

MTSU Facilities Services



September 2016

Summary of Services Annual Report

July 2015 — June 2016

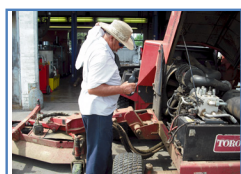


Middle Tennessee State University Facilities Services Department

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*...maintaining facilities and grounds... in a safe, clean, and functional condition...
Continuous growth...Continuous Improvement*

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 15/16 has concluded and FY 16/17 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 15/16 for the department, updates the O&M and capital budget situations, and revises deferred capital renewal projections. The following are samples of the Accomplishments and Challenges.

Accomplishments

Performance Metrics

The Summary of Services report from the previous FY identified a combined total of 87 individual goals across the departmental work units for the FY 15/16. Overall, 71 of the goals were completely met or had substantial progress toward their completion (81.6%), 12 of the goals had progress toward completion but remain on-going (13.8%) and 4 of the goals had showed little to no progress (4.6%).

Capital Projects and Construction Renovation Projects

- 11 capital construction projects were completed totaling \$10.1 million
- 127 renovation projects were completed totaling \$3.3 million
- The Miller Education Center renovation was completed and is operational
- The multi-phased Underground Electrical Project is substantially complete

Customer Service and Communication

- All work units combined to complete approximately 19,000 work orders for the year
- Maintained a brochure for academic and administrative personnel that outlines campus maintenance and operations and work order processing
- Updated Residential Life Handbook

Management and Productivity

- Quarterly meetings were conducted for work units within the department
- Extensive training was performed throughout the department

Energy Management

- The TN Sustainable Design 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

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. FY 15/16 saw a nominal increase in M&O funding.

Capital maintenance projects are submitted each year, typically totaling \$10 million - \$13 million, to provide for the major repair and replacement needs of the campus. Funding formulas indicate an annual

(Continued on page 4)



Holmes Building

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)

need of approximately \$10 million just to remain level. Recent funding history shows annual funding received in the amounts of \$3.0 million – \$4.5 million. In FY 15/16, MTSU received \$2,650,000 for capital maintenance. This under funding of capital maintenance accumulates 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 increased approximately 0.8% in FY 15/16. This is primarily due to the construction and occupation of new buildings across campus coupled with nominal rate increases for utilities. 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. In addition, the Tennessee Valley Authority continues to adjust (net increases) electrical rates. MTSU was moved to a 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 continually stretches M&O services as well as the infrastructure capacity. The Miller Education Center, (formerly Bell St. properties) has been renovated and is now occupied and operational.

Energy and Sustainability

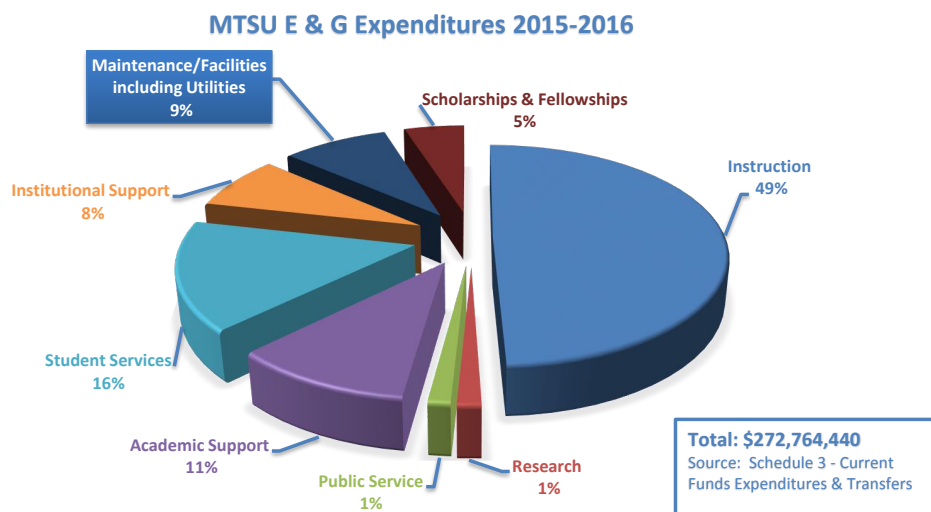
There are many initiatives designed to increase the greening of the campus such as the Sustainable Campus Fee program, the Tennessee Sustainable Design Guidelines for capital projects, the recycling program, etc. These programs and initiatives are effective but are also limited by economic factors such 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

