

MTSU Facilities Services

SUMMARY OF SERVICES ANNUAL REPORT

July 2016 — June 2017



**MIDDLE
TENNESSEE**
STATE UNIVERSITY

***Facilities Services Department
Middle Tennessee State University***

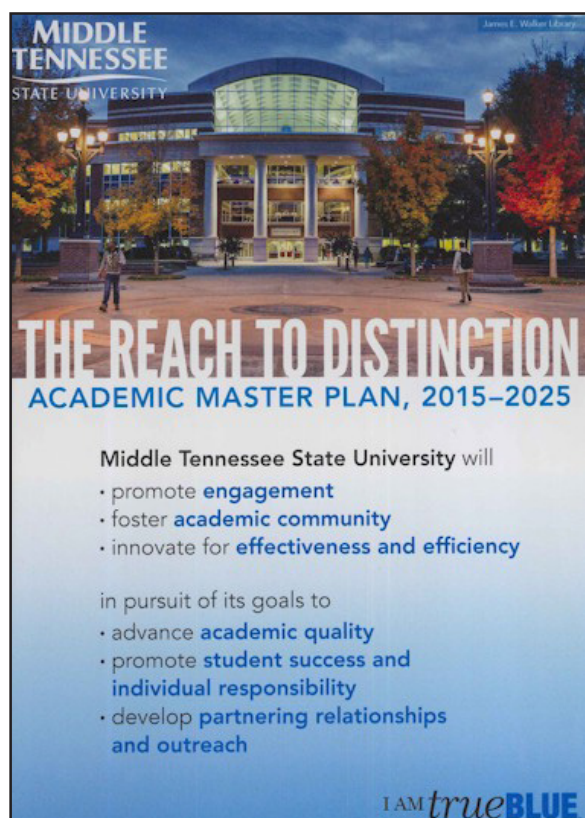
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...maintaining facilities and grounds... in a safe, clean, and functional condition...

Continuous growth...Continuous Improvement

September 2017

**MIDDLE
TENNESSEE**
STATE UNIVERSITY



MTSU Facilities Services is a department reporting to Senior Vice President Alan Thomas of the Division of Business and Finance.

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FY 16/17 has concluded and FY 17/18 is well underway. The Maintenance and Operating (O&M) budget for Educational and General Facilities has remained fairly level. As always, Facilities Services maintains a constant focus on productivity management, innovation, informed decision making, and effective communication in serving the campus community.

This report highlights many accomplishments in FY 16/17 for the department and updates the O&M and capital budget. The following are samples of the Accomplishments and Challenges/Opportunities.

Accomplishments

Performance Metrics

The Summary of Services report from the previous FY identified a combined total of 103 individual goals across the departmental work units for the FY 16/17. Overall, 78 of the goals were completely met or had substantial progress toward their completion (75.7%), 23 of the goals had progress toward completion but remain on-going (22.3%) and 2 of the goals had showed little to no progress (2.0%).

Capital Projects and Construction Renovation Projects

- 5 capital construction projects were completed totaling \$21.7 million
- 127 renovation projects were completed totaling \$2.0 million
- The Davis and Wiser Patten renovations were completed and are operational
- The Natatorium was razed
- A chiller in the Central Plant was replaced

Customer Service and Communication

- All work units combined to complete approximately 20,000 work orders for the year
- Developed a customer service survey system that produced useful feedback and consistently high ratings for services
- Maintained a brochure for academic and administrative personnel that outlines campus maintenance and operations and work order processing



Management and Productivity

- Staff, informational and safety meetings were conducted throughout the department
- Extensive technical and professional development training was performed throughout the department

Energy Management

- The TN High Performance Building Guidelines were used to design energy efficiency and sustainability features into capital projects
- Facilities Services applied for and has been awarded numerous Sustainable Campus Fee projects to improve energy efficiency and sustainability of several existing facilities across campus
- The MTSU Energy Guidelines are in effect for the campus

Association of Physical Plant Administrators (APPA)

- With MTSU as a member institution, Facilities Services personnel continued to participate in many forms of technical and leadership/management training at the state, regional, and national/international levels of APPA
- Several Facilities Services personnel serve in leadership positions and various support positions within APPA

Challenges and Opportunities

Focus Act Transition

Facilities Services invested significant time and energy in activities that supported the University's transition from the Tennessee Board of Regents system to the locally governed Board of Trustees. All policies and numerous procedures were reviewed and revised to reflect these changes in governance.

Budgets

Maintenance and Operations (M&O) budgets are for basic operational needs such as custodial services, grounds services, central utilities services, light bulb changing, etc., and routine maintenance and repair of facility systems such as HVAC, electrical, etc. The M&O budgets for Facilities Services have remained level over the years.

Capital maintenance projects are submitted each year,

(Continued on page 4)

The mission of Facilities Services is to maintain facilities and grounds and present them to the university tenants and the public in a safe, clean, and functional condition while managing the resources and assets in accordance with applicable requirements, procedures, and constraints.

(Continued from page 3)

typically totaling \$10 million - \$13 million, to provide for the major repair and replacement needs of the campus. Funding formulas indicate an annual need of approximately \$10 million just to remain level. Recent funding history shows annual funding received in the amounts of \$2.0 million – \$4.5 million. **In FY 16/17 however, MTSU received \$6,730,000 for capital maintenance.** This increased level of funding is much needed and appreciated. It interrupts a period of significant underfunding capital maintenance. These deficits accumulate over time to a condition referred to as “deferred capital renewal.” This condition is reported on in the Campus Master Plan.

Utilities/Energy Costs

On the whole, energy and utility costs decreased approximately 2.1% in FY 16/17. This is primarily due to the consistent use and efficient operation of the facilities and utility plants. In addition, natural gas rates continue to remain fairly low. This is positive considering the reliance on natural gas to fuel the 5 mw turbine/cogeneration system. The Tennessee Valley Authority continues to adjust (net increases) electrical rates. MTSU maintained our time-of-use rate. As such, we remain judicious in our utilities operations and more efficient in every aspect of energy management.

New Buildings and Infrastructure

New buildings add to the M&O and utility needs of the campus. The recent growth increases the demand for M&O services as well as the infrastructure capacity. The renovation of

the Davis Science Building and Wiser Patten Building were the most significant capital projects completed in FY 16/17.

Energy and Sustainability

There are many initiatives designed to increase the greening of the campus such as the Sustainable Campus Fee program, the Tennessee High Performance Building Guidelines for capital projects, the recycling program, etc. These programs and initiatives are effective but are also limited by economic factors such as first costs and paybacks. Energy and environmental regulations are increasing as well. Overall, Facilities Services and the Center for Energy Efficiency do an excellent job of integrating the economic and program elements to maximize the energy and sustainability benefits across the campus.

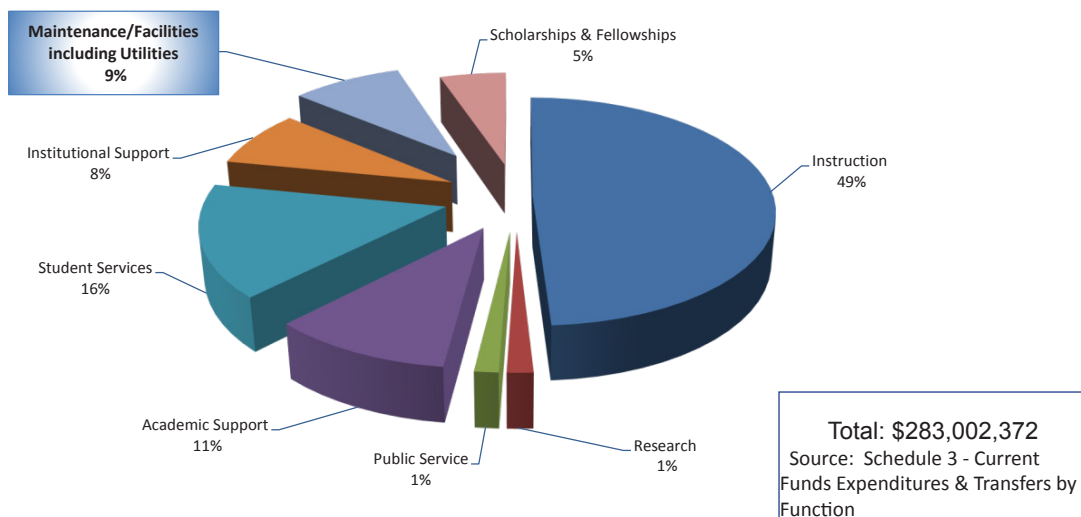
Conclusion

Although constrained by resources, we continue striving to maintain the campus in a safe, clean, and functional manner while aligning the department with the University mission and the Academic Master Plan. I want to express appreciation to the Facilities Services staff for their dedication and good work in pursuit of these goals. The accomplishments listed throughout this document are a testament to their commitment to Middle Tennessee State University.

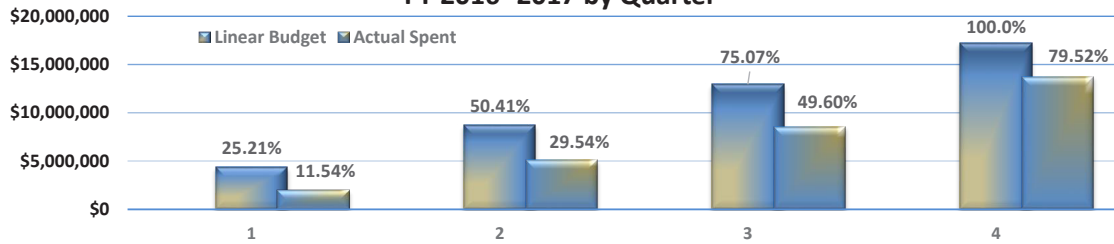
Finally, as we serve the university, it is important that we hear from our customers. Please review this document (as well as our website) for our service delivery. As always, feel free to contact us and let us know how we can serve you better.

