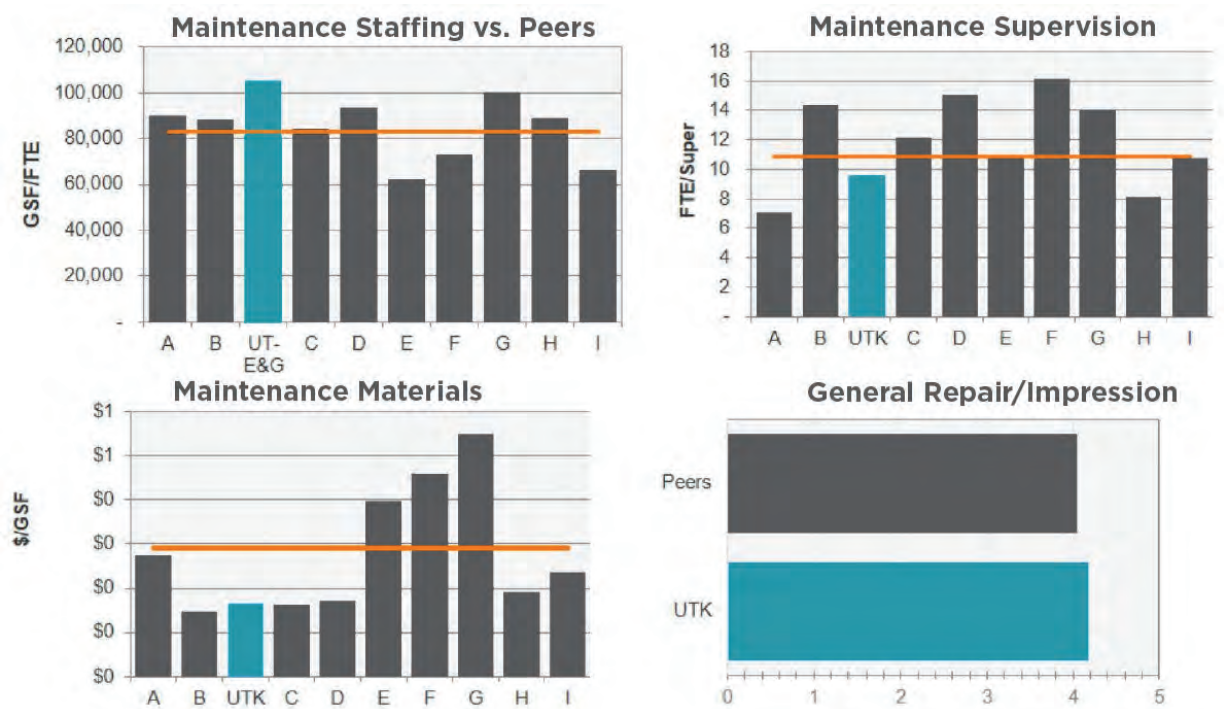
* Institutions arranged by Tech Rating

*UTFS has made a concerted effort to cover more sqft. with fewer employees, and reducing the number of foremen in zone maintenance.

APPENDIX A - SIGHTLINES

Maintenance; Covering More, Spending Less

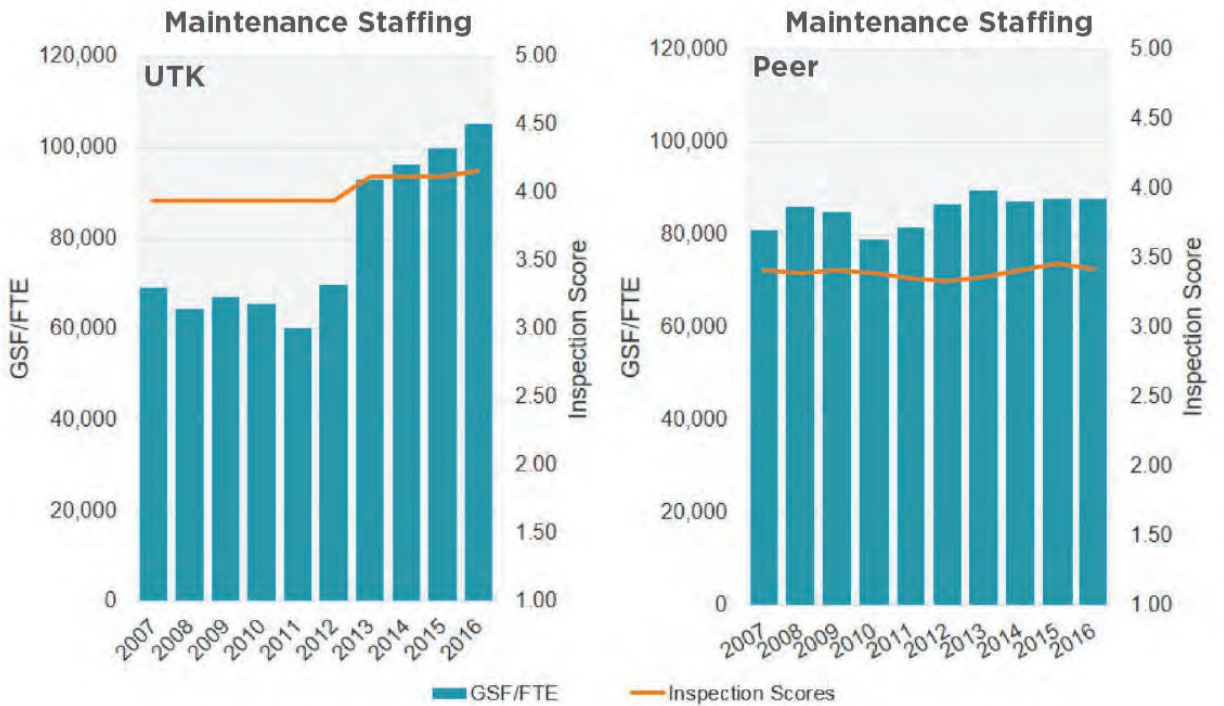
Performance is stronger than peers



* Institutions arranged by Tech Rating (SEC Peers)