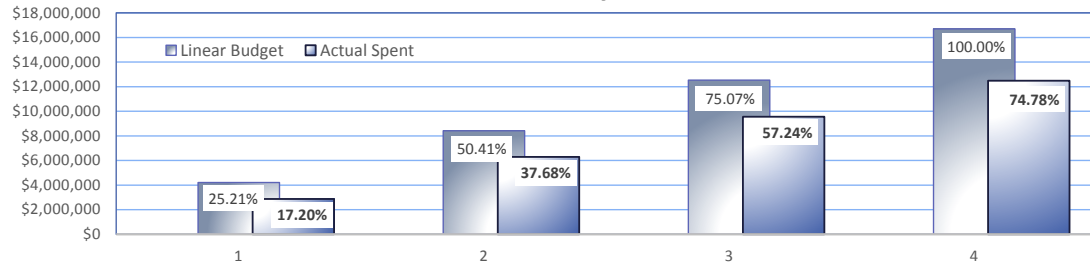
Although constrained by resources, we continue striving to maintain the campus in a safe, clean, and functional manner while aligning the department with the University mission and the Academic Master Plan. I want to express appreciation to the Facilities Services staff for their dedication and good 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



Education & General (E&G) Maintenance and Operations Budget FY 2015 - 2016 by Quarter

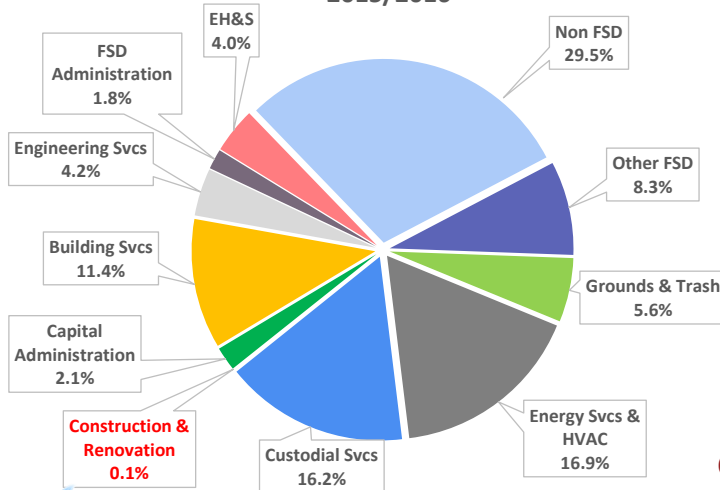


2015/2016	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Totals	% of Total
Total M & O Expenditures	\$ 4,909,630	\$ 4,595,662	\$ 4,112,346	\$ 5,203,177	\$ 18,820,815	
Work for Others	\$ (2,039,085)	\$ (1,176,647)	\$ (846,457)	\$ (2,276,185)	\$ (6,338,374)	34%
Net E & G Expenditures	\$ 2,870,545	\$ 3,419,015	\$ 3,265,889	\$ 2,926,992	\$ 12,482,441	66%
E & G Budget	\$ 16,692,478	\$ 16,692,478	\$ 16,692,478	\$ 16,692,478	\$ 16,692,478	
% of Budget	17.20%	20.48%	19.57%	17.53%	74.78%	

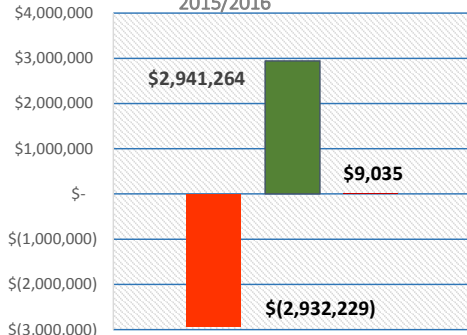
Accomplishments & Highlights 2015/2016

- Provided financial data for response to State of TN plan for Facilities Management Outsourcing
- Attended training for HR forms and ePEFs: prepare forms for all FSD new hires, terminations, & pay changes; staff attended leadership seminar
- Improved Auxiliary billing procedures to account for mixed building use
- Updated policies to comply with the FOCUS Act
- Supported the campus-wide MT Engage Quality Enhancement Program
- Continued improvement in ensuring the integrity of Facilities financial reporting and monitoring financial reporting using Argos
- Updated monthly and yearly allocations to Auxiliaries