—Joe Whitefield

MTSU E & G Expenditures 2016-2017



Education & General (E&G) Maintenance and Operations Budget FY 2016- 2017 by Quarter

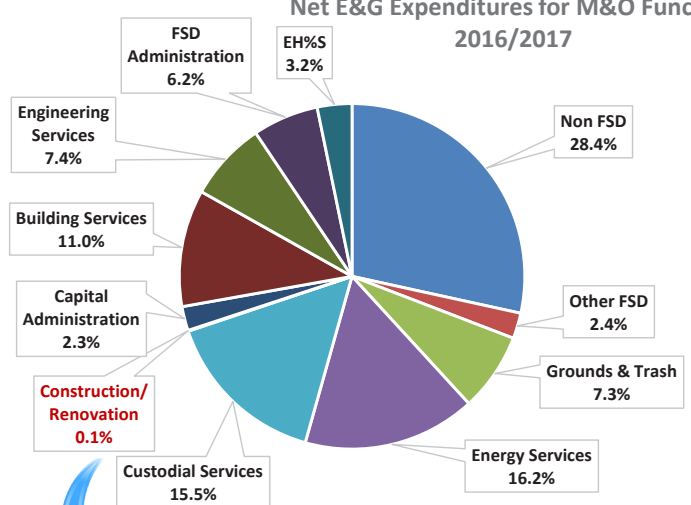


2016/2017	1st Qtr	2nd Qtr	3rd Qtr	4th Qt	End-of-Year Totals	% of Total
Total M & O Expenditures	\$ 3,829,384	\$ 4,211,779	\$ 4,262,324	\$ 6,077,583	\$ 18,381,070	
Work for Others	1,836,719	1,105,585	799,887	912,446	4,654,638	25%
Net E & G Expenditures	\$ 1,992,664	\$ 3,106,193	\$ 3,462,437	\$ 5,165,137	\$ 13,726,432	75%
E & G Budget	\$ 17,262,168	\$ 17,262,168	\$ 17,262,168	\$ 17,262,168	\$ 17,262,168	
% of Budget	11.54%	17.99%	20.06%	29.92%	79.52%	

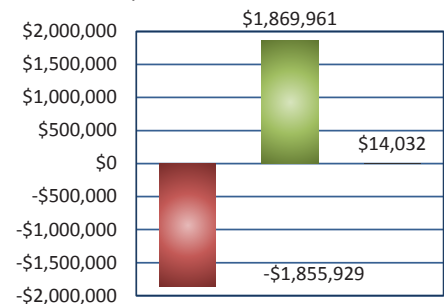
Accomplishments & Highlights 2016/17

- Provided financial data for response to State of TN plan for Facilities Management Outsourcing
- Attended training for HR forms and procedures to prepare forms for FSD new hires, terminations, & pay changes; FLSA training planning for change in overtime rules; and Workers Compensation training
- Provided information to TBR & other 3rd party requests for Motor Pool data; data to Enterprise Fleet Management representatives regarding motor pool operation; and to Vanderbilt on our work process system billing for work orders
- Continued improvement in ensuring the integrity of Facilities financial reporting and monitoring; updated monthly and yearly allocation to Auxiliaries calculations
- Developed new fee structure for plants & flower arrangements for events
- Attended Tri-APPA
- Provided Notary services to campus

Net E&G Expenditures for M&O Function 2016/2017



Construction/Renovation 2016/2017



Goals 2017/18

- Seek new technological processes and integrated software to improve workflow and reduce redundancies
- Plan for cross-training on the API Mainsaver feed to Banner Finance
- Create an internal checklist for invoice processing
- Begin the process of developing FSD Accounting training for managers/supervisors
- Update and simplify the annual list of FSD contracts
- Encourage employee development, education and certification, including team building and communication
- Continue development of a manual for Asset/Building/Property Facts & Figures

Accomplishments & Highlights 2016/17

- Negotiated annual utility related contracts with Tennessee Valley Authority and Murfreesboro Electric (Generation Partners, Green Power Purchase Agreement)
- Supported sale of distributed generation system, five 2MW natural gas generators
- Supported development of SCADA (Supervisory Control and Data Acquisition) system and dashboard development, partnering with Murfreesboro Electric Dept
- Supported Focus Act transition and MT Engage efforts; continuing intern position for Center for Energy Efficiency for Fall and Spring semesters and student worker positions
- Provided EIA monthly emissions data to ICT for report preparation
- Completed coordination of water meter replacements/upgrades project on campus (city-wide metering upgrade)
- Resolved campus utility issues, including utility account audits and

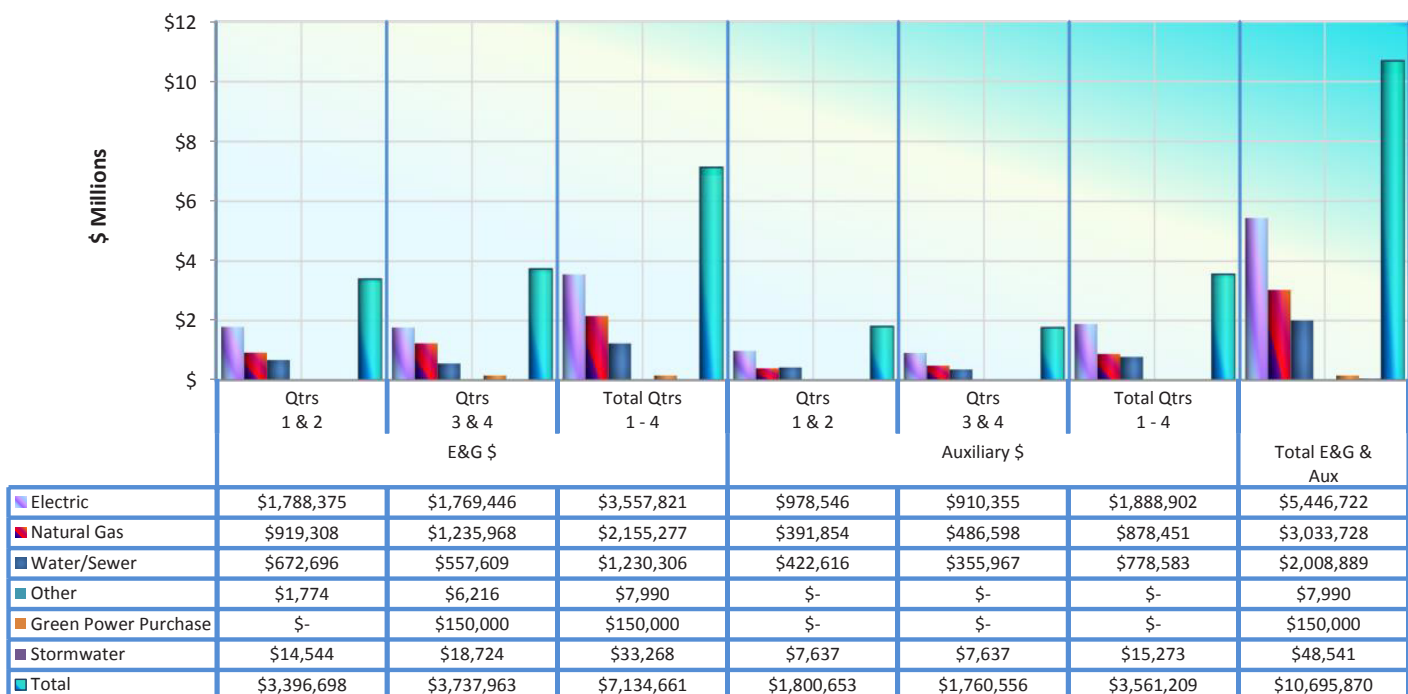
consolidated billing with Murfreesboro Water Resources

- Provided annual reporting for THEC, NCAA, and EPA Partnership
- Supported property demolish projects related to utilities (properties on Wilson Ave and Main St)
- Updated Physical Facility Surveys for Capital Maintenance requests
- Provided utility information for State Utility Management Plan being initiated by State of Tennessee
- Continued support of the MTSU Sustainable Campus Fee Committee (SCF) under Student Affairs; and oversight of Students for Environmental Action (SEA) project involvement & student project applications
- Continued on the President's Commission on the Status of Women and Women in STEM Boards
- Published Summary of Services Annual Report for 15/16

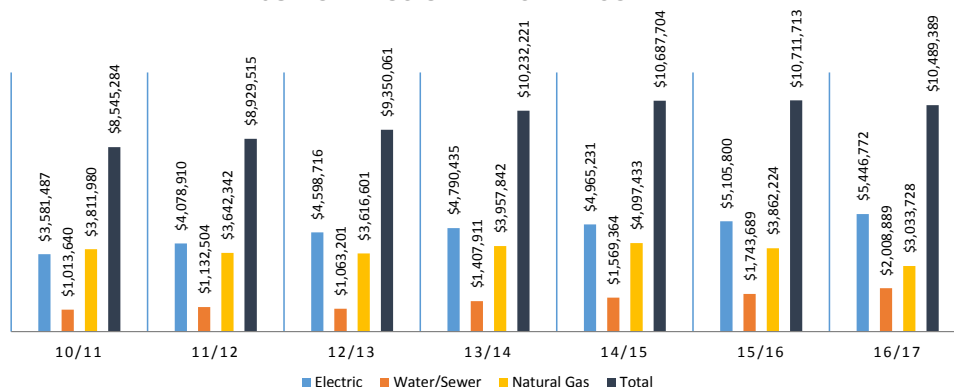
Goals 2017/18

- Support introduction of SCADA system and dashboard development for campus and development of metering potentials
- Continue to work on energy dashboard initiative
- Continue support for capital projects and construction/renovation projects
- Support utilities preparation for new academic building being planned
- Continue support of MT Engage on campus through internships, student workers, and volunteer opportunities
- Continue to provide utility and energy management data, support, and research to university departments and others as needed (new service, demolish projects)
- Continue offering intern positions Fall and Spring semesters
- Continue support of MTSU Sustainable Campus Fee Program and other sustainable practices on campus
- Continue to support classroom instruction for Engineering Technology, Honors, Chemistry, and other as requested

Total Campus Utilities
2016/2017



MAJOR CAMPUS UTILITIES BY FISCAL YEAR



Recycling Program - MTSU Recycles

Linda Hardyman

Accomplishments & Highlights 2016/17

- Maintained recycling program to meet campus needs employing student workers
- Supported Construction/Renovation move-out/move-in projects for faculty in multiple buildings (major cardboard collection support)
- Supported Campus Planning and Construction/Renovation on major renovation recycling efforts, Davis Science, Wiser Patten, KUC, KOM, others; SFA keyboards moved; outfitted newly renovated computer labs, office spaces, including Davis Science, Wiser Patten and KOM, for recycling
- Added the MTSU airport buildings (Jean A Jack and Lanier) to the Recycling Program; additional recycling added in some parking lot areas
- Continued support of football season recycling in suites, stadium and, Students for Environmental Action (SEA) tailgating recycling efforts; recycling added to softball press box and basketball track
- Oversaw additional Sustainable Campus Fee (SCF) projects, including water refill stations, Big Belly solar trash compactors, landscaping
- Utilized MTSU Sustainable Campus Fee project funds to improve recycling program appearance across campus; new and appropriate bin styles to encourage further recycling
- Responded to 839 special requests for recycling on campus in addition to normal program tasks
- Supported MT Engage efforts, student employee fair, and welcome events
- Provided safety and diversity training for recycling staff
- Provided recycling for special events on campus per requests

Goals 2017/18

- Continue to direct Sustainable Campus Fee approved student projects – water refill stations, dorm room recycling, solar trash compactors, etc.
- Continue to provide campus recycling education, upgrade appearance of recycling containers
- Continue to work with athletics staff to provide recycling at athletic events
- Continue to support Campus Planning, Capital Construction, and Construction/Renovation projects
- Continue working with MTSU Sustainable Campus Fee Program for recycling project funding; including funding for additional truck for recycling vehicle fleet
- Explore new initiatives as the opportunity arises to grow the program and increase commodities collection while helping lower amount and cost of campus trash going to the landfill



MTSU Recycles!	
Commodity	2016/2017
	Pounds
Aluminum	↑ 7,349
Mixed/White Paper	↑ 504,218
Newspaper	↓ 78,251
Maintenance Metals	↓ 28,807
Cardboard	↑ 562,236
E-waste	↓ 60,000
Plastics	↑ 208,000
Units	
Batteries	↑ 1,228
Ink Cartridges	↓ 1,014
Pallets	↓ 642