Covering More than Peers

Scoring higher than Top 25 institutions

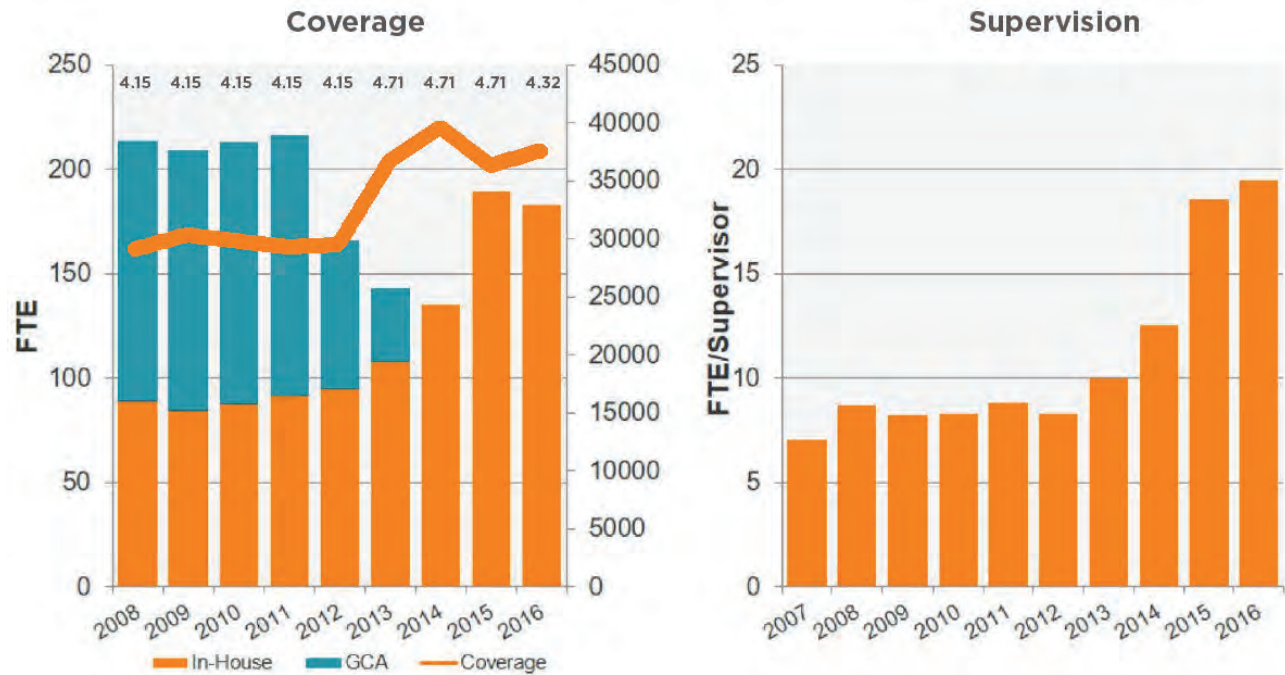


Compared to SEC Peers

APPENDIX A - SIGHTLINES

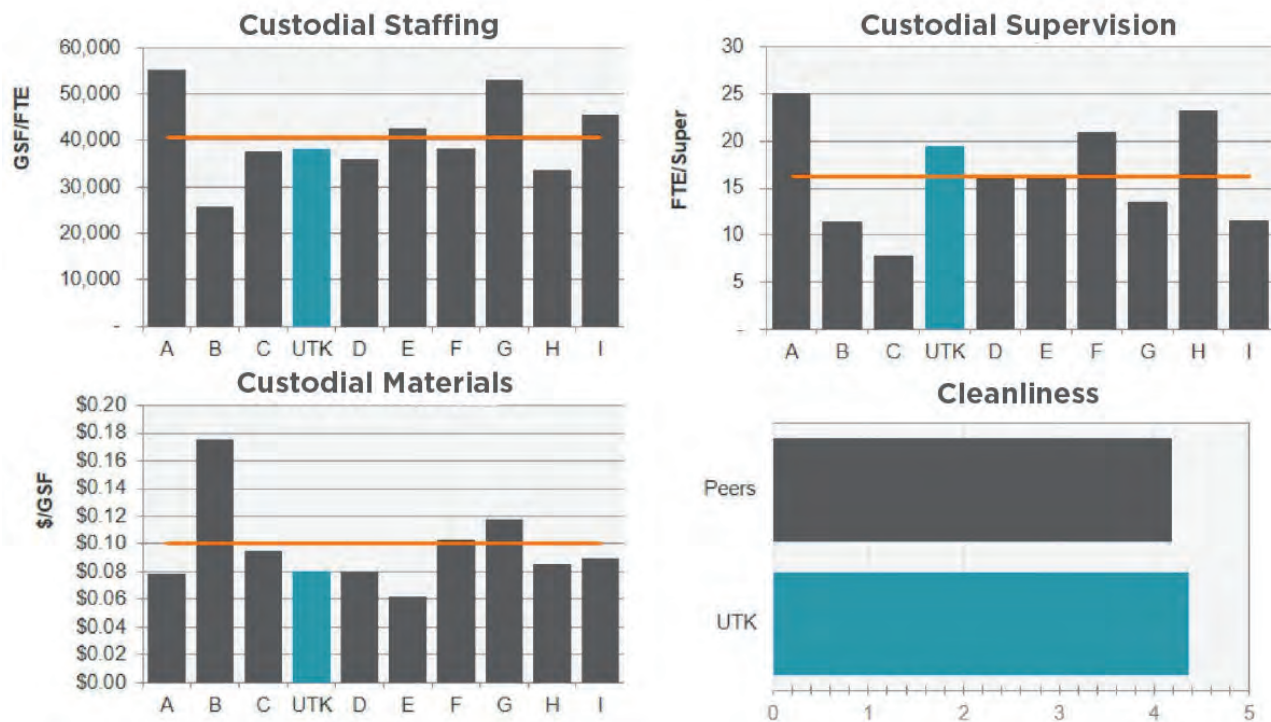
In House Custodians are Performing Effectively