Net E&G Expenditures for M&O Function 2015/2016



Construction/Renovation 2015/2016



Goals 2016/2017

- Update billing & reconciling processes for Motor Pool fuel charges after FuelMaster upgrade
- Seek new technological processes and integrate software to improve workflow and reduce redundancies
- Continue to enhance financial reporting by creating new reports for account analysis
- Develop plan for increasing the frequency of billing closed work orders
- Produce training video, procedure manual, PowerPoint presentation to train FSD employees on administrative processes
- Encourage employee development, training, and certification, including communication and team building

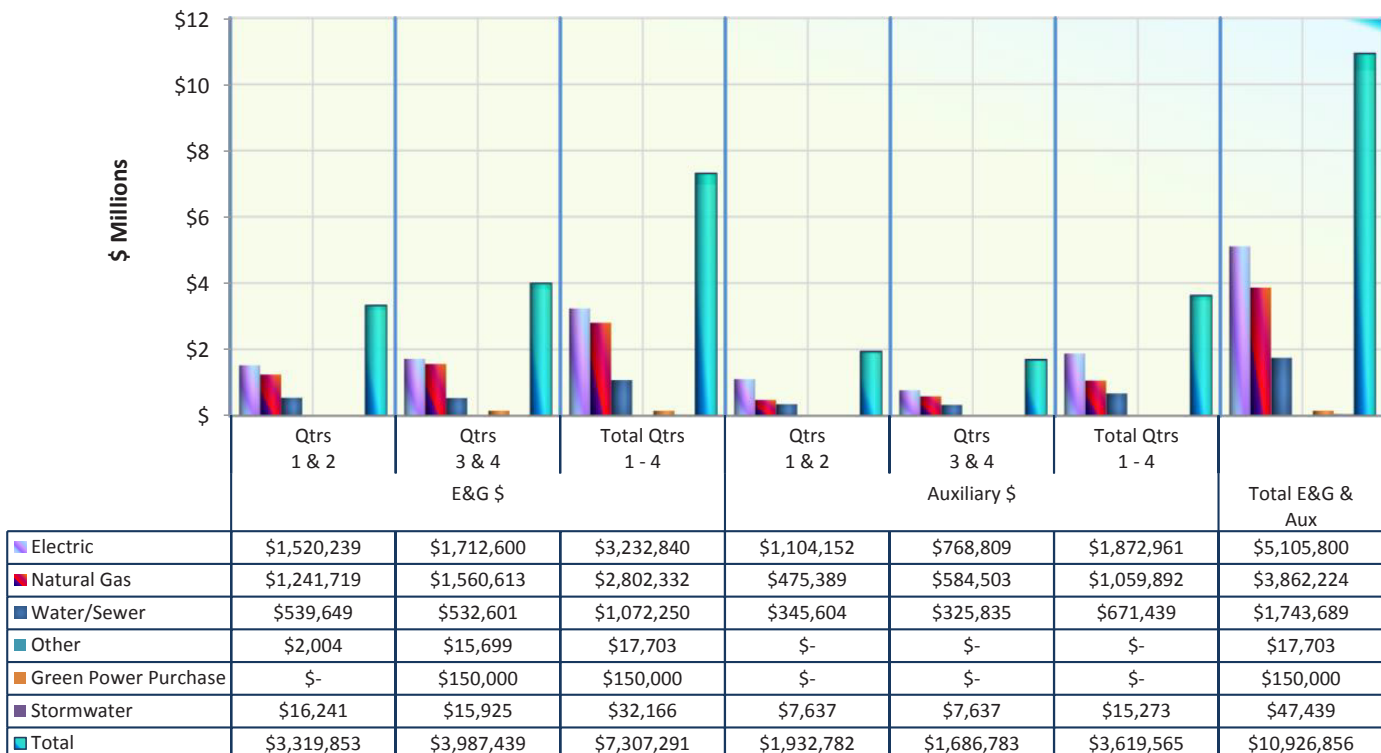
Accomplishments & Highlights 2015/16

- Negotiated annual utility related contracts with Tennessee Valley Authority and Murfreesboro Electric (Generation Partners, Green Power Purchase Agreement)
- Worked with underground electrical project pertaining to IDGS (Interactive Distributed Generation System)
- Supported property demolish projects related to utilities (Budget House, Haynes House)
- Updated TBR Facility Surveys for TBR and Construction Administration
- Worked with new Master Plan Development Committee
- Provided transition support for newly acquired Miller Education Center
- Offered intern position for Center for Energy Efficiency for Fall and Spring semesters
- Completed annual THEC and NCAA reporting
- Continued support of the MTSU Sustainable Campus Fee Committee (SCF) under Student Affairs
- Oversaw 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 14/15
- Attended SRAPPA (Baton Rouge)

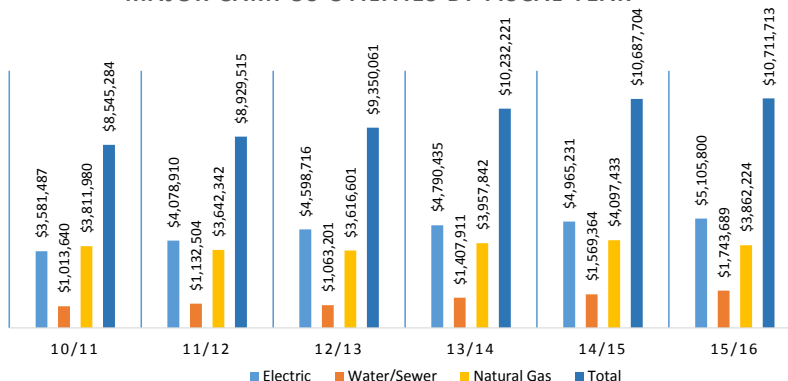
Goals 2016/17

- Support distributed generation changes, including opportunity for sale of equipment
- Support campus underground electric project and development of metering potentials
- Work on energy dashboard initiative
- Coordinate campus water meter replacements by Murfreesboro Water & Sewer Dept, part of city-wide meter upgrade
- Support utilities planning for newly renovated Davis Science and Wiser Patten