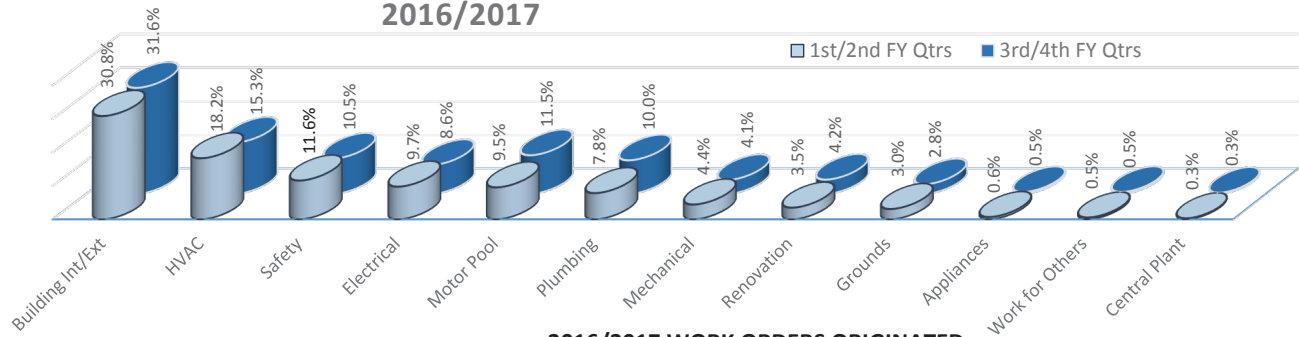
↑ -increase from 15.16

↓ - decrease from 15.16

- Consider opportunities for anti-littering campaign for the recycling community drop-off area
- Continue partnership opportunities with MT Engage, Recycle Rutherford and Rutherford County Government
- Continue to provide classroom support for environmental seminars and storm water initiatives
- Continue participation in professional training and development programs



WORK ORDERS ORIGINATED 2016/2017



2016/2017 WORK ORDERS ORIGINATED

	1st Qtr		2nd Qtr		3rd Qtr		4th Qtr		Annual Totals	
	# WO	% of Total	# WO	% of Total	# WO	% of Total	# WO	% of Total	# WO	% of Total
Appliances	40	0.8%	23	0.5%	29	0.6%	21	0.4%	113	0.6%
Building Interior/Exterior	1,608	30.5%	1,402	31.2%	1,701	33.2%	1,544	30.1%	6,255	31.2%
Central Plant	12	0.2%	14	0.3%	13	0.3%	18	0.4%	57	0.3%
Electrical	492	9.3%	458	10.2%	523	10.2%	360	7.0%	1,833	9.2%
Grounds	182	3.5%	115	2.6%	102	2.0%	188	3.7%	587	2.9%
HVAC	1,011	19.2%	768	17.1%	754	14.7%	818	15.9%	3,351	16.7%
Mechanical	206	3.9%	223	5.0%	215	4.2%	207	4.0%	851	4.2%
Motor Pool	519	9.9%	410	9.1%	430	8.4%	753	14.7%	2,112	10.5%
Plumbing	412	7.8%	349	7.8%	606	11.8%	421	8.2%	1,788	8.9%
Renovation	205	3.9%	132	2.9%	168	3.3%	265	5.2%	770	3.8%
Safety	551	10.5%	577	12.9%	557	10.9%	523	10.2%	2,208	11.0%
Work for Others	30	0.6%	19	0.4%	33	0.6%	20	0.4%	102	0.5%
Total	5,268	100.0%	4,490	100.0%	5,131	100.0%	5,138	100.0%	20,027	100.0%

Accomplishments & Highlights 2016/17

- Initiated Customer Service Survey process
- Coordinated upgrade of Mainsaver and Crystal Report Writer software to most recent versions
- Formulated work order procedures & codes for tracking mold remediation and plant request charges
- Assisted ITD in identifying and troubleshooting issues with new Skype for Business phone system implementation in work orders office

Facilities Services initiated a Customer Service Satisfaction Survey in 2016 to provide better communication with our campus community. The valuable feedback has provided better understanding of customer's expectations and satisfaction with our level of service.

Goals 2017/18

- Design Summary of Asset reports highlighting maintenance activities and accomplishments
- Continue to identify ways to integrate Mainsaver Connect into shop workflow and upgrade to latest version
- Document process for generating and distributing standard work order reports
- Continue to design Mainsaver training modules and present to directors, managers and supervisors using new whiteboard technology in HTB Conference Room



2016/17 Customer Service Survey Response		
Did you receive an email when the work order was opened?	98%	
Did you receive an email when your work order was completed?	96%	
Did the Corrective Action adequately address the problem or requested work?	4.6	
How satisfied are you with the timeliness of the response(s) to your work request?	4.7	
How satisfied are you with the customer service you received?	4.7	
Scale:	5- Very Satisfied	2- Dissatisfied
	4- Satisfied	1- Very Dissatisfied
	3- Neutral	

http://www.mtsu.edu/facserv/work_request_forms.php

Accomplishments & Highlights 2016/17

- Facilitated employee training sessions for FSD work units
- Assisted FSD AVP in performing daily and routine work tasks/assignments
- Assisted in the EH&S Committee Meetings with preparation of minutes
- Served on 'Customer Service' initiative/training program for FSD managers/supervisors specific work units



Goals 2017/18

- Continue to work on the 'Customer Service' training project, assisting FSD managers/supervisors in presenting the training modules specific work units
- Continue to review specific cleaning tasks and grounds work, with focus on improved campus facility and grounds cleanliness and appearance
- Continue maintenance and productivity studies with emphasis on custodial services
- Attend professional development and leadership training



FSD Employees Training Records 2016/2017		Leadership/Professional Development			Technical Training		
By Training Type	# Employees (Full-Time)	# Employees Trained	Total Hours		# Employees Trained	Total Hours	
			In-House	Conference		In-House	Conference
Central Administration							
-Assistant Vice President	1	1	1.0	0.0	0	0.0	0
-Accounting Information Services	5	5	27.5	30.0	5	8.5	0
-Employee Development	1	1	1.5	19.0	0	0.0	0
- Work Orders	4	4	6.0	23	2	7	0
Engineering Services							
-Director	1	1	0	37	1	3.5	0
-Center for Energy Efficiency	2	2	8.0	16.0	2	2.5	5.0
-GIS and Locating	1	1	2.0	5	1	4.5	3
-Key Shop	5	5	5.0	5	4	17.5	0
-Systems Engineering	1	1	1.5	0	1	3.5	0
Building Services							
Construction Administration	3	3	4.5	7.5	3	8.5	0
Construction Renovation Services	4	3	3	13	3	6	0
Custodial Services	17	15	16	30.5	17	70	0
Energy Services/Utilities	18	15	19.5	45	16	61.0	0
Environmental Health & Safety	7	7	84.5	10	7	24.5	178
Grounds Services/Motor Pool	23	20	21	28	23	101.5	0
Totals	109	100	222	376	100	420.5	186

Number of Employees per Total Hours Trained 16/17	# Employees (Full-Time)	0 Hrs	1-10 Hrs	11-20 Hrs	>20 Hrs
Central Administration					
-Assistant Vice President	1				1
-Accounting Information Services	5		1	3	1
-Employee Development	1				1
-Work Orders	4		2	2	
Engineering Services					
-Director	1				1
-Center for Energy Efficiency	2		1		1
-GIS and Locating	1			1	
-Key Shop	5		5		
-Systems Engineering	1		1		
Building Services					
Construction Administration	3		2	1	
Construction Renovation Services	4	1	2	1	
Custodial Services	17		14	3	1
Energy Services	18		15	2	1
Environmental Health & Safety	7		4	2	
Grounds Services/Motor Pool	23		19	4	
Totals	109	1	74	27	7

Accomplishments & Highlights 2016/17

- Managed 319 after hours callbacks
- Prepared EPA report for greenhouse gas emissions
- Evaluated operating schedules for natural gas and electric pricing
- Supported Construction/Renovation projects
- Located and repaired major condensate leaks
- Upgraded of solar turbine/ boiler controls
- Upgraded Walker Library, Floyd Stadium, and Miller Education Building EMS controls
- Replaced condensate line from LRC to Forrest Hall
- Replaced #4 chiller at main Chiller Plant
- Provided training to maintain compliance regarding confined space and code issues
- Completion of safety training

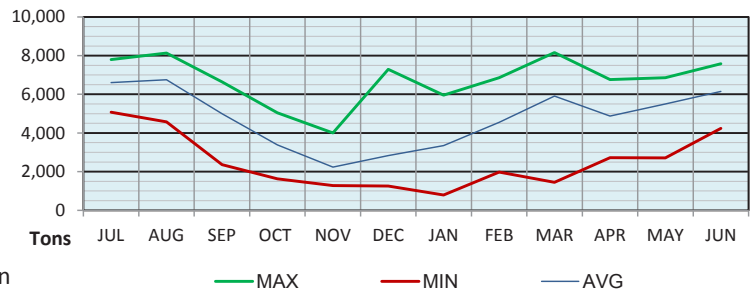
Goals 2017/18

- Replace economizer on energy recovery boiler
- Continue exploring recovery of loop system condensate
- Re-tube energy recovery boiler
- Repair Walker Library manhole and replace associated condensate line to New Science Building
- Replace section of chilled water line at Miller Education Building
- Implement new SCADA system
- Continue to support capital and construction/renovation projects on campus
- Continue to investigate training opportunities

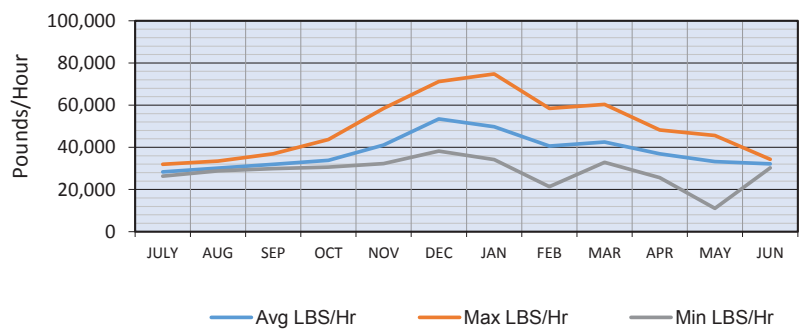


Boiler Tube Replacement Project

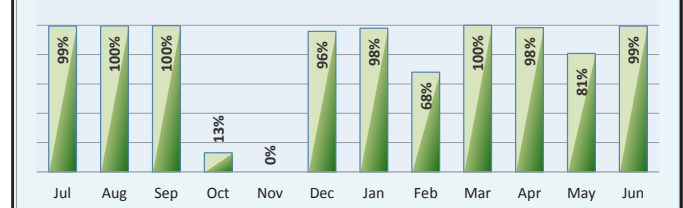
Chilled Water Tonnage 2016/2017



Steam Production 2016/2017



Turbine: Percent Runtime By Month 2016/2017



2016/2017 Central Plant Equipment Peak Operational Levels

Natural Gas Fired Turbine/Generator					Steam Boilers					Chillers				
5 MW (Nominal)					85,000 Pounds/Hour (Peak)					11,500 Tons (Peak)				
	Mid-Year	3rd Qtr	4th Qtr	Annual		Mid-Year	3rd Qtr	4th Qtr	Annual		Mid-Year	3rd Qtr	4th Qtr	Annual
Peak MW	5.0	5.3	5	5.3										
Avg MW	4.5	4.8	4.5	4.6	Avg LBS/Hr	36,467	44,276	34,084	38,276	Max Peak Tons	8,032	8,159	7,585	8,159
Total MWH	13,391.7	9,264.6	9,122.8	31,779.1	Peak LBS/Hr	73,000	82,000	49,000	82,000	Min Tons	1,264	794	2,711	794

Purchased Power: 52,275.94 MWH

Accomplishments & Highlights 2016/17

- Managed 120 after hours callbacks
- Supported Sustainable Campus Fee projects and Construction/Renovation projects
- Improved HVAC building air filtering systems
- Reduced work order completed past due percentage by addressing identified work flow and documentation process issues
- Replaced condenser fan motors and replaced evaporator coils on AHU's units located at Dyslexia Center
- Replaced condenser coil and multiple fan motors at Campus School
- Replaced VFD's for relief fans at Student Recreation Center
- Improved customer service in HVAC department
- Completed safety training

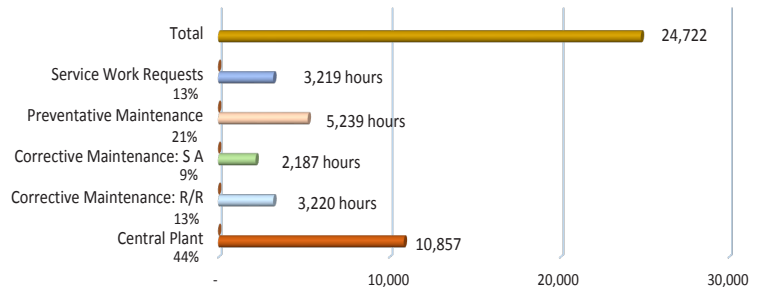


Old chiller, good-bye!