Increased custodial efficiency as custodial transition in house



A Vocabulary for Measurement

The Return on Physical Assets - ROPA™

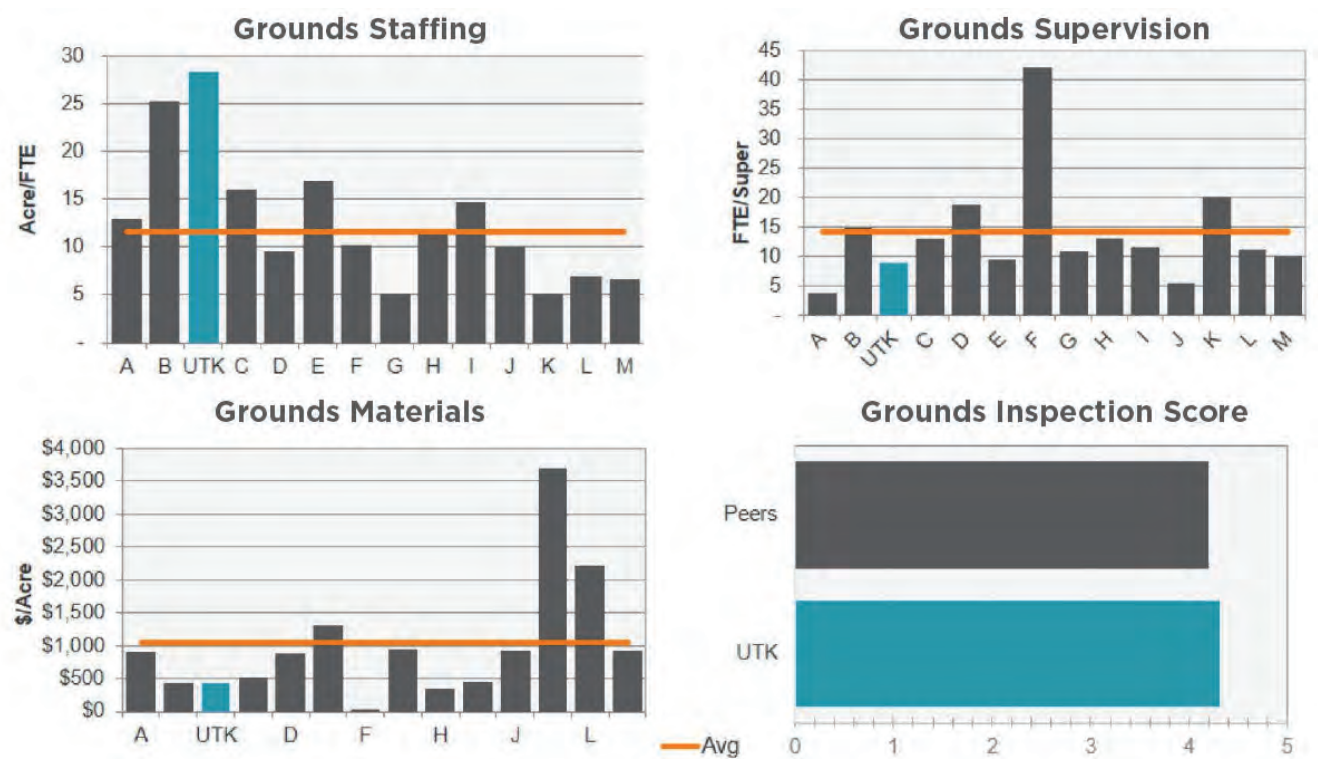


*Institutions arranged by Density factor

APPENDIX A - SIGHTLINES

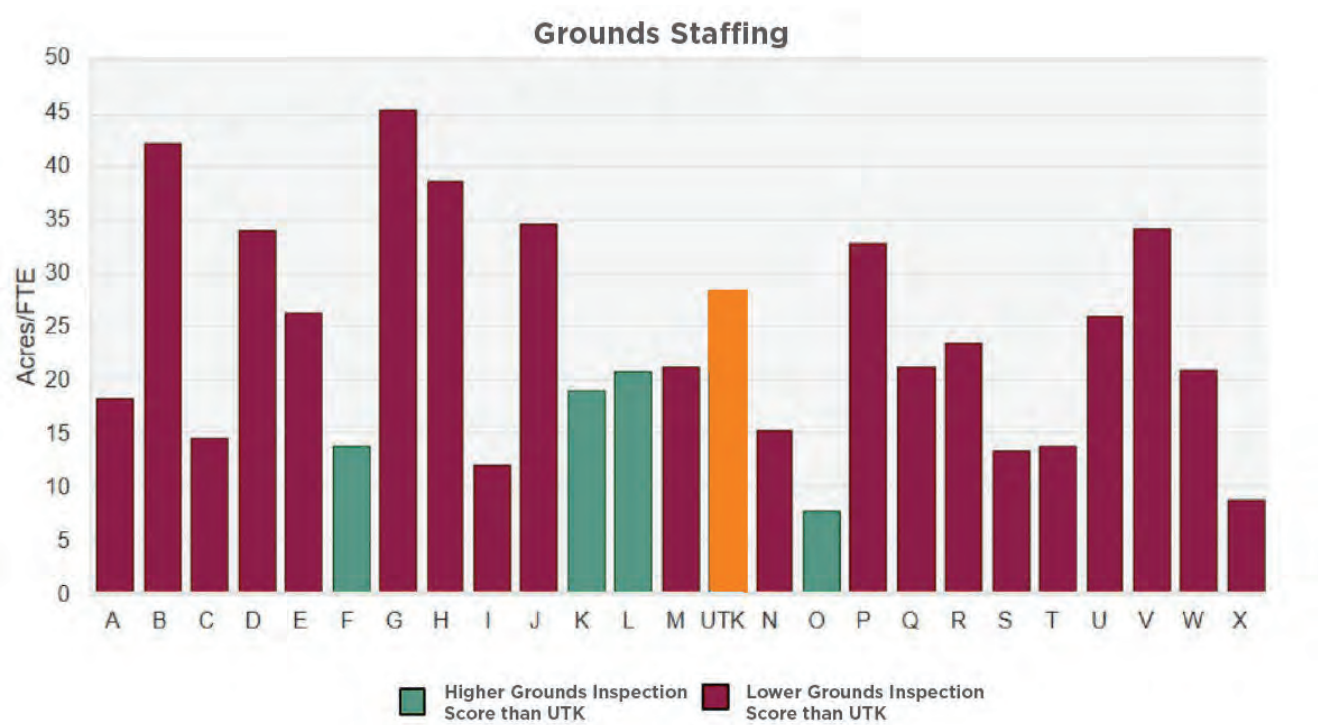
Grounds; Covering More, Less Supervision

Higher inspection scores than Peers



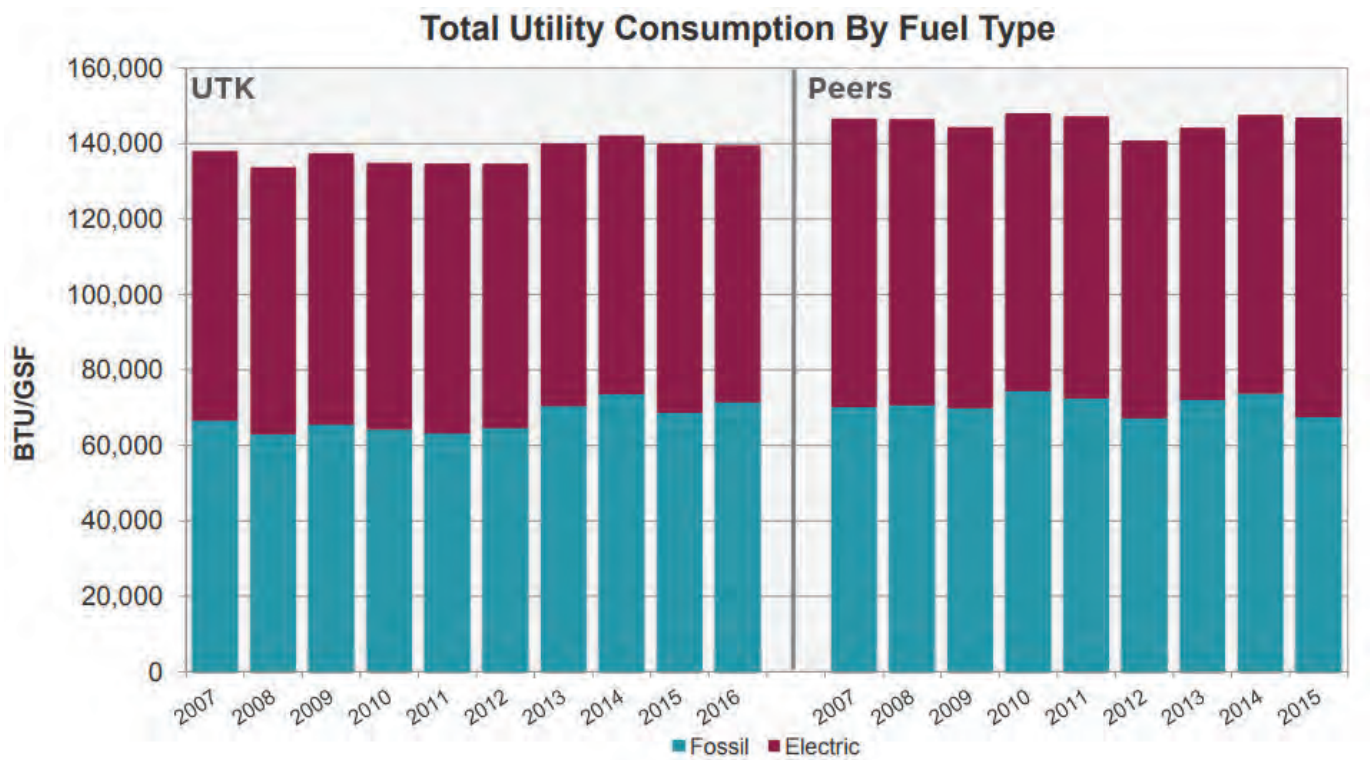
Top 25 Institutions as Peers. Institutions arranged by Grounds Intensity.