- Continue support of MTEngage on campus through internships, student workers, and volunteer opportunities
- Continue Focus Act participation and updates
- Continue to provide utility and energy management support and research to university departments
- 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 Engineering Technology, Honors, Chemistry, and other classroom instruction
- Continue training and professional development

Total Campus Utilities 2015/2016



MAJOR CAMPUS UTILITIES BY FISCAL YEAR



Recycling Program - MTSU Recycles

Linda Hardyman

Accomplishments & Highlights 2015/16

- Created two videos for promoting the recycling program
- Maintained recycling program to meet campus needs employing student workers
- Supported Construction/Renovation move-out projects in multiple buildings as requested
- Supported Campus Planning on major renovation recycling efforts, Davis Science, Wiser Patten, Cope
- Supported football season recycling in stadium and Students for Environmental Action (SEA) tailgating recycling efforts
- Oversaw installation of Sustainable Campus Fee (SCF) projects, including water refill stations, Big Belly solar trash compactors, dorm room recycling, solar umbrellas
- Outfitted newly renovated office spaces, including Miller Education Center and Veterans Center, for recycling
- Responded to 665 special requests for recycling on campus in addition to normal program tasks
- Supported MT Engage efforts
- Provided safety and diversity training for recycling staff
- Provided recycling for special events on campus per requests
- Utilized MTSU Sustainable Campus Fee project funds to improve recycling program appearance across campus; new and appropriate bin styles to encourage further recycling

Goals 2016/17

- 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
- Add the MTSU airport buildings (Jean A Jack and Lanier) to the Recycling Program
- Continue to support Campus Planning, Capital Construction, and Construction/Renovation projects
- Continue working with MTSU Sustainable Campus Fee Program for recycling project funding
- Explore new initiatives as the opportunity arises to grow the