Goals 2017/18

- Update Siemens operating system to new Desigo platform
- Investigate new ways of saving energy on campus
- Replacement of 60 ton chiller at Ellington Human Sciences
- Improve department processes
- Continue to perform preventive maintenance on AHU'S
- Continue to clean coils on campus to improve air quality and energy efficiency
- Develop new projects for MTSU Sustainable Campus Fee
- Continue to support capital and construction/renovation projects on campus
- Continue to investigate training opportunities

Energy Services
Total In-House Work Order Hours
2016/17



PERFORMANCE MEASURES: Energy Services Corrective Maintenance

2016/2017		#Work Orders Completed		Man Hours		Avg Man Hours/WO		% Completed Past Due	
CORRECTIVE MAINTENANCE (CM) REQUESTS		Replace/Repair	System Adjustment	Replace/Repair	System Adjustment	Replace/Repair	System Adjustment	Replace/Repair	System Adjustment
	Appliances	15	20	70	40	4.6	2.0	0%	35%
	HVAC	1001	1157	3028	2079	3.0	1.8	19%	21%
	Mechanical	73	62	123	69	1.7	1.1	47%	52%
	Sub-total	1089	1239	3220	2187	3.0	1.8	21%	23%
	Central Plant	7	10	0	24	0.0	2.4	14%	10%
	Total	1096	1249	3220	2211	2.9	1.8	21%	23%

PERFORMANCE MEASURES: Energy Services Preventive Maintenance and Service

2016/2017		#Work Orders Completed	Man Hours	Avg Man Hours/WO	% Completed Past Due
PREVENTIVE MAINTENANCE (PM) REQUESTS		Annual	Annual	Annual	Annual
	Appliances	20	12	0.6	0%
	HVAC	1,081	4,806	4.4	29%
	Mechanical	714	421	0.6	39%
	Sub-total	1,815	5,239	2.9	33%
	Central Plant	13	1,630	125.4	62%
	Total	1,828	6,869	3.8	33%
SERVICE WORK ORDERS		Annual	Annual	Annual	Annual
	HVAC	121	3,213	26.6	55%
	Mechanical	12	7	0.5	67%
	Sub-total	133	3,219	24.2	56%
	Central Plant	26	9,187	353.3	27%
	Total	159	12,406	78.0	51%

Accomplishments & Highlights 2016/17

Systems Engineering

- Science Complex
 - Provided oversight of departmental fume hood certification and maintenance of fume; 168 hoods certified
 - Diagnosed and corrected laboratory hood system operational issues involving hood valve programming and response times; improved reliability and longevity of the valves
 - Assisted in development of maintenance plan for HVAC air valves; managed change out of 160 actuators on fume hood valves and programming and commissioning the PID loop on 160 fume hoods
 - Completed isolation valve and controls upgrades for de-ionized water system to prevent catastrophic flooding; installed additional safety railing on roof to ensure safe access to penthouses
 - Continued to learn the operation and functionality of critical systems
 - Supported commissioning phase of Davis/Wiser Patten renovation
- Assisted with sale of the 5 2MW generators on campus

Key Shop

- Added SimpleK Key Tracking system to supplement existing Stanley Keystone 600N software
- Completed 1,531 work orders including core replacements, door repairs, card key installations, and access control system repairs
- Cut 2,976 keys for Residential Life and Construction Administration/Renovation projects
- Built and installed 728 new I/C Cores
- Completed the installation of the Key System and Card Access for Davis Science/Wiser Patten capital project
- Re-Keyed Davis Science/Wiser Patten Building and House 8
- Added 16 additional on-line card readers to bring the campus wide total to 847 readers

GIS and Locating

- Completed over 600 Tennessee One Call tickets for MTSU properties with less than 3% damage to infrastructure
- Continued updating the GIS infrastructure map for new and demolished utilities on campus
- Assisted in the ongoing locating and coordination for City of Murfreesboro's Middle Tennessee Blvd. road project
- Added new staff member dedicated to GIS mapping and locating

Elevators & Generators

- Implemented targeted auditing of older elevator equipment resulting in a 50% reduction in the number of entrapments compared to last year; downtime for ADA elevator under 10%
- Worked with the campus ITD to complete the transition from copper to fiber serving elevator emergency phones
- Provided required output for EPA report on the run time of each emergency generator for TDEC
- Managed maintenance invoicing, permits, and repairs for the elevators and emergency generators
- Provided regular testing and inspection of emergency generators, completing minor repairs to reduce overall maintenance costs

Goals 2017/18

Systems Engineering

- Continue to implement and monitor necessary PM's to care for new Science building and newly renovated Davis/Wiser Patten Science buildings
- Update and finalize maintenance plan for Davis and Wiser
- Obtain training in the use of the new campus ACS SCADA system
- Oversee the implementation of the transition from existing Siemens Insight platform to the new Desigo platform

Key Shop

- Support capital project at the Saunders Fine Arts Building
- Complete rekey of Boutwell Dramatic Arts

GIS and Locating

- Implement new Trimble equipment and software with the ArcGIS system
- Complete updates to current storm and sanitary sewer system layers in campus GIS map
- Ongoing assistance with locating utilities for the Campus Surveillance project including the installation of new emergency call stations and security cameras
- Provide training for additional personnel in the Facilities Services Department in the use of the GIS navigational equipment

Elevators & Generators

- Support the capital maintenance project to modernize elevators in Saunders Fine Arts, Boutwell Dramatic Arts, Kirksey Old Main, and Keathley University Center
- Continue targeted auditing of highly trafficked elevators to reduce downtime and entrapments

PERFORMANCE MEASURES: Engineering Services Coordinated and Conducted Activities				
2016/2017	Corrective Maintenance and Service Activities		Preventive Maintenance Activities	
	# Work Orders completed	% Completed Past Due	# Work Orders completed	% Completed Past Due
Keyshop	1,516	1.8%	1	100.0%
Elevators	514	12.6%	672	14.6%
Generators	51	11.8%	457	54.3%
Systems Engineering	15	26.7%	5	0.0%



New
fume
hoods

Environmental Health & Safety (EH&S) Services

Alan Parker Doug Brinsko Shelia Huffmire Terry Logan

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Accomplishments & Highlights 2016/17

Training

Online safety training is an essential part of MTSU's Occupational Safety and Health Plan. Training modules are made available online to ensure employees are aware of the procedures and protocols for a variety of safety topics. This past year:

- 1,494 MTSU employees were trained in a total of 3,839 online safety modules in various topics related to laboratory safety, hazardous waste, bloodborne pathogens, etc.
- EH&S hosted 2 in-house training sessions: Safety Harness Check for Facilities and Asbestos Safety for Shop 90
- 6 other training sessions provided by vendors: (2) Hazardous Waste Annual Report Workshops; (1) Minors on campus training; (1) Aerial Lift training; (1) Campus Police Radiation training; (1) MTSU Fall Protection training

Inspections

- 7,167 inspections were completed by EH&S to remain in compliance with federal, state, and local guidelines such as OSHA, NFPA, NRC, TDEC, ANSI standards. Inspections conducted were related to existing labs, stormwater, hoods, and hazardous materials.

Projects

- Developed radiation safety training for EHS modules
- Coordinated waste removal and chemical move related to Davis Science/Wiser Patten renovations
- Revised and updated the Campus Safety Handbook
- Provided 360 gallons of lab packs

Emergency Operations

- Completed a draft of the Emergency Operations Plan, including Emergency Support Functions 1-16 and Weapons of Mass Destruction Annex
- Coordinated Active Shooter Exercise with Murfreesboro Police Department & Murfreesboro Fire & Rescue Department
- Coordinated Emergency Management planning activities with other Institutions, TEMA, RCEMA, & Tennessee Military Department

Stormwater Program

- Received \$2,500 in Sustainable Campus Fee (SCF) grants for purchasing native plants
- Received \$9,000 in Sustainable Campus Fee (SCF) grants for bank stabilization



Goals 2017/18

- Finalize Emergency Operations Plan and provide recommended training to the campus community
- Hold Emergency Operations table top exercise demonstrating compliance with campus policy in accordance of FEMA's National Incident Management System
- Provide ongoing updates to the Campus Safety Handbook – particularly related to Laboratory Safety
- Implement new online training modules with updated content
- Install bank stabilization and plants with Sustainable Campus Fee grants to reduce erosion on campus
- Coordinate stormwater mapping with Building Services and Campus Planning
- Continue stormwater program partnership with the City of Murfreesboro to continue to meet NPDES permit compliance for all BMPs included in the permit
- Continue working with groups on campus for the Adopt-A-Stream program
- Continue working with MT Engage to incorporate student engagement in our projects
- Identify and hire new radiation safety officer



STORMWATER PROGRAM ACTIVITIES 2016/17

Targeted Education	
Events (stream cleanups, tree plantings, tree day, rain barrel workshops)	17
Trash removed - lbs.	1,857
Invasive plants removed	15,065
Participants signed up for volunteer list	600
Number of volunteers	347
Trees planted/given out	506
Mailouts to residents	176
Door hangers to residents	44
By the numbers - Targeted	18,612
General Education	
Overall Events (Booths and workshops)	7
Classroom visits	1
TV ads played	74
Educational Print media	648
Promotional items distributed	2,280
Overall public educated/served	2,909
MTSU Customs Events	10
Training	883
By the numbers - General Education	6,812

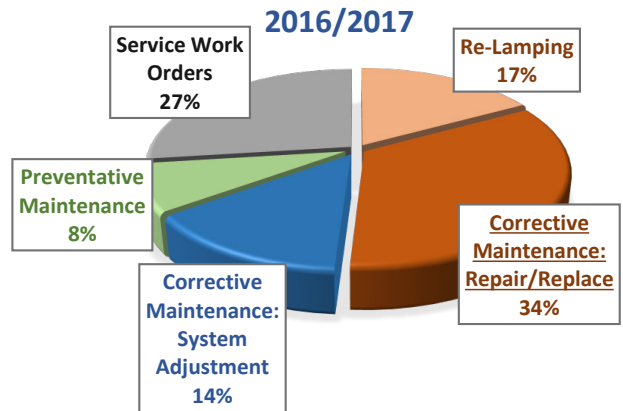
PERFORMANCE MEASURES: Environmental Health & Safety