Grounds Staffing Against Top 50 Public Institutions

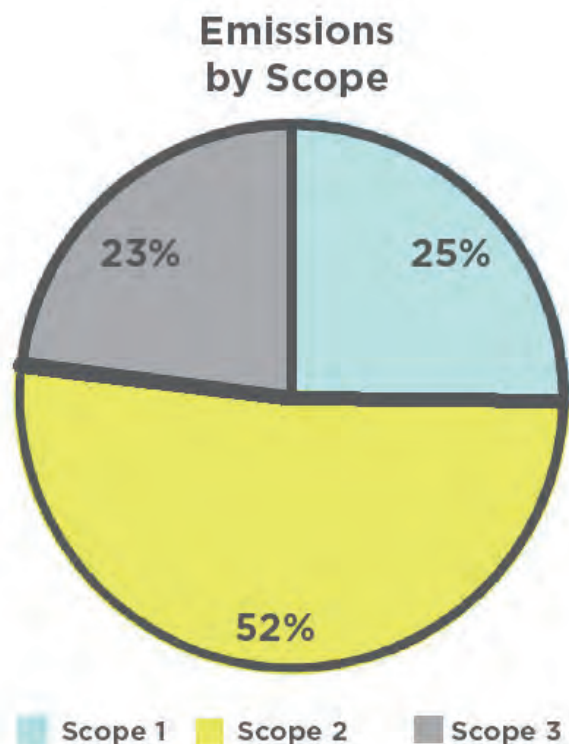


APPENDIX A - SIGHTLINES

Energy Consumption vs. Peers



Distribution of Emissions by Level of Control



Scope 1 - Direct GHGs

- Natural Gas, Fuel Oil
- Vehicle Fleet
- Refrigerants

Scope 2 - Upstream GHGs

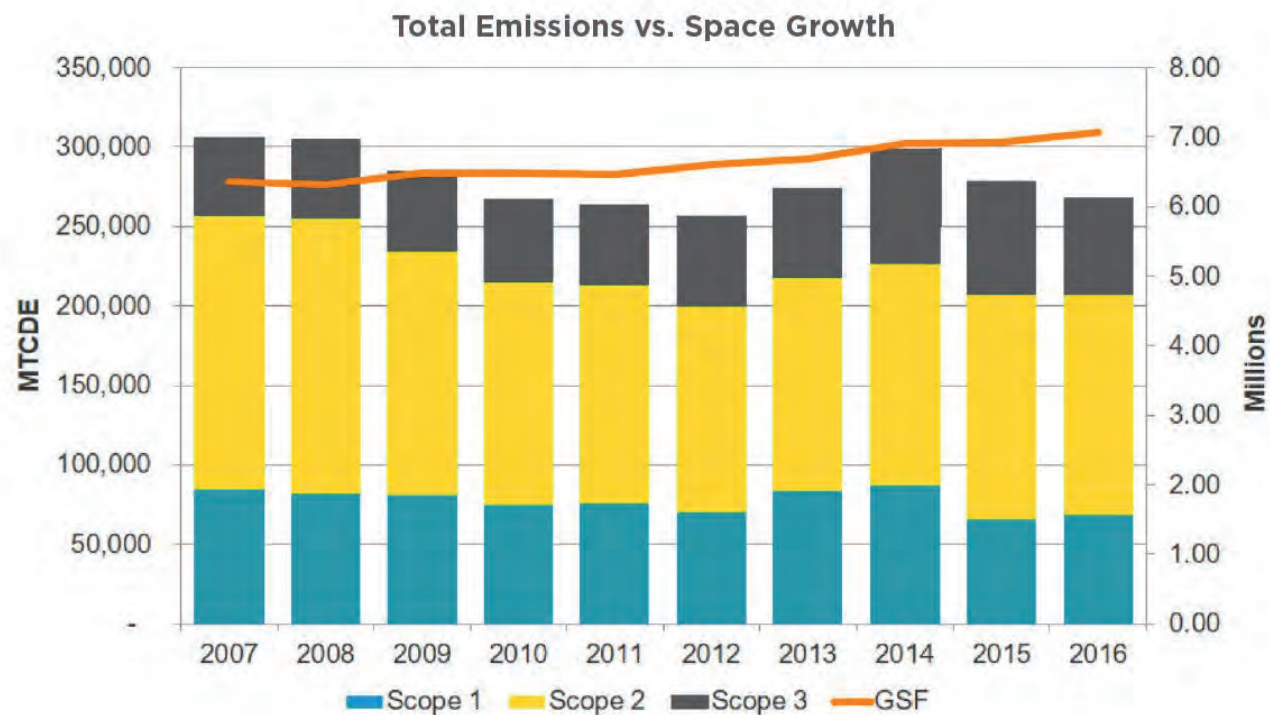
- Purchased Electricity

Scope 3 - Indirect GHGs

- Faculty/Staff/Student Commuting
- Directly Financed Travel
- Study Abroad Travel
- Solid Waste
- Wastewater
- Paper Purchasing
- Transmission & Distribution Losses

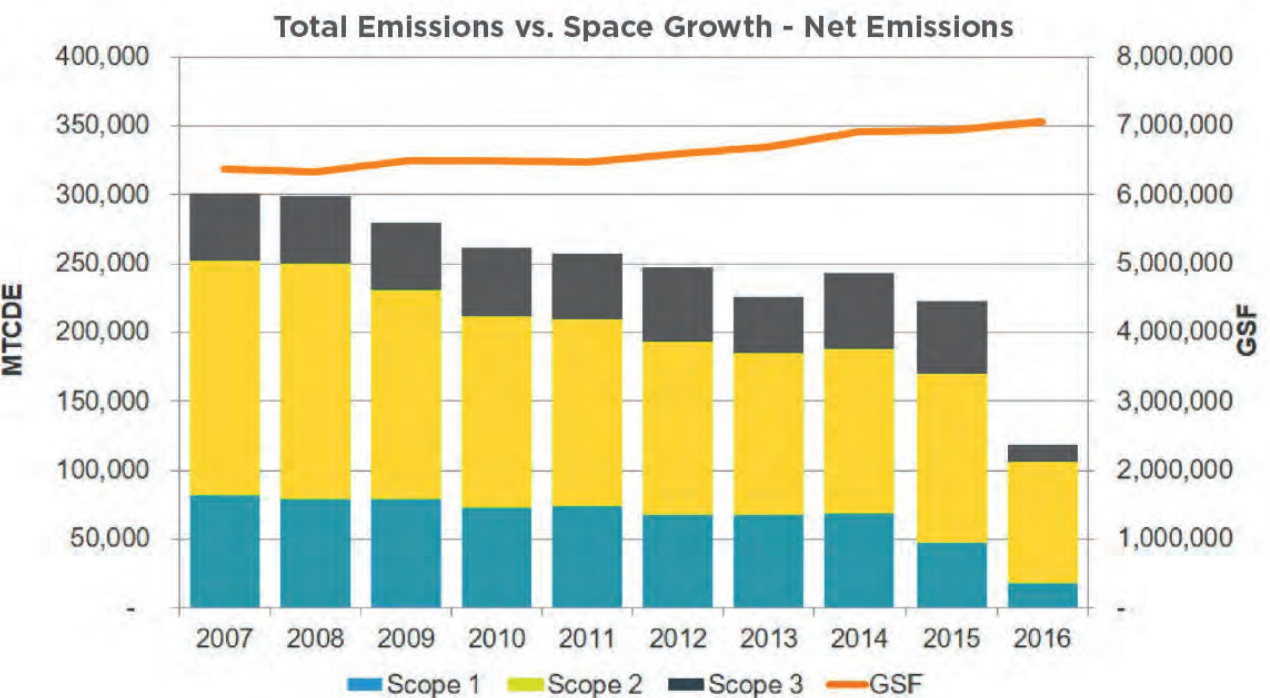
APPENDIX A - SIGHTLINES

Gross Emissions



Conversion from coal to natural gas has greatly reduced emissions.

REC purchases significantly change net emissions profile



UT Knoxville leads the nation in green power purchases in higher education.

APPENDIX B - APPA FPI

1. APPA: Leadership in Educational Facilities

Facilities Performance Indicators Report (FPI) for 2016 – Comparison of average costs for grounds, custodial, maintenance, and other functional areas among peer institutions.