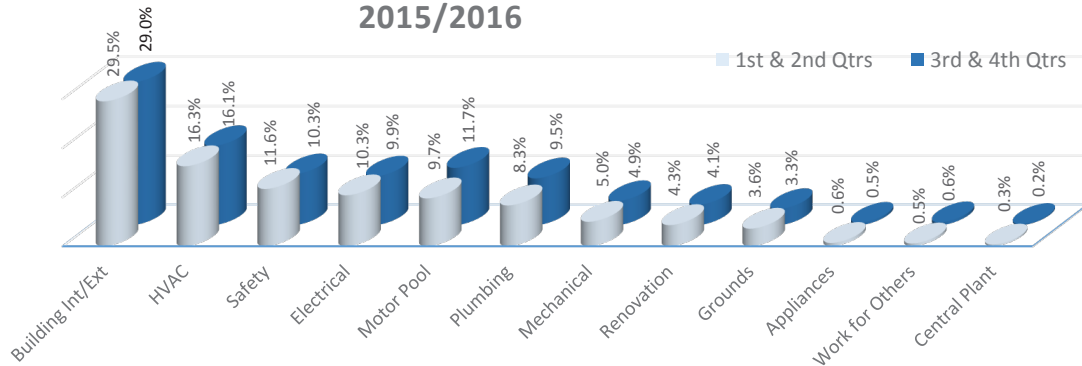
program and increase commodities collection while helping lower amount and cost of campus trash going to the landfill

- 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 training and development programs

MTSU Recycles!	
Commodity	2015/2016
	Pounds
Aluminum	7,265
Mixed/White Paper	401,344
Newspaper	192,612
Maintenance Metals	46,084
Cardboard	308,540
E-waste	60,500
Plastics	82,000
Units	
Batteries	645
Ink Cartridges	1,593
Pallets	1,408



WORK ORDERS ORIGINATED 2015/2016



Accomplishments & Highlights 2015/16

- Designed reports for new work orders metric reporting to focusing on work unit productivity
- Purchased new Mainsaver module to allow mobile access to database and ad-hoc reporting
- Designed and implemented process for tracking maintenance project costs
- Coordinated move of work orders office to newly renovated space in Haynes Turner
- Hired work order coordinator to assist with work order processing and customer service

Goals 2016/17

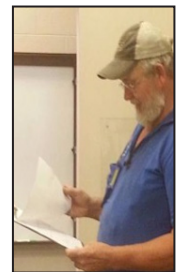
- Upgrade Mainsaver and Mainsaver Connect software to most recent versions
- Identify ways to integrate Mainsaver Connect into shop workflow
- Design Mainsaver training modules and present to directors, managers and supervisors using new whiteboard technology in HTB Conference Room
- Purchase and install new version of Crystal Report Writer to further enhance Mainsaver reporting capabilities



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

Work Unit	Index	Originated	Total #	Completed
Building Services	2-71109	1223	1,131	1,155
Custodial	2-74100	235	223	305
Energy Services	2-75209	776	717	117
Grounds Services	2-76109	91	86	26
Greenhouse	2-76200	26	21	9
Environmental Health & Safety	2-77200	494	462	10
Totals		2,845	2,620	320

Reports! Daily, monthly, yearly!



2015/2016 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%	20	0.5%	23	0.5%	23	0.5%	106	0.56%
Building Interior/Exterior	1,440	28.9%	1,292	30.2%	1,465	30.0%	1,382	28.1%	5,579	29.26%
Central Plant	16	0.3%	13	0.3%	9	0.2%	14	0.3%	52	0.27%
Electrical	512	10.3%	446	10.4%	536	11.0%	433	8.8%	1,927	10.11%
Grounds	212	4.3%	117	2.7%	128	2.6%	191	3.9%	648	3.40%
HVAC	883	17.7%	623	14.6%	812	16.6%	765	15.6%	3,083	16.17%
Mechanical	226	4.5%	233	5.4%	253	5.2%	224	4.6%	936	4.91%
Motor Pool	480	9.6%	420	9.8%	450	9.2%	692	14.1%	2,042	10.71%
Plumbing	367	7.4%	400	9.3%	498	10.2%	434	8.8%	1,699	8.91%
Renovation	242	4.9%	154	3.6%	169	3.5%	233	4.7%	798	4.19%
Work for Others	29	0.6%	21	0.5%	35	0.7%	21	0.4%	106	0.56%
Safety	537	10.8%	541	12.6%	506	10.4%	506	10.3%	2,090	10.96%
Total	4,984	100.0%	4,280	100.0%	4,884	100.0%	4,918	100.0%	19,066	100.00%