2016/2017		Corrective Maintenance (CM)	Preventive Maintenance (PM)	Service Work Orders	Work Orders Completed	Program Totals
EH&S	Mid-Year	1	245	55	301	2,786
	Annual	3	530	100	633	
Safety Systems	Mid-Year	57	904	91	1,052	
	Annual	136	1,848	169	2,153	

Accomplishments & Highlights 2016/17

- Safety training participation by staff members
- Promoting MT Engage with Student workers
- Staff members participated in the TNAPPA Conference held in Knoxville, Tennessee
- Support and contribute to Capital Constuction and Construction/Renovations projects – document reviews and project implementation
- Purchase of equipment to support staff activities and maximize effectiveness
- Various staff actively participated in educational training; receiving certificates in Variable Frequency Drive (VFD) applications, Cross-Connection repair, and FLIR Infrared applications, NFPA Codes Workshop, and Electrical Safety by-Design

BUILDING SERVICES ANNUAL IN-HOUSE MAN HOURS



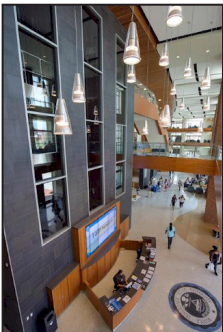
Goals 2017/18

- Advertise and fill vacant positions
- Continue to improve inter-departmental and campus customer relations
- Minimize departmental expenditures while maximizing budget
- Develop educational training opportunities for staff
- Advance promotion of work place safety



PERFORMANCE MEASURES: Building Services

2016/2017		#Work Orders Completed	Man Hours	Avg Man Hours/WO	#Closed past due
PREVENTIVE MAINTENANCE (PM) Requests	Annual	Annual	Annual	Annual	Annual
	Building Interior/Exterior	430	791	1.8	104
	Electrical	166	68	0.4	0
	Plumbing	281	585	2.1	18
	Total	877	1,444	1.6	122
SERVICE WORK ORDERS	Annual	Annual	Annual	Annual	Annual
	Appliances	3	41	13.7	0
	Building Interior/Exterior	1,901	2,717	1.4	607
	Electrical	40	80	2.0	5
	Plumbing	41	406	9.9	11
	Renovation	702	1,886	2.7	30
	Total	2,687	5,130	1.9	653



PERFORMANCE MEASURES: Building Services Corrective Maintenance

2016/2017		#Work Orders Completed		Man Hours		Avg Man Hours/WO		% Completed Past Due	
CORRECTIVE MAINTENANCE (CM)		Replace/Repair	System Adjustment	Replace/Repair	System Adjustment	Replace/Repair	System Adjustment	Replace/Repair	System Adjustment
	Appliances	28	13	82	13	2.9	1.0	4%	15%
	Building Interior/Exterior	766	568	2,636	1,600	3.4	2.8	21%	24%
	Electrical	240	316	988	628	4.1	2.0	11%	10%
	Plumbing	1,009	314	2,796	527	2.8	1.7	5%	12%
	Sub-total	2,043	1,211	6,501	2,768	3.2	2.3	12%	17%
	Re-Lamping	699	34	3,216	91	4.6	2.7	10%	24%
	Total	2,742	1,245	9,717	2,859	3.5	2.3	11%	17%

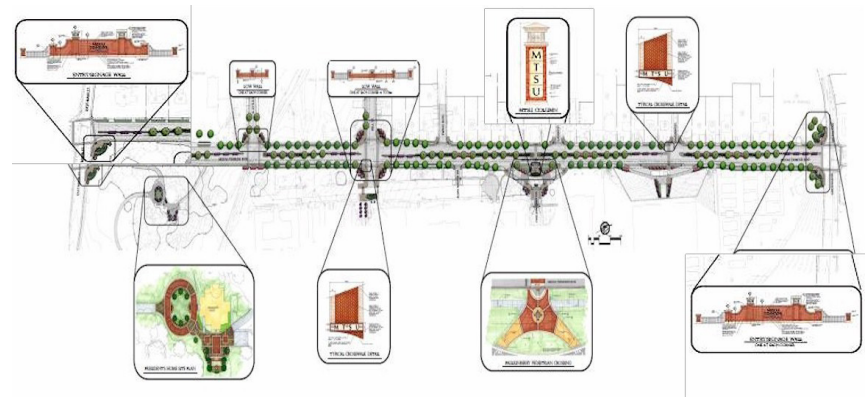
Accomplishments & Highlights 2016/17

- Finished the final phase of the Science Complex Renovations Davis/Wiser, both phase 1 and phase 2
- Along with the sidewalk completion of this project, MTSU repaired much needed Sanitary Sewer repairs
- Completed Business Aerospace building upgrades
- Participated in TNAPPA at University of Tennessee-Knoxville
- Worked on In-House Construction Guidelines
- Completed DB70s for fiscal year 2017-2018 as well as the projected fiscal year requests for the next 10 years.
- Completed Parking & Transportation SBC166/009-08-2011A
- Completion of Natatorium Demolition SBC 166/009-02-2016

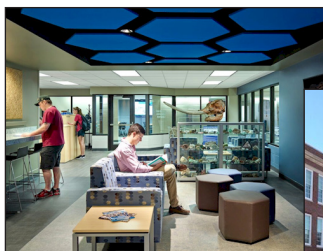
Goals 2017/18

- Hire two new project managers
- Continue to work with City of Murfreesboro to complete MT Blvd Road Project by Fall of 2018
- Continue with APPA participation
- Complete Design and Contract Documents for fiscal year 2017-2018 projects in the next 3-6 months for bids
- Fifteen capital construction projects in the queue

2016/2017 Capital Projects Review		
	New Projects	Completed Projects
July - September	<ul style="list-style-type: none"> ✓ Natatorium Demo ✓ Central Plant Control Updates 	<ul style="list-style-type: none"> ✓ Parking & Transportation Improvements ✓ Natatorium Demo
October - December		<ul style="list-style-type: none"> ✓ Davis Science & Wiser-Patten Renovation
January - March	<ul style="list-style-type: none"> ✓ Saunders Fine Arts HVAC/Windows Phase II 	<ul style="list-style-type: none"> ✓ Chiller Replacement
April - June	<ul style="list-style-type: none"> ✓ Floyd Stadium Ribbon Boards ✓ Cope Interior Renovation/ 2nd Floor ITD Wing ✓ Energy Recovery Boiler 	<ul style="list-style-type: none"> ✓ Central Plant Control Updates



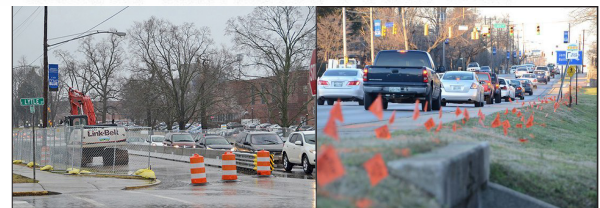
MIDDLE TENNESSEE BOULEVARD



Davis Science study space



Stroebe Lobby

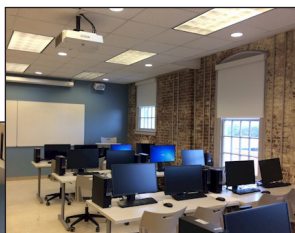
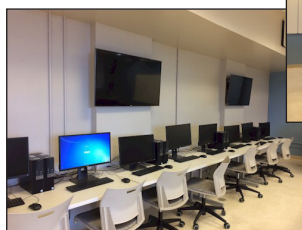


Construction Administration Capital Project Summary

2016/2017	1st FY Qtr		2nd FY Qtr		3rd FY Qtr		4th FY Qtr		Annual Totals	
	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects
Beginning Active Projects	4	\$ 21,131,047	4	\$ 21,240,347	3	\$ 2,137,183	3	\$ 3,425,327	4	\$ 21,131,047
Added Projects	2	\$ 1,156,000	0	\$ -	1	\$ 1,865,644	3	\$ 1,531,909	6	\$ 4,553,553
Completed Projects	2	\$ 1,046,700	1	\$ 19,103,164	1	\$ 577,500	1	\$ 1,010,000	5	\$ 21,737,364
Ending Active Projects	4	\$ 21,240,347	3	\$ 2,137,183	3	\$ 3,425,327	5	\$ 3,947,236	5	\$ 3,947,236

Accomplishments & Highlights 2016/17

- Construction/Renovation completed approximately 127 projects and managed more than \$2,014,000 worth of products and services during the course of those projects
- Major renovations include:
 - ACE Learning Center – Accessible playground renovation
 - Business Building – Multiple classroom TAF improvements.
 - Kirksey Old Main – Classroom TAF renovation
 - Business Building – Multiple office improvements
 - Miller Education Center – Renovation for new Center for Student Coaching and Success
 - Peck Hall – Multiple digital signage installations
 - James Union Building – Renovation for new MT-Engage offices
 - Cope Administration – Renovation for new Board of Trustees offices
 - Jones Hall – Renovations for Institutional Effectiveness, Planning & Research department and Communication Studies and Organizational Communications department as part of Davis/Wiser backfill
 - Student Services and Admissions Center – Improvements to Tour Room for enhanced experience
- Hired a new Project Manager in the Construction/Renovation team
- Hired new student designer as part of the work-study scholarship program
- Attended TNAPPA conference



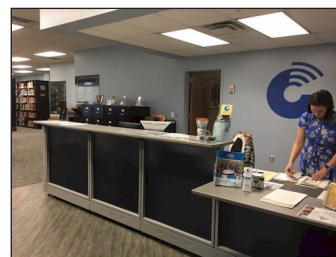
MGB 303 A & B

Goals 2017/18

- Update the In-House Construction Guidelines
- Issue new direct order contract bid package and award for summer 2018 projects.
- Attend TNAPPA, SRAPPA, and APPA conferences
- Successfully complete major renovations:
 - Finalize back-fill projects in Peck Hall, KOM, AMG, BDA and other buildings as needed
 - Bragg – Center for Popular Music
 - TAF classrooms in PH, KOM, BAS, BDA, and BRAGG
 - Baldwin Archives at Miller Education Center
 - Martin Chair of Insurance – new student-centered space
 - University Police – Dispatch and Tech Support spaces
 - Student Union – Office renovations



ACE playground



Bragg

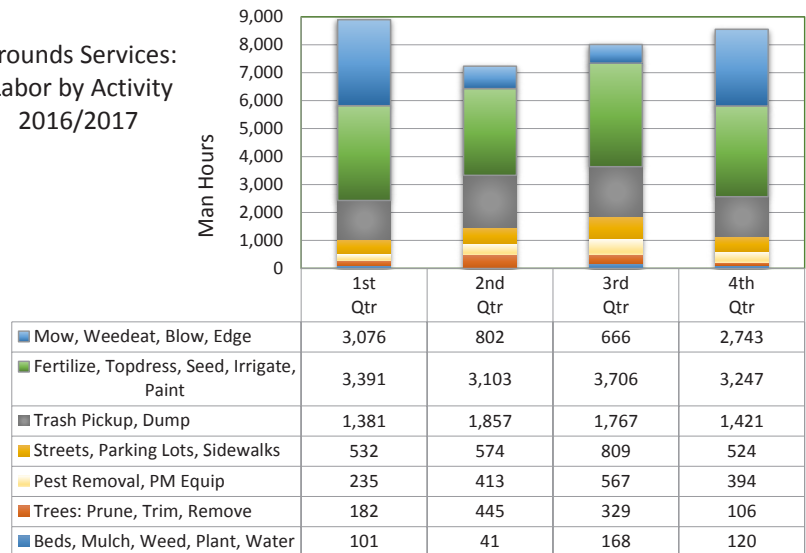
Construction/Renovation Project Summary

2016/2017	1st FY Qtr		2nd FY Qtr		3rd FY Qtr		4th FY Qtr		FY Totals	
	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects
Beginning Active Projects	260	\$ 743,589	241	\$ 114,749	241	\$ 358,423	264	\$ 302,086	260	\$ 743,589
Added Projects	41	\$ 453,841	21	\$ 643,460	46	\$ 257,500	39	\$ 224,146	147	\$ 1,578,947
Completed Projects	60	\$ 1,082,681	21	\$ 399,786	23	\$ 313,837	23	\$ 217,869	127	\$ 2,014,173
Ending Active Projects	241	\$ 114,749	241	\$ 358,423	264	\$ 301,086	280	\$ 308,363	280	\$ 308,363