APPA FPI Report - 2015-16

University of Tennessee/Knoxville

Region: SRAPPA

Gross Square Feet: 15,164,999

Carnegie: Research Very High

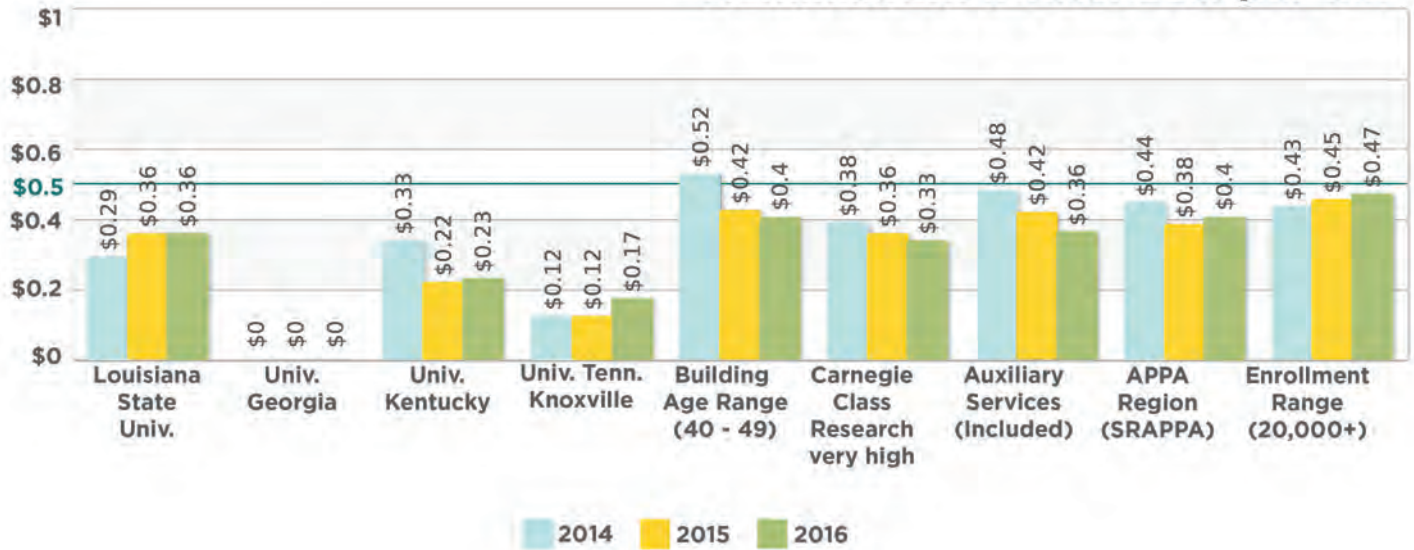
Number of Building: 282

Funding: Public

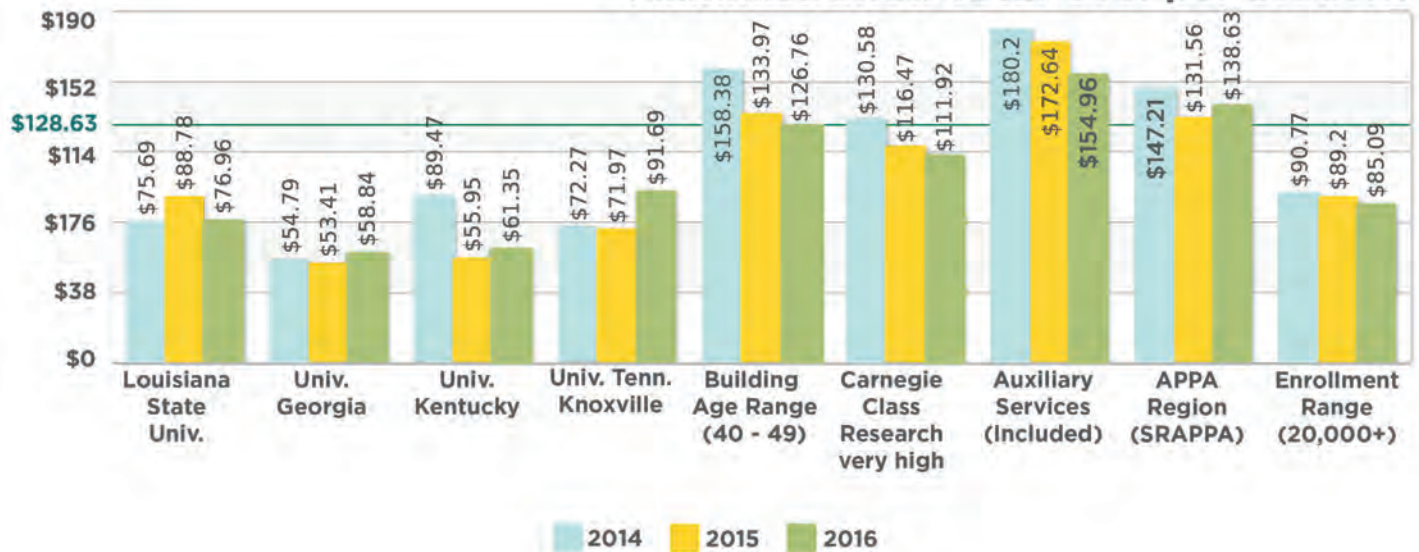
Number of Students: 28,209

APPENDIX B - APPA FPI

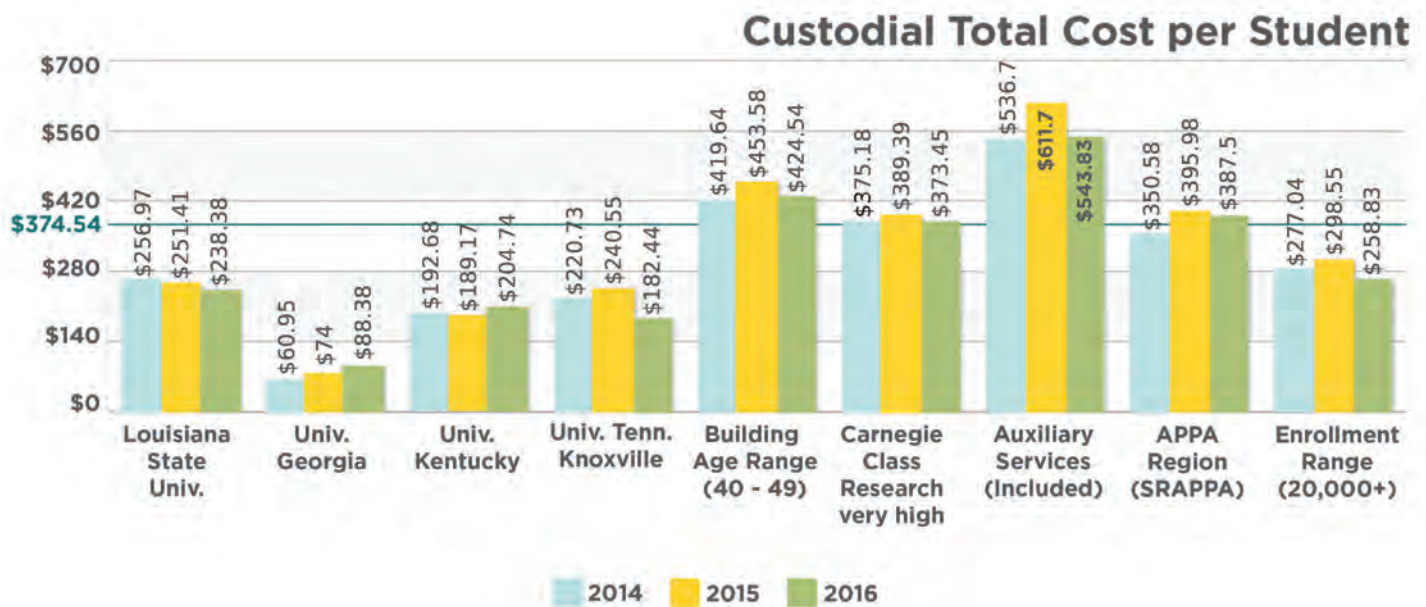
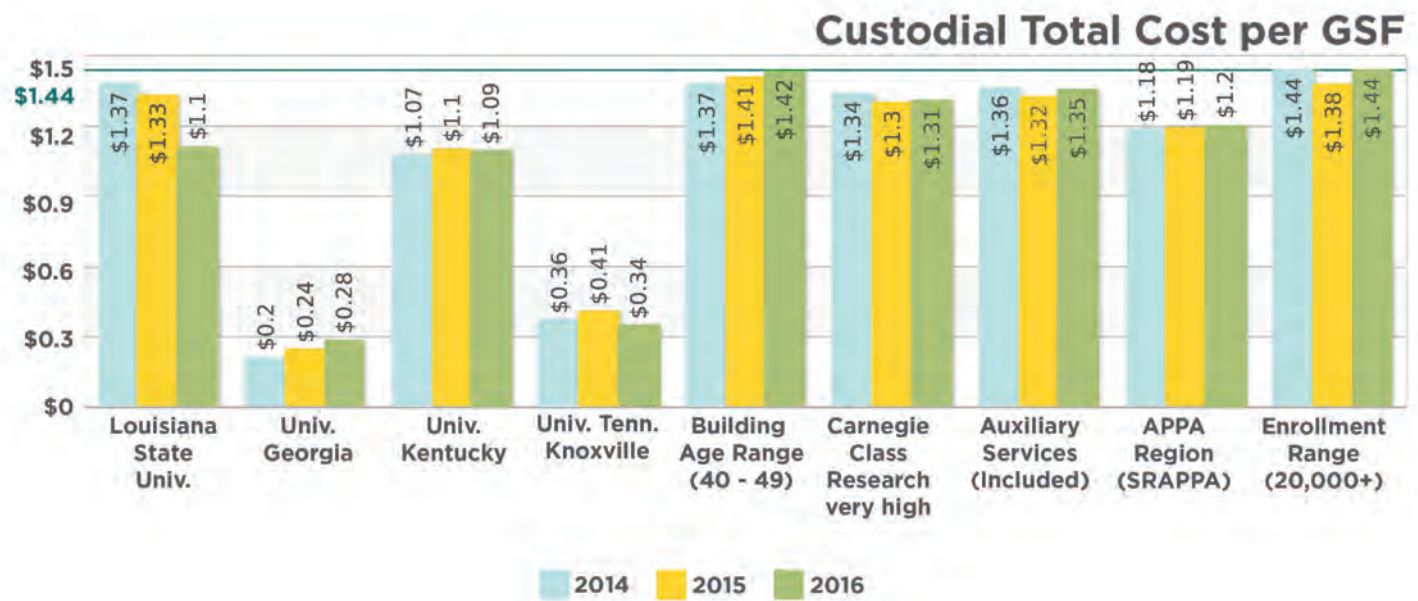
Administration Total Cost per GSF