Central Administration: Employee Development Services

Connie Hagberg



Accomplishments & Highlights 2015/16

- Facilitated employee training sessions for FSD work units
- Served on FSD "Customer Service" initiative/training group
- Updated/refreshed Employee Development information on FSD homepage
- Assisted FSD AVP in performing daily and routine work tasks/assignments



Goals 2016/17

- Complete "Customer Service" training project; assist FSD Managers/Supervisors in presenting the training modules to their specific work units
- Continue to review specific cleaning tasks and grounds work, with overall focus on improved campus facility and grounds cleanliness and appearance
- Continue maintenance and productivity studies for FSD with emphasis on custodial services
- Attend professional development and leadership training



2015/2016 FSD Employees Training Records		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	2.0	11.0	0		0
-Accounting Information Services	5	5	20.5	86.5	4	13.5	0
-Employee Development	1	1	1.8	57.5	1	1.5	0
-Work Orders	4	4	6.4	0	4	11	0
Engineering Services							
-Director	1	1	21.8	0	1	0	3.5
-Center for Energy Efficiency	2	2	12.1	29.5	2	4.5	5.5
-GIS and Locating	1	1	1.3	0	1	3.5	0
-Key Shop	5	5	3.9	0	5	24.5	0
-Systems Engineering	1	1	1.8	0	1	3.5	0
Building Services	19	18	22	46	19	80.2	20
Construction Administration	4	4	5.7	0	4	10.5	0
Construction Renovation Services	4	4	32.2	0	4	8	0
Custodial Services	18	15	8.3	70	18	35	46.5
Energy Services/Utilities	18	8	10.6	0	16	58.9	0
Environmental Health & Safety	7	2	2.6	0	7	18.5	16
Grounds Services/Motor Pool	22	15	21	0	20	88.2	0
Totals	113	87	174	300.5	107	361.3	91.5

Number of Employees per Total Hours Trained	# 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		4		
Engineering Services					
-Director	1				1
-Center for Energy Efficiency	2			1	1
-GIS and Locating	1	1	1		
-Key Shop	5		5		
-Systems Engineering	1	1	1		
Building Services	19		15	3	1
Construction Administration	4		4		
Construction Renovation Services	4		2	2	
Custodial Services	18		17		1
Energy Services	18	2	16		
Environmental Health & Safety	7		6	1	
Grounds Services/Motor Pool	22		22		
Totals	113	4	94	11	6

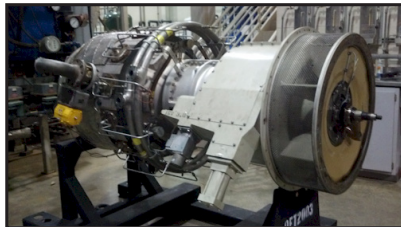
Accomplishments & Highlights 2015/16

- Managed 349 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 replaced major condensate leaks
- Replaced cooling towers at Main Central Plant
- Completion of main steam line replacement under physical plant upgrades
- Provided training to maintain compliance regarding confined space and code issues
- Completed safety training

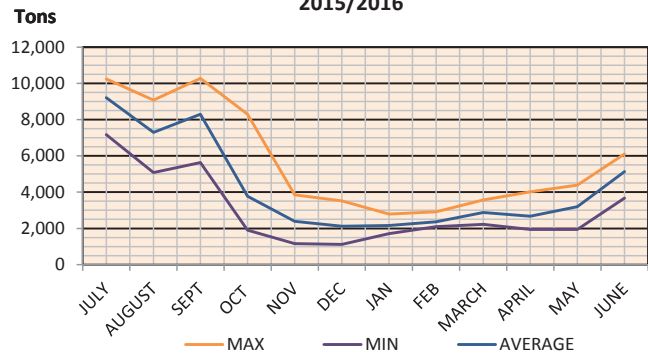
Goals 2016/17

- Replace economizer on energy recovery boiler
- Continue exploring recovery of loop system condensate
- Retube energy recovery boiler
- Upgrade of solar turbine/ boiler controls
- Upgrade of Walker Library, Floyd Stadium, and Miller Education Building EMS controls
- Replace condensate line from LRC to Forrest Hall
- Replace #4 chiller at main Chiller Plant
- Continue to support capital and construction/renovation projects on campus
- Continue to investigate training opportunities