Accomplishments & Highlights 2016/17

- Re-landscaped areas around campus, east side of KOM, Davis/Wiser Science area, and Old Main Circle to improve curb appeal and maximize efficiency of landscape maintenance
- Continued weed control/fertilizer program for academic core and other areas of campus
- Upgraded lay-down/storage area with berms and screening to maximize work space and keep area less visible from campus
- Performed another round of sidewalk grinding to remove small imperfections and uneven spots on sidewalks around campus
- Upgraded snow plows with 2 new brooms to help clear areas of campus more efficiently and use on areas with brick pavers
- Improved plan for trimming bushes and mulching beds on campus to be more efficient
- Updated Facilities Services website with our Arboretum trees information page
- Continued training

Grounds Services:
Labor by Activity
2016/2017



PERFORMANCE MEASURES: Grounds Services

2016-2017	#Work Orders Completed		Man Hours		Avg Man Hours/WO		% Completed Past Due	
	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
Maintenance	20	45	129	285	6.4	6.3	10.0%	17.8%
Preventive (PM)	8	13	70	70	8.7	5.4	0.0%	0.0%
Corrective (CM)	12	32	59	216	4.9	6.7	16.7%	25.0%
Service	275	563	3,634	58,237	13.2	103.4	24.4%	23.1%
Routine	275	524	3,634	37,887	13.2	72.3	24.4%	24.8%
Annual	0	39	0	20,350	0.0	521.8	0.0%	0.0%
Total	295	608	3,762	58,522	12.8	96.3	23.4%	22.7%



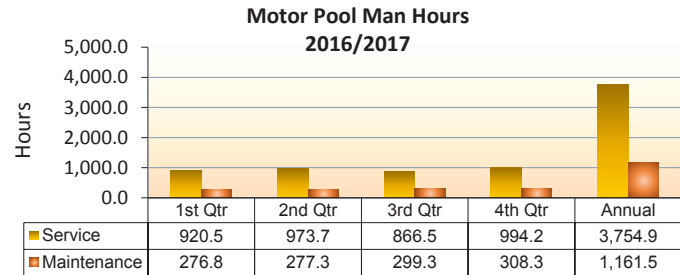
Goals 2017/18

- Continue work with Biology Department and Campus Planning to finish updating tree inventory list and begin process of adding additional trees to our arboretum list
- Continue re-landscaping projects around campus to improve curb appeal and maximize efficiency of landscape maintenance
- Continue weed control/fertilizer program to help improve turf areas around campus; continue development of plan to aerate these areas as well
- Continue tree replacement program
- Upgrade lay-down/storage area with covered shed and screening
- Continue required training and seek training opportunities for staff



Accomplishments & Highlights 2016/17

- Upgraded Motor Pool fleet with 6 new vehicles replacing some with higher mileage
- Continued on site emissions testing
- Performed annual fuel tank cleaning and maintenance
- Continued work with TDEC Division of Underground Storage Tanks to ensure tanks were in compliance with all regulations
- Upgraded shop diagnostic computer to be compatible with newer model vehicles
- Switched to a new fuel card offering customers more available
- Designed a motor pool vehicle replacement strategy to maximize efficiency of vehicles



Goals 2017/18

- Continue monitoring and cleaning of underground storage tanks
- Continue to upgrade shop equipment to maximize repair efficiency
- Continue on site emissions testing
- Continue evaluation of replacement plan for facilities carts to have a more standardized appearance
- Continue training

PERFORMANCE MEASURES: Motor Pool



2016-2017	#Work Orders Completed		Man Hours		Avg Man Hours/WO		% Completed Past Due	
	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
Maintenance	471	1,079	554	1,162	1.2	1.1	11.0%	9.1%
Preventive (PM)	468	1,074	551	1,155	1.2	1.1	11.1%	9.1%
Corrective (CM)	3	5	4	7	1.2	1.3	0.0%	0.0%
Service	453	973	1,894	3,755	4.2	3.9	28.3%	28.3%
Total	924	2,052	2,448	4,916	2.6	2.4	19.5%	18.2%

Custodial Services

Connie Hagberg Brenda Wunder

Accomplishments & Highlights 2016/17

- Worked closely with Custodial Services contract administration on contract terms
- Coordinated special event/conference cleaning requirements with contractor and in-house Custodial Services
- Met with the SACSCOC Planning Committee regarding the scheduled visit to campus to ensure custodial administration and facilities/grounds staff are prepared for the review
- Completed safety and administrative training sessions

E&G Space 2016/2017	Gross Square Feet	Cleanable Square Feet	% Cleanable Square Feet
Facilities Services Department			
In-house	499,749	154,218	7%
Contract Labor	2,349,025	1,690,709	72%
Murphy Center Complex			
In-house	0	0	0%
Contract Labor	595,019	500,282	21%
Total	3,443,793	2,345,209	100%

Goals 2017/18

- Ensure custodial contractor service is completed according to contract terms
- Inspect facilities for cleanliness according to Cleaning Standards & Frequencies
- Continue with SACSCOC Planning Committee regarding scheduled visit September 2017; work with Custodial Services administration and FSD to ensure campus facilities

are clean and prepared for the review

- Update in-house Custodial Supervisor position, hire and train new employee on FSD campus operations and cleaning standards
- Continue productivity studies of in-house custodial service, review and finalize plans for in-house custodial assignments

Excerpts from Campus Master Plan 2015 - 2025

Facility Assessment: Education and General Use Facilities

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Like many universities and colleges, MTSU has simultaneously experienced significant growth and increased fiscal constraints. These conditions have led to postponement of major repairs and replacement of facilities and infrastructure. This delay, combined with aging facilities, leads to a degradation of the facilities and an increased backlog of maintenance and capital renewal projects commonly referred to as deferred maintenance.

	Building Name	Building ID	Year Constructed	Gross SF	Assignable SF	Current Condition (1)	Site Suitability (2)	Physical Building Rating (3)	Existing Program Suitability (4)
ALOF	Alumni Office (2263 Middle Tennessee Boulevard)	24-172	1948	2,796	1,814	94.3	M	A	A
ALUM	Alumni Relations House (2259 Middle Tennessee Blvd.)	24-174	2008	10,105	5,435	94.7	M	A	A
BAS	Business & Aerospace Building	24-091	1997	184,931	102,233	90.1	M	A	A
BDA	Boutwell Dramatic Arts	24-031	1964	56,164	36,757	79.6	M	C	D
BLH	1417 East Main Street (Center for Historic Preservation)	24-097	1958	3,041	2,191	71.5	L	D	D
BRAGG	Bragg Media and Entertainment Building	24-083	1990	91,114	52,325	89.3	M	B	C
CAB	Cope Administration Building	24-034	1965	50,976	29,325	85.3	M	B	A
CH	College Heights Chapel	24-197	1959	9,362	7,828	75.4	M	C	C
CKNB	Cason-Kennedy Nursing Building	24-084	1994	31,494	18,259	96.5	M	A	A
COE	College of Education Building	24-229	2010	91,206	50,989	100	M	A	A
DSB	Davis Science Building	24-041	1967	75,258	40,966	81.2	H	B	A
DYS	Tennessee Center for the Study & Treatment of Dyslexia	24-155	2000	7,169	4,146	96.0	H	A	A
EHS	Ellington Human Sciences	24-025	1962	15,509	10,619	85.5	M	B	D
EZEL	Ezell Hall	24-072	1973	52,452	32,775	66.4	L	D	D
FAIR	Fairview Building	24-149	1962	38,250	22,960	89.4	M	B	A/C
FH	Forrest Hall	24-017	1954	14,177	8,807	84.0	L	D	A
FSHP	Farm Shop	24-232	2011	9,772	9,396	96.1	H	A	A
GH	Greenhouse	24-073	1975	4,774	4,709	80.1	L	D	B
HARR	1416 East Main Street (Center for Historic Preservation)	24-130	1925	2,454	1,478	80.2	L	D	D
HC	Horticulture Facility	24-093	1997	9,002	6,458	87.1	L	D	C
HONR	Paul W. Martin, Sr. Honors Building	24-166	2003	20,720	11,601	98.5	M	A	A
ING	Sam H. Ingram Building (2269 Middle Tennessee Blvd.)	24-169	1951	27,498	17,838	96.8	M	A	A
JACK	Tom H. Jackson Building1	24-003	1911	8,224	4,825	84.2	H	B	B
JH	Jones Hall1	24-005	1921	39,855	21,103	84.6	H	B	A
JUB	James Union Building	24-015	1952	58,354	36,626	83.6	H	B	A
KOM	Kirksey Old Main1	24-002	1911	83,706	45,947	70.9	H	C	A
KUC	Keathley University Center	24-042	1967	122,671	80,518	85.9	M	B	B
LIB	James E. Walker Library	24-094	1998	254,596	171,275	96.8	M	A	A
LRC	Ned McWherter Learning Resources Center	24-074	1975	65,865	38,296	93.8	M	A	A
LYTL	1114 East Lytle Street (Lytle House)	24-171	1948	1,874	1,401	89.4	M	B	B
MB	McFarland Building	24-054	1969	10,285	6,424	90.5	M	A	A
MD	Main Dairy	24-230	2011	22,190	18,987	98.8	H	A	A
MEC	Miller Education Center	24-241	1999	126,839	105,196	93.5	M	A	A
MGB	E.W. Midgett Building	24-076	1959	18,615	11,126	62.7	L	D	D
NB3	Nursing Building Addition	24-84A	2006	24,044	13,814	97.5	M	A	A
OBS	Observatory	24-194	2007	724	363	96.9	M	A	A
PCS	Pittard Campus School1	24-007	1927	47,487	29,526	79.7	H	C	B
PH	Peck Hall	24-044	1968	110,501	53,126	73.0	M	C	D
PHLP	Project Help	24-088	1996	4,568	3,158	90.2	M	A	B
PKS	Parking Services Building	24-158	1951	12,099	7,441	86.6	L	D	A
PRES	President's Home1	24-001	1911	7,794	7,015	87.2	H	B	A
PSB	Printing Services Building	24-175	2005	4,320	3,659	97.4	M	A	A
ROTX	ROTC Annex	24-010	1942	10,143	8,477	63.9	L	D	B
SAG	Stark Agribusiness and Agriscience Center	24-045	1968	25,463	15,340	76.7	M	C	A
SCI	Science Building	24-249	2014	263,670	144,540	100	M	A	A
SFA	Saunders Fine Art	24-022	1959	32,788	19,811	78.0	M	C	D
SSAC	Student Services and Admissions Center	24-245	2012	64,500	33,002	100	M	A	A
STU	Student Union	24-238	2010	210,846	111,153	100	M	A	A
TB	Telescope Building	24-106	1986	412	346	80.1	L	D	D
TCM	Telecomm Building	24-089	1996	10,267	5,959	91.8	M	A	C
TLC	Tennessee Livestock Center	24-070	1972	157,316	91,738	85.6	L	D	A
TODD	Andrew L. Todd Hall	24-019	1958	114,388	65,666	96.4	H	A	A
VA	Vocational Agriculture	24-080	1979	6,047	5,163	84.3	L	D	C
VET	Voorhies Engineering Technology	24-009	1942	39,289	28,488	78.9	L	D	C
WANH	209 North Baird Lane (Internal Audit)	24-103	1958	1,243	900	78.4	L	D	B
WMB	Wright Music Building	24-081	1980	31,357	20,802	82.5	M	B	B
WPS	Wiser-Patten Science Hall	24-008	1932	41,116	24,612	82.8	H	B	A
WSC	Wood - Stegall Center (University Advancement)	24-156	2001	10,142	4,630	98.6	M	A	B

Legend:

- (1) Current Condition Score (0-100) determined by the Physical Facilities Survey Score as of August 2015 (PFIS).
- (2) Site Suitability Score (High, Medium, Low) determined by factors including various land uses, code issues, and original campus structure.
- (3) Physical Building Rating (A-D) determined by combining the Current Condition and Site Suitability Scores as shown in the matrix.
- (4) Existing Program Suitability (A-D) determined by the factors including quantity and quality of space and the fit of programs to the design.