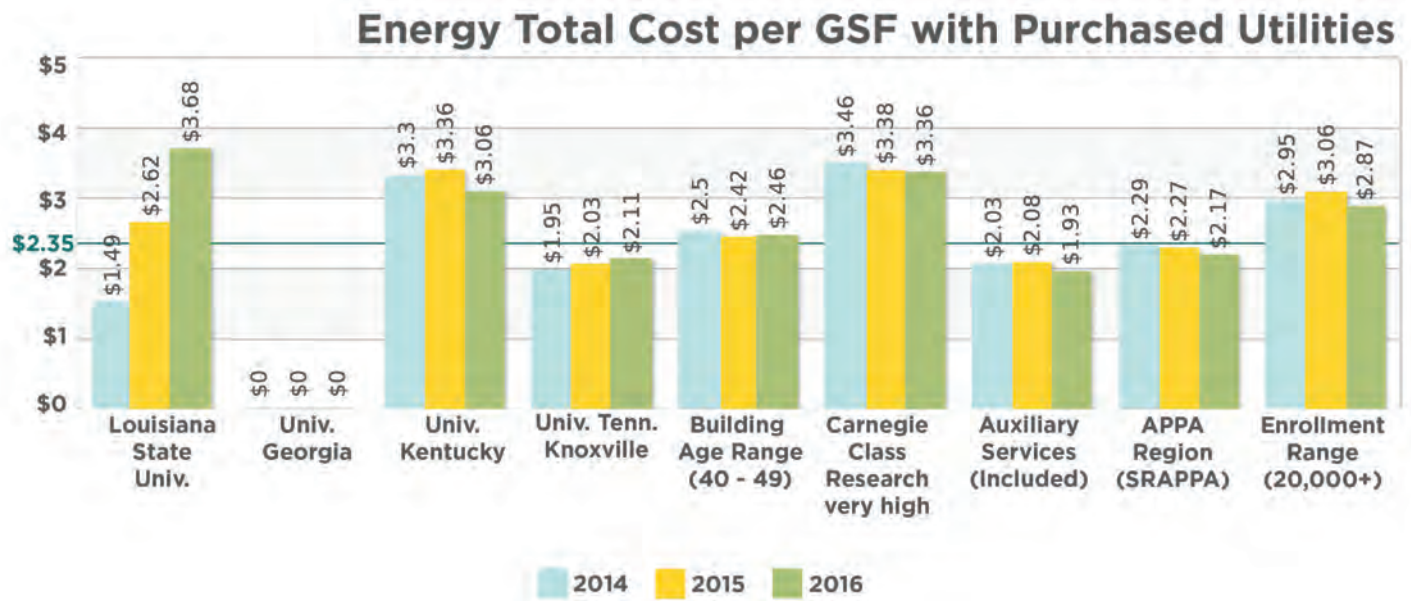
Administration Total Cost per Student



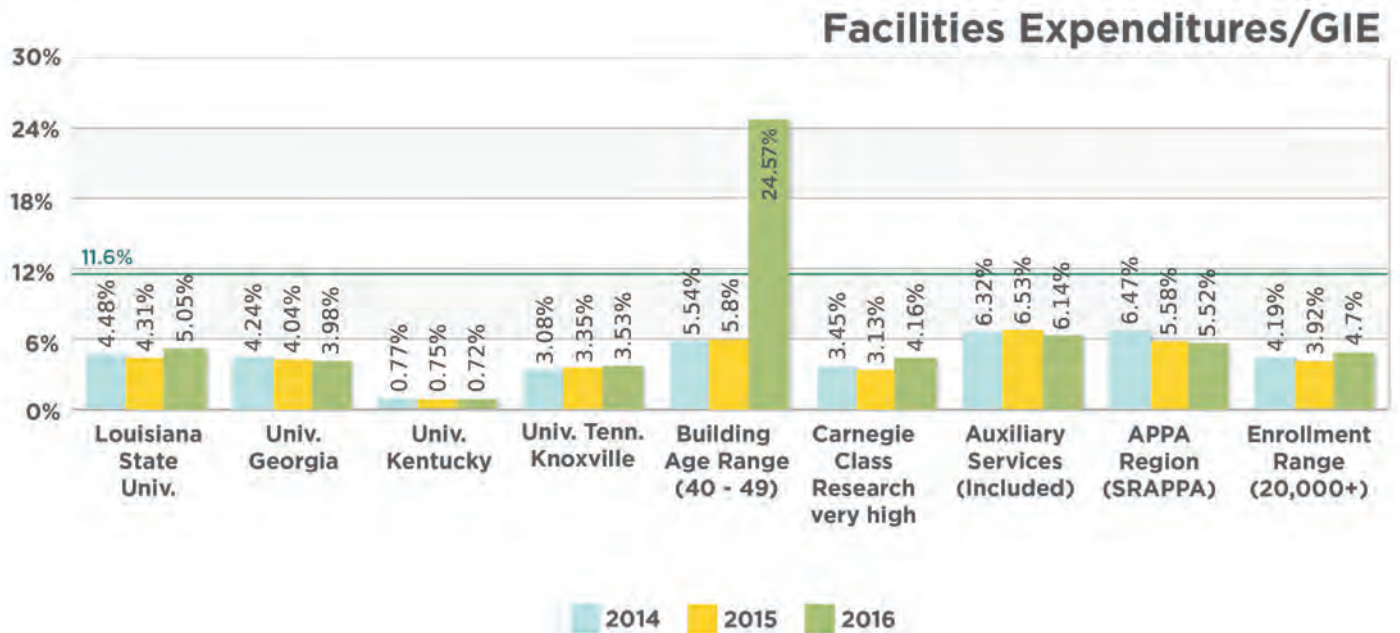
APPENDIX B - APPA FPI



APPENDIX B - APPA FPI

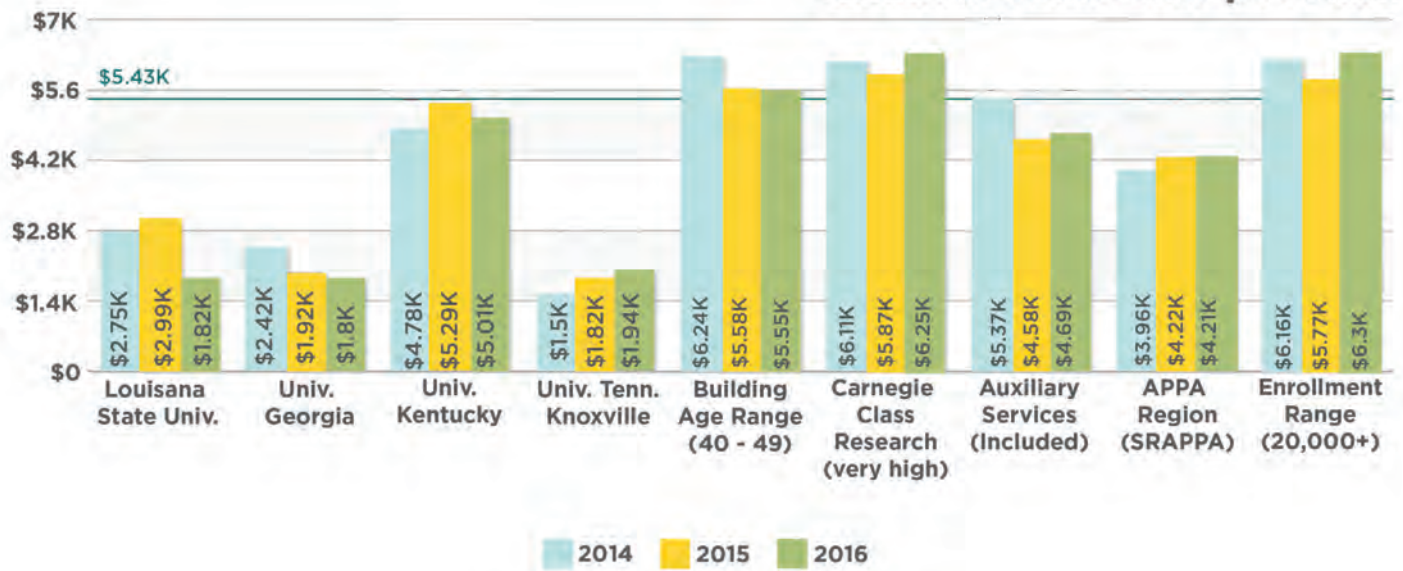


Costs are kept in check by operating efficiencies in use of natural gas at Steam Plant, and lighting and equipment upgrades. During this time period the commodity cost of natural gas has increased slightly, and the commodity cost of purchased electricity has decreased slightly.