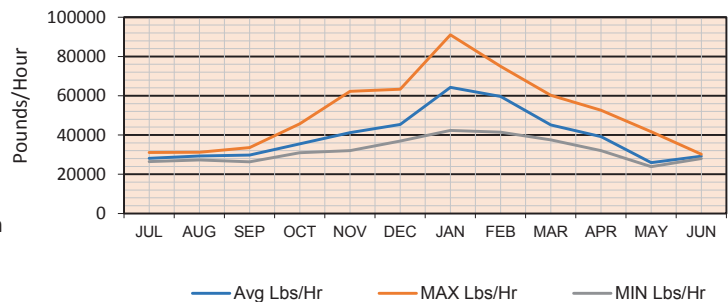
Turbine
Replacement
Project



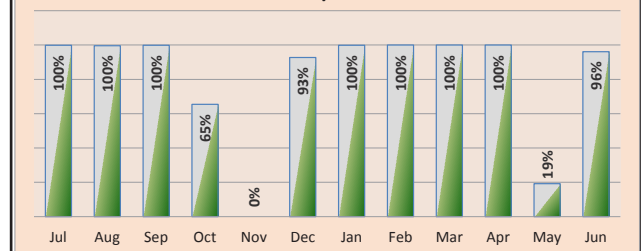
Chilled Water Tonnage 2015/2016



Steam Production 2015/2016



Turbine: Percent Runtime By Month 2015/2016



2015/2016 Central Plant Equipment Peak Operational Levels

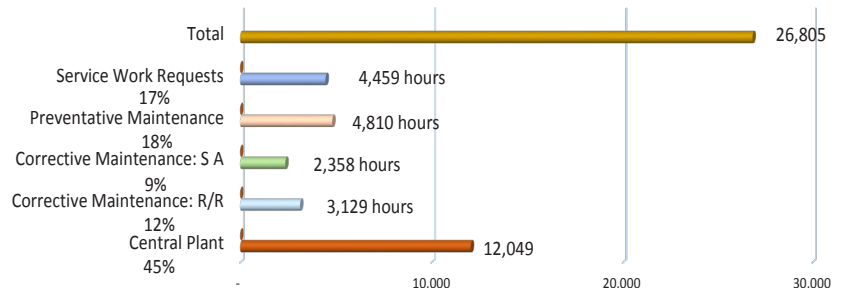
Natural Gas Fired Turbine/ Generator					Steam Boilers					Chillers				
5MW (nominal)					85,000 Pounds/Hour (peak)					10,500 Tons (peak)				
	Mid-Year	3rd Qtr	4th Qtr	Annual		Mid-Year	3rd Qtr	4th Qtr	Annual		Mid-Year	3rd Qtr	4th Qtr	Annual
Peak MW	5.5	5.6	5.2	5.6										
Ave MW	4.6	5.0	4.5	4.7	Ave LBS/ Hr	34,857	56,348	31,402	39,366	Max Peak Tons	10,276	3,574	6,111	10,246
Total MWH	15,479.5	10,934.6	7,063.8	33,478.0	Peak LBS/ Hr	63,375	91,042	52,583	91,042	Min Tons	7,174	2,221	3,677	1,119
Purchased power: 49,894.31 MWH														

Purchased power: 49,894.31 MWH

Accomplishments & Highlights 2015/16

- Managed 134 after hours callbacks
- Provided training to maintain compliance regarding confined space and code issues
- Support construction/renovation projects
- Replaced older motors with energy efficiency motors (TLC)
- Reviewed implementation procedures on services to auxiliaries and zone maintenance
- Supported sustainable campus fee projects
- Completed safety training