Deferred Maintenance:

Current Condition				
Site Suitability				
		> 90	80 - 90	< 80
	High	A	B	C
	Medium	A	B	C
	Low	C	D	D
	Physical Building Rating			

Table A-2 Educational and General (E&G, Maintenance, Utilities, & Athletics)		
Physical Building Rating	Square Feet	20-Year Deferred Maintenance (1)
A	1,773,836	\$35,459,630
B	886,512	\$88,670,198
C	422,487	\$46,857,416
D	240,427	\$22,538,570
Other	11,540	\$865,008
Infrastructure (2)		\$48,597,706
20-Year Capital Renewal Funding (3)		(\$56,968,010)
Total	3,334,802	\$186,020,518

MTSU Capital Maintenance

List of Projects for Capital Budget Request

2015 - 2016	Priority	Project Name	FY 15/16 Request	Appropriated Funding
	1	Central Plant Controls Upgrade	\$ 2,650,000	\$ 2,650,000
	2	Generator Replacement	\$ 825,000	\$ -
	3	Several Buildings Electrical Equipment Upgrade	\$ 1,450,000	\$ -
	4	Replacement of BAS Control Panels	\$ 715,000	\$ -
	5	Several Buildings Exterior Renovations	\$ 1,480,000	\$ -
	6	Domestic Water/Sewer Systems Updates	\$ 680,000	\$ -
	7	Jones Hall Plumbing Upgrade	\$ 1,450,000	\$ -
	8	Sidewalk Repair/Replacement	\$ 560,000	\$ -
	9	Campus Stormwater BMP	\$ 800,000	\$ -
	10	Peck Hall HVAC Updates Phase II-VAV	\$ 1,250,000	\$ -
	Total:		\$ 11,860,000	\$ 2,650,000
2016 - 2017	Priority	Project Name	FY 16/17 Request	Appropriated Funding
	1	Saunders Fine Arts HVAC Phase II Updates	\$ 1,750,000	\$ 1,830,000
	2	Energy Recovery Boiler Repair	\$ 875,000	\$ 880,000
	3	Several Buildings Electrical Equipment Upgrade	\$ 1,595,000	\$ 1,600,000
	4	Replacement of BAS Control Panels	\$ 787,000	\$ 790,000
	5	Several Buildings Exterior Renovations	\$ 1,628,000	\$ 1,630,000
	6	Domestic Water/Sewer Systems Updates	\$ 748,000	\$ -
	7	Peck Hall Stairwell & Flooring Restoration	\$ 450,000	\$ -
	8	Several Buildings Plumbing & Restroom Upgrades	\$ 1,500,000	\$ -
	9	Maintenance Complex Roofs' Replacement	\$ 850,000	\$ -
	10	Sidewalk Repair/Replacement	\$ 616,000	\$ -
	11	Campus Stormwater BMP	\$ 880,000	\$ -
	12	Peck Hall HVAC Updates Phase II-VAV	\$ 1,375,000	\$ -
	13	Bell Street Facility Roof Replacement	\$ 800,000	\$ -
	Total:		\$ 13,854,000	\$ 6,730,000
2017 - 2018	Priority	Project Name	FY 17/18 Request	Appropriated Funding
	1	Life Safety Fire Alarm System Upgrades Phase I	\$ 2,810,000	\$ 2,820,000
	2	Steam, Condensate & Manhole Repair/Replacement	\$ 1,900,000	\$ 1,900,000
	3	Keathley University Cntr Mechanical/HVAC Upgrades	\$ 1,750,000	\$ 1,750,000
	4	Several Buildings Roof Replacement	\$ 1,790,000	\$ 1,790,000
	5	Several Buildings Elevator Modernizations	\$ 700,000	\$ 700,000
	6	Domestic Water & Sewer Systems Updates	\$ 900,000	\$ -
	7	Stark Ag Mechanical & HVAC Upgrades	\$ 1,560,000	\$ -
	8	Miller Education Center Roof Replacement	\$ 800,000	\$ -
	9	Several Buildings Plumbing & Restroom Upgrades	\$ 1,500,000	\$ -
	10	WMOT Tower Electrical Service & HVAC Upgrades	\$ 250,000	\$ -
	11	Peck Hall Stairwell & Flooring Restoration	\$ 450,000	\$ -
	12	Maintenance Complex Roofs' Replacement	\$ 850,000	\$ -
	13	Life Safety Fire Alarm System Upgrades Phase II	\$ 2,000,000	\$ -
	14	Sidewalk Repair/Replacement	\$ 616,000	\$ -
	15	Campus Stormwater BMP	\$ 880,000	\$ -
	Total:		\$ 18,756,000	\$ 8,960,000
2018 - 2019	Priority	Project Name	FY 18/19 Request	Appropriated Funding
	1	Communications, Mechanical, Electrical & Data Closet Updates	\$ 1,212,000	\$ -
	2	KUC & Miller Ed Center Roof Replacements	\$ 1,500,000	\$ -
	3	Steam/Condensate & Manhole Repair/Replacement Phase II	\$ 2,350,000	\$ -
	4	Domestic Water & Sewer Systems Updates Phase I	\$ 1,010,000	\$ -
	5	Maintenance Complex Roofs' Replacement	\$ 1,048,000	\$ -
	6	Several Building HVAC Repair & Smoke Evacuation Retro-Commissioning	\$ 500,000	\$ -
	7	Elevator Modernization Phase II	\$ 550,000	\$ -
	Total:		\$ 8,170,000	TBD




FSD is APPA Active at WORK!

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APPA offers premier training for educating and equipping facilities professionals in leadership, management, and latest technologies.

FSD Staff Involvement 2016/2017

	
	Every MTSU work unit was represented - 41 staff members attended Tri-APPA!
	Emerging Professionals 4 staff members
	Facility Manager Magazine Joe Whitefield - Columnist
	TNAPPA
	Current Officer
	Secretary/Treasurer - Gerald Grimes

Upcoming in 2017/2018 -



APPA Facilities Drive-In Workshop For Area Colleges And K-12 School Districts



Wednesday, November 29, 2017
10:00am – 2:00pm
Middle Tennessee State University
Student Union

The Association of Physical Plant Administrators promotes leadership in educational facilities for professionals seeking to build careers, transform institutions, and elevate the value and recognition of facilities education.

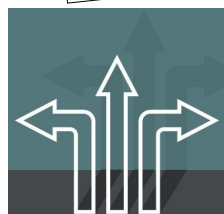


...important leadership issues presented by author
Joe Whitefield - **Facilities Manager Magazine**



enabling leadership

Decisive Leadership



"A patient leader is one who first recognizes the link between success and grit."

<http://www.appa.org/FacilitiesManager/index.cfm>



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Leadership and Virtues—Patience

enabling leadership

Leadership and Virtues—Justice

By Joe Whitefield

Five years ago I began writing a regular feature in Facilities Manager on leadership within facilities organizations on somewhat of an experimental basis. Intending to be timely and relevant, the topics have varied widely from publication to publication. With that said, this month's article is my last submission for Facilities Manager as I move on to other endeavors. I would like to thank the APPA staff for their masterful editing and support of this effort. I would also like to thank the readers, both frequent and occasional, for your interest and feedback. It is my hope that a particular article, or even a single point within an article, has helped you in some small way as a leader. I know that I have benefited greatly from researching topics, talking to colleagues, and writing the articles. Continued success to you and all. —J.W.

Facilities Manager brings the reader the views and experiences of the people behind the facilities operations.

Funded by a fee initiated by the MTSU student body, administered by the Division of Student Affairs, and supported by the Tennessee Board of Regents, the intent of the MTSU Sustainable Campus Fee Program is to decrease consumption of non-renewable energy with a portion directed for purchasing 'green power' to facilitate production of electricity from wind, solar power, and methane gas as a clean alternative to traditional energy sources.