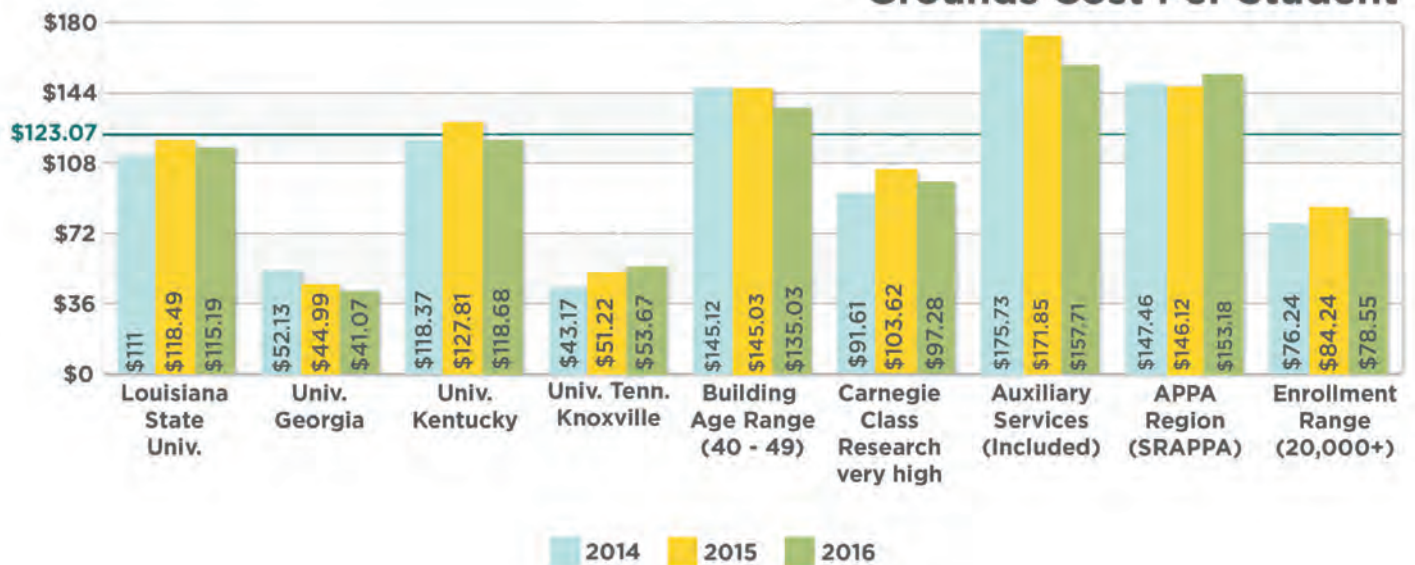


APPENDIX B - APPA FPI

Grounds Total Cost per Acre

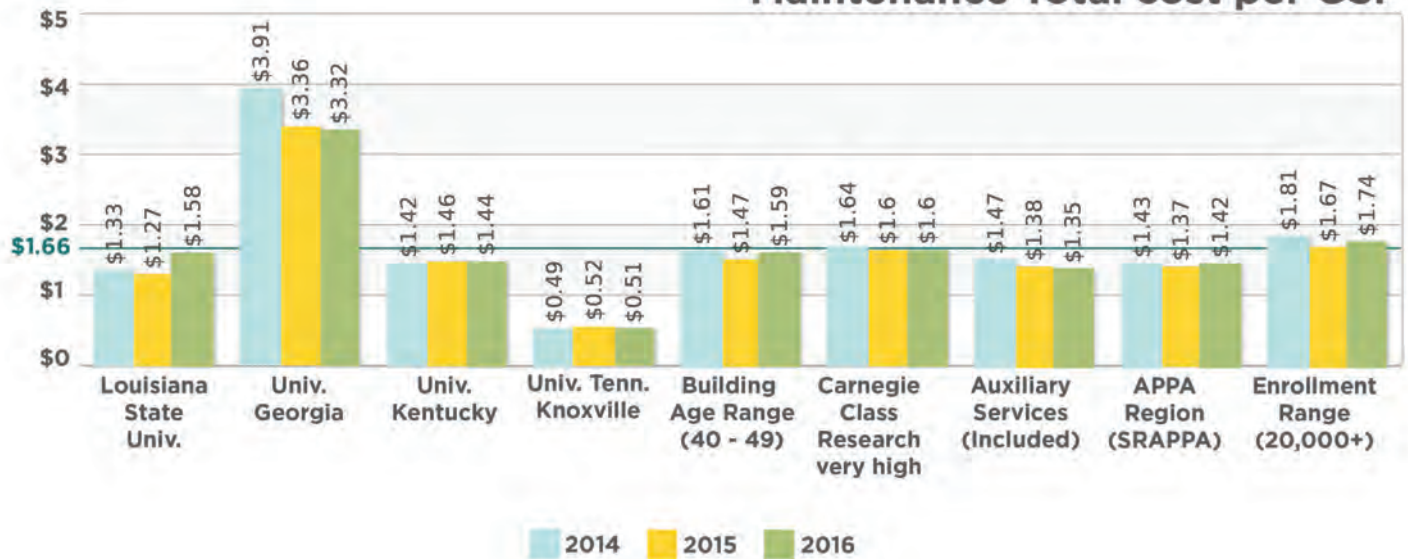


Grounds Cost Per Student

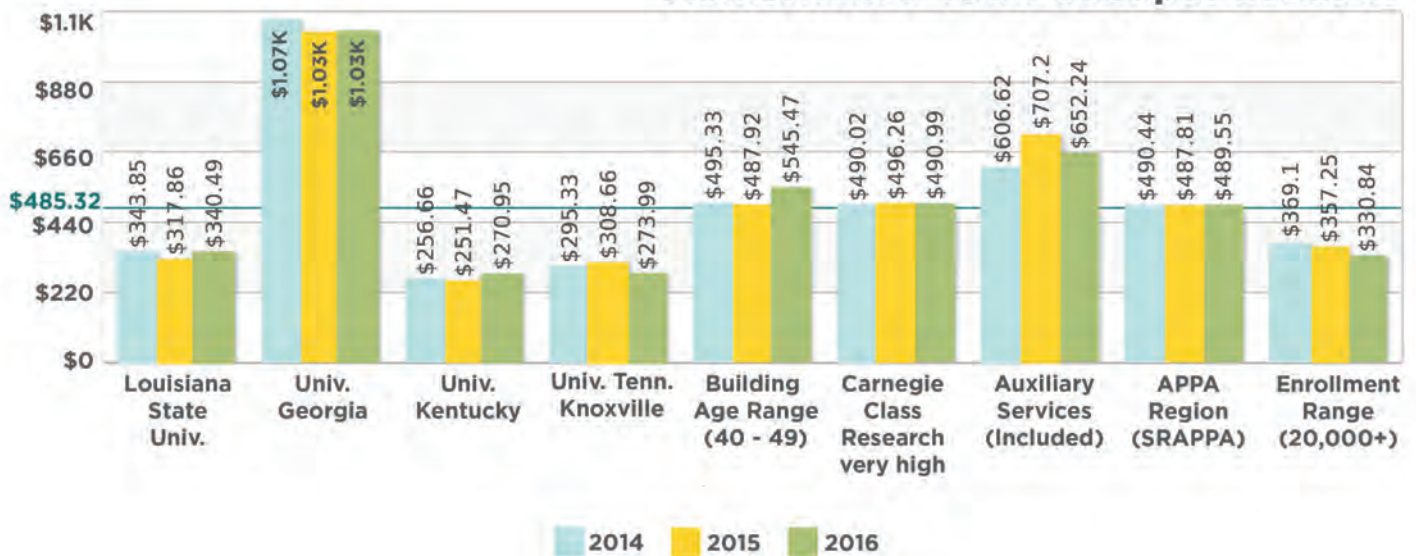


APPENDIX B - APPA FPI

Maintenance Total cost per GSF

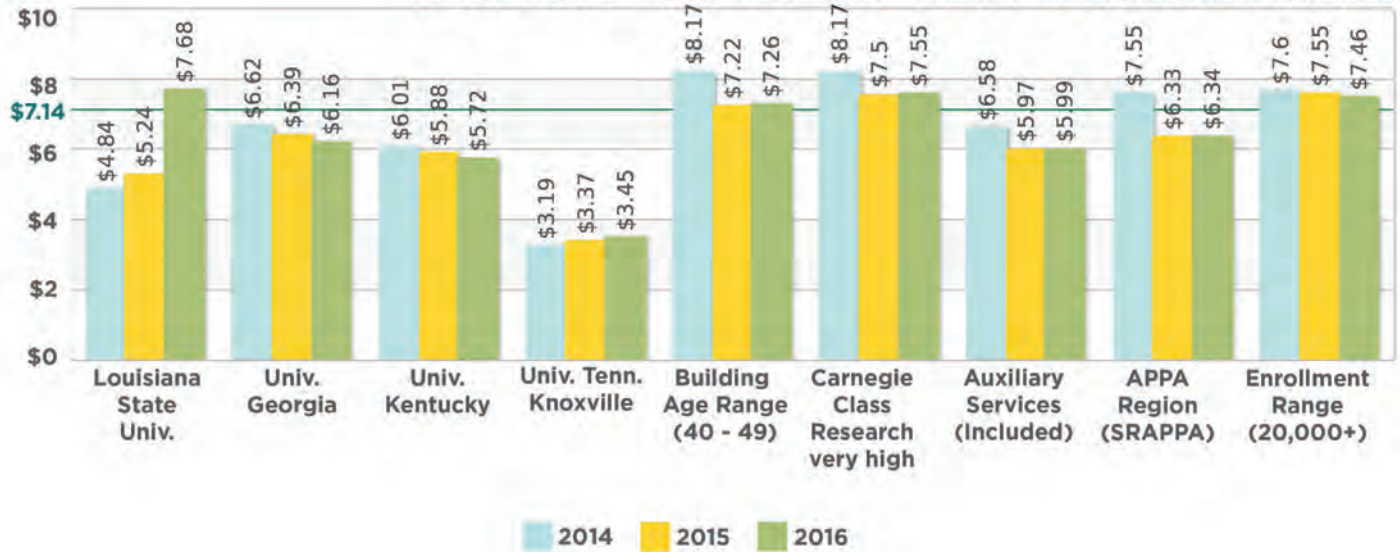


Maintenance Total Cost per Student

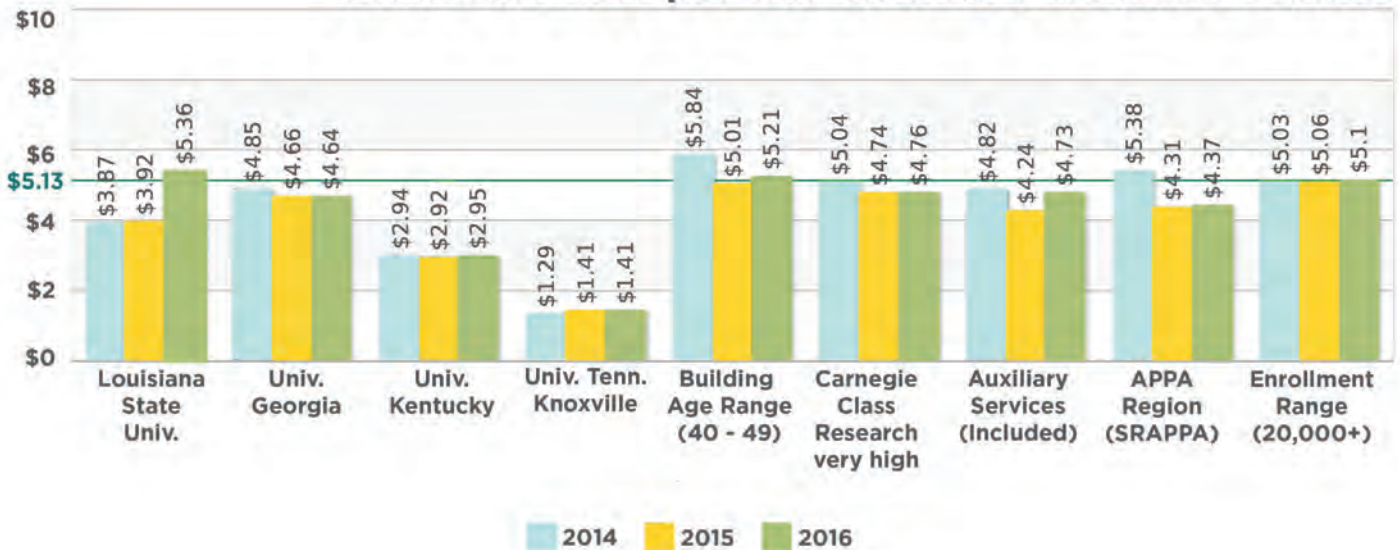


APPENDIX B - APPA FPI

Total O&M Cost Per GSF with Purchased Utilities



Total O&M Cost per GSF without Purchased Utilities





THE UNIVERSITY OF
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FACILITIES SERVICES

ANNUAL REPORT 2017

Facilities Services Department

2040 Sutherland Avenue
Knoxville, TN 37996

Phone: 865-974-2178

Fax: 865-974-7786

Email: adminfs@utk.edu

Website: fs.utk.edu