Energy Services
Total In-House Work Order Hours
2015/2016



Goals 2016/17

- Continue to support capital and construction/renovation projects on campus
- Continue to improve HVAC building air filtering systems
- Upgrade EMS controls at Walker Library, Miller Education Center, and Floyd Stadium
- Develop new projects for MTSU Sustainable Campus Fee
- Reduce work order completed past due percentage by addressing identified work flow and documentation process issues
- Continue to clean coils on campus to improve air quality and energy efficiency
- Improve customer service in HVAC department
- Participate in maintainability meetings with regard to HVAC issues
- Improve department processes
- Investigate new ways of saving energy on campus
- Continue to investigate training opportunities



Satellite Plant



Cooling Tower

Fiscal Year PERFORMANCE MEASURES: PREVENTATIVE MAINTENANCE & SERVICE

2015/2016		#Work Orders Completed	Man Hours	Avg Man Hours/WO	% Completed Past Due
PREVENTIVE MAINTENANCE (PM) REQUESTS	Appliances	21	14	0.6	0%
	HVAC	958	4245	4.4	18%
	Mechanical	617	552	0.9	42%
	Sub-total	1596	4810	3.0	27%
	Central Plant	13	2763	212.5	54%
Total		1609	7573	4.7	27%
SERVICE WORK ORDERS	HVAC	86	4420	51.4	38%
	Mechanical	13	39	3.0	77%
	Sub-total	99	4459	45.0	43%
	Central Plant	27	9284	343.8	44%
	Total	126	13743	109.1	44%

Fiscal Year PERFORMANCE MEASURES: Energy Services CORRECTIVE MAINTENANCE REQUESTS

2015/2016		#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	17	7	83	16	4.9	2.3	0%	14%
	HVAC	731	1137	2318	2157	3.2	1.9	9%	10%
	Mechanical	85	79	729	185	8.6	2.3	16%	14%
	Sub-total	833	1223	3129	2358	3.8	1.9	10%	10%
	Central Plant	5	10	2	16	0.4	1.6	0%	20%
Total		838	1233	3131	2157	3.7	1.7	10%	10%

Accomplishments & Highlights 2015/16

Systems Engineering

- Assisted construction phase of Davis/Wiser Patten renovation
- Provided oversight of departmental fume hood certification and maintenance of fume hoods
- Maintained HVAC air valve system for new Science Building
- Created emergency action plan for De-ionized water system
- Increased working knowledge of the operation and functionality of the fume hood systems as well as the de-ionized water system in the new Science Building

Key Shop

- Completed 1,568 work orders including core replacements, door repairs, card key installations, access control system updates, etc.
- Cut a total of 2,816 keys for Residential Life and Construction Administration/Renovation projects
- Completed the installation of the Key System and Card Access for the Miller Education Center capital project
- Re-Keyed House 3, Warehouse, and a portion of AMG. Also, changed the master keying at the Stadium open air boxes
- Added wireless on-line card outside door access to the remaining two houses (House 5 and 8) at Greek Row
- Brought card readers online at Wiser-Patton which brought the campus to a total of 831 card access doors campus wide

GIS and Locating

- Completed over 600 Tennessee One Call tickets for MTSU properties with less than 5% damage to infrastructure
- Updated and revised the GIS infrastructure map as new and demolished utilities were affected on campus
- Assisted in the completion of the underground electrical project and the installation of the new emergency generator at the Cope Building

Elevators & Generators

- Initiated and completed upgrades to all elevators to raise code compliance from the older ASME A17.1-1996 code to the newer, more stringent 2010 version of the ASME code. Upgrades included adding required signage, heat detectors, fire extinguishers, lighting, and door restrictors
- Implemented a protocol to test the elevator ADA phone systems every month and to test the elevator fire evacuation systems semiannually to assure the reliability of the components
- 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 on campus
- Provided regular testing and inspection of campus emergency generators and completed minor repairs to reduce overall maintenance costs

Goals 2016/17

Systems Engineering

- Continue to implement and monitor necessary preventative maintenance activities to care for the new Science Building
- Install safety equipment for authorized personnel to access roof
- Support commissioning phase of Davis/Wiser Patten renovation

Key Shop

- Transition from Stanley Keystone 600N key track software to SimpleK Key Tracking
- Provide required support of capital projects at the Davis Science/Wiser Patton as they approach completion

GIS and Locating

- Improve efficiency and use of the new Trimble Yumas with the ArcGIS system
- Provide training for additional personnel in the Facilities Services Department in the use of the GIS navigational equipment

Elevators