MTSU Sustainable Campus Fee (SCF) Program

Approved Projects	2006-12	2012-13	2013-14	2014-15	2015-16	2016-17	Totals
Green Power Purchase	\$ 1,370,000	\$ 230,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 2,200,000
Air flow meter installations						\$ 9,000	\$ 9,000
Alternative Fuel (Biodiesel) Production Project	\$ -	\$ 2,500					\$ 2,500
Alternative Fuel- Bus conversion to run on used cooking oil	\$ 15,000						\$ 15,000
Alternative fuel- Convert vehicle to operate on natural gas/installation of compressed gas station	\$ 8,500						\$ 8,500
Alternative fuel- Development of flex-fueled engine Phase 1 and 2 (sun and hydrogen)	\$ 54,000						\$ 54,000
Alternative fuel- Multi-fuel bus emission testing project	\$ 10,944						\$ 10,944
Alternative fuel- Running Vehicles off Gasification from Wood	\$ -			\$ 4,500			\$ 4,500
Bee Keeping and Colony Collapse	\$ -				\$ 10,000		\$ 10,000
Battery operated grounds equipment (40V Lithium Ion)						\$ 2,500	\$ 2,500
Biofuels- Ultrasonic Generator Research; Biotech applications research	\$ -				\$ 6,360	\$ 4,820	\$ 11,180
Bioremediation of Barbiturates for Ecofriendly Horse Composting/Soil bacteria for Degrading Toxic Barbiturates from Horses in Landfills	\$ 16,846			\$ 5,400			\$ 22,246
Blast hand dryers for Campus Rec	\$ 11,270						\$ 11,270
Boiler Sequencing Controller- M2G, Ingram Building	\$ -			\$ 7,698			\$ 7,698
Bring green chemistry to campus program Phase I-IV	\$ -		\$ 13,066	\$ 2,100	\$ 3,089	\$ 3,017	\$ 21,272
By-pass feeders- 15 buildings						\$ 9,800	\$ 9,800
Change hot water valve tops in Murphy Center	\$ 6,502						\$ 6,502
Chilling plant: pressure gauges installation	\$ 1,000						\$ 1,000
Clean/replace coils multiple buildings (15)	\$ 39,394	\$ 20,157	\$ 15,100				\$ 74,651
'Clickable' Polymers	\$ -	\$ 600					\$ 600
Closed loop sediment filtering system multiple buildings - (15+)	\$ 118,150	\$ 46,650	\$ 15,750	\$ 21,000	\$ 8,900		\$ 210,450
Compact infrared cameras for energy audits & solutions; flow meter	\$ 3,450				\$ 9,900		\$ 13,350
Conduct light level studies in Todd, Mass Comm, BAS, Peck	\$ 5,500						\$ 5,500
Creating MTSU as a Bicycle Friendly University; Progression towards becoming a bicycle friendly Univ/ advancing the project	\$ 38,169	\$ 30,668	\$ 19,295				\$ 88,132
Data Loggers for Energy Efficiency Analysis	\$ -		\$ 4,000	\$ 2,000		\$ 2,060	\$ 8,060
Dehumidifier project/Dehumidify for Voorhies 108	\$ 2,100	\$ 11,500					\$ 13,600
Develop Novel Approach to Producing Biofuel	\$ -			\$ 9,500			\$ 9,500
Development of a biosensor to detect hydrogen production	\$ 4,250						\$ 4,250
DRIPS Project (Development and Research into Pervious Surfaces)	\$ 13,500						\$ 13,500
Energy Books purchase- Library and Facilities offices	\$ 4,500	\$ 1,823					\$ 6,323
Energy Conservation Project in BDA, Theater Production (Motion Sensors)	\$ -			\$ 4,568			\$ 4,568
Environmentally Friendly Bio-Composting of Toxic Horse Carcasses	\$ -	\$ 8,894					\$ 8,894
Filter- Pleated filter project- multiple buildings (12)	\$ -		\$ 4,427	\$ 9,654	\$ 5,918		\$ 19,999
Golf cart conversion 1 and 2 (electric to solar)	\$ 10,500	\$ 2,000		\$ 11,880			\$ 24,380
Hand dryers installation- Walker Library, Fairview						\$ 9,107	\$ 9,107
Hot/chilled water valve assessment	\$ 5,000						\$ 5,000
HVAC controls replacement Wright Music	\$ 29,950						\$ 29,950
HVAC pocket filter project - multiple buildings (21+)	\$ 92,813	\$ 40,235	\$ 4,801			\$ 10,175	\$ 148,024
Hybrid/Alternative fuel vehicle purchase/subsidy/ continue project	\$ 17,250		\$ 15,000	\$ 15,600			\$ 47,850
Increasing Production Capacity of Biodiesel	\$ -	\$ 9,965					\$ 9,965
Infrared thermometer guns	\$ 500						\$ 500
Install FilterPave Porous Pavement in parking lot on Champion Way	\$ 18,665						\$ 18,665
Install frequency drive in BDA	\$ 12,777						\$ 12,777
Install milk cooling system	\$ 17,500						\$ 17,500
Installation of a geothermal cooler system at MTSU farm	\$ 27,150						\$ 27,150
Installation of programmable thermostats in F/S maintenance shops	\$ 1,200						\$ 1,200
Installation of variable speed compressor in the Central Utilities Plant	\$ 24,000						\$ 24,000
Insulate pipes- Multiple buildings (19+)	\$ 37,337	\$ 5,000	\$ 17,000	\$ 42,872	\$ 14,200		\$ 116,409
Insulated Garage Door Replacement- Motor Pool	\$ -			\$ 3,950			\$ 3,950
ITD- AMX Resource Mgmt Suite System Upgrade; Virtual Mgmt Software	\$ -		\$ 7,500		\$ 10,000		\$ 17,500
ITD- 'Lights out' Cope Data Center	\$ -			\$ 1,316			\$ 1,316
ITD- Server consolidation/Virtualization/Blade servers	\$ 62,708	\$ 47,000	\$ 32,500	\$ 26,000	\$ 25,000		\$ 193,208
Kenaf Agriculture for Sustainable Community (alternative energy crop)	\$ 5,935						\$ 5,935
Lamp crusher	\$ 4,000						\$ 4,000
Laser alignment devices	\$ 5,681						\$ 5,681
LED lighting retrofits - mechatronics lab, MTSU airport ramp lights						\$ 9,050	\$ 9,050
Light switch plate labels	\$ 2,500						\$ 2,500
Lighting Projects- Atrium for Walker Library; Campus Rec indoor pool LED lights; Mass Comm and Peck LEDs; studio lighting in Mass Comm & LRC; VET	\$ 81,888		\$ 31,450		\$ 5,930	\$ 18,377	\$ 137,645
Lighting- Re-lamp Cason Kennedy Nursing Building (existing portion) and Fairview	\$ 61,200						\$ 61,200
Lighting- Replacement of incandescents in Murphy Cntr	\$ 5,729						\$ 5,729
Occupancy Sensors Honors Building	\$ 3,372						\$ 3,372
Permeable Pavers for Sustainable Learning Environment (Forest Hall)	\$ 13,050						\$ 13,050

(Continued on page 23)

(Continued from page 22)

The remainder of the funds generated by SCF provides funds for local campus projects supporting sustainability efforts on campus, such as retrofitting older systems, lowering consumption and decreasing energy expenses.



New truck with lift gate for recycling



Big Belly Solar Trash Compactors



Water Refill Stations

Approved Projects	2006-12	2012-13	2013-14	2014-15	2015-16	2016-17	Totals
Poster campaign and Earthwise reusable bag project	\$ 18,160						\$ 18,160
Promotion of SCF Program		\$ 1,000					\$ 1,000
Propane powered mower to replace older gas powered				\$ 12,045	\$ 11,178		\$ 23,223
Proteat mold treatment for air handling units	\$ 1,400						\$ 1,400
Re-caulk exterior windows (Davis Science Building)	\$ 14,000						\$ 14,000
Recycling - community drop-off relocation/expansion	\$ 3,000						\$ 3,000
Recycling at special events			\$ 3,500	\$ 3,500	\$ 3,500	\$ 3,500	\$ 14,000
Recycling containers/supplies for campus	\$ 37,000	\$ 6,500	\$ 17,500	\$ 5,500	\$ 7,000	\$ 4,000	\$ 77,500
Recycling- increase behavior thru application of behavior science principles			\$ 1,300				\$ 1,300
Recycling- pickup truck purchase						\$ 14,000	\$ 14,000
Recycling pilot program: Dorm room recycling bins			\$ 3,000	\$ 6,000			\$ 9,000
Recycling- Technology Lab Resources					\$ 1,800		\$ 1,800
Replace older motor with energy efficient motor in Holmes; Wright Music; Stark Ag; Murphy Cntr; Livestock	\$ 2,279	\$ 5,300	\$ 26,180		\$ 10,784	\$ 12,851	\$ 57,394
Replace Older Pump with Energy Efficient Pump- KUC	\$ -			\$ 5,424			\$ 5,424
Replace use of Helium & Hydrogen Cylinders in New Science Building with Hydrogen generated via Electrolysis	\$ -			\$ 15,116			\$ 15,116
Replace use of Helium Gas in DSB with Hydrogen Generated Via Electrolysis	\$ -		\$ 14,160				\$ 14,160
Replacement of exterior windows McFarland & Holmes	\$ 60,000						\$ 60,000
Restroom flush valves replacement- Walker library						\$ 9,020	\$ 9,020
ReRev Cardio System elliptical machines in Rec Center	\$ 30,000						\$ 30,000
Self Sustainability Initiative thru Alternative Horticulture	\$ -	\$ 10,000					\$ 10,000
Server consolidation/Visualization- Health Services	\$ -		\$ 20,000				\$ 20,000
Siemens Energy Analysis- New Science Building	\$ -			\$ 12,000			\$ 12,000
Solar - Install 10kW solar system	\$ 81,224						\$ 81,224
Solar attic fans in Forrest Hall; Ellington Human Science	\$ 28,932						\$ 28,932
Solar- Big Belly solar trash compactor program	\$ -			\$ 12,000	\$ 11,094	\$ 11,789	\$ 34,883
Solar boat project	\$ -		\$ 6,165				\$ 6,165
Solar- Patio Umbrellas	\$ -				\$ 4,500		\$ 4,500
Solar- Purchase of organic dyes for use in organic dye sensitized solar cells	\$ 1,100						\$ 1,100
Solar- Student projects trailer	\$ -			\$ 7,846			\$ 7,846
Solar- WMTS-FM 88.3 Solar Power Supply Project	\$ 12,000	\$ 19,900					\$ 31,900
Steam trap ultrasonic test equipment	\$ 2,600						\$ 2,600
Stormwater Control Projects- Rain Gardens; native plants; Bioremediation Ponds on Campus for MS4 Compliance/ Maintenance; Parking lot run-off; Bank stabilization	\$ 7,000	\$ 3,000		\$ 10,000	\$ 18,859	\$ 11,500	\$ 50,359
Student Suitabilities Education Initiative	\$ -	\$ 2,500					\$ 2,500
Study- Building Heating/AC Energy Efficiency Study	\$ -			\$ 1,500			\$ 1,500
Sub-metering for Chilling Plant and Murphy Cntr	\$ 8,000						\$ 8,000
Test & balance hot water system- KUC	\$ -		\$ 12,716				\$ 12,716
Tree planting/landscape projects	\$ -		\$ 3,000	\$ 500	\$ 5,000	\$ 15,500	\$ 24,000
Turning manure into gold	\$ 1,000						\$ 1,000
Ultrasonic transmitters Midgett	\$ 18,130						\$ 18,130
Variable Frequency Drives - Jones Hall; Walker Library	\$ -	\$ 5,225		\$ 9,800	\$ 7,490	\$ 18,554	\$ 41,069
Water Conservation for Rural & Urban Citizens	\$ -				\$ 25,000		\$ 25,000
Water Refill Stations- SGA Resolution 7-14-F- Multiple buildings (23)	\$ -		\$ 3,400	\$ 6,132	\$ 20,053	\$ 31,532	\$ 61,117
Y-pattern Valve Changeout- Cogen Plant	\$ -			\$ 7,600			\$ 7,600
Total:	\$ 2,589,605	\$ 510,417	\$ 440,810	\$ 433,001	\$ 375,555	\$ 360,152	\$ 4,709,540

SCF Case Study: Air Flow Meters



Airflow station

The Sustainable Campus Fee (SCF) committee funded a project to install two airflow measuring and monitoring stations for Corlew Hall. The monitoring stations have been added to the outside air units serving the dorm. This is the first phase of modifications to enhance the performance of the dormitory facility. Currently, Corlew Hall is experiencing large fluctuations in building pressure. Generally the pressure is excessively positive meaning that more than normal amounts of supply air are being added and conditioned for the space. Without the monitoring devices, any mechanical adjustments to equipment was guess work at best.

A second phase will be to add measuring and monitoring devices to the exhaust air for the building. Upon completion of this phase, actual airflow entering and leaving the building can be trended. This will provide critical information to make meaningful recommendations for adjustments to existing equipment.

These adjustments should allow for precise control of airflow that will maintain building pressure much more accurately. In turn, this means much less energy being wasted for oversupply of conditioned air.



Summary of Services 2016/2017 Annual Report

This report is produced by the FSD assistant vice president and staff and published by FSD Central Administration.

Linda Hardymon, Editor/Publishing Coordinator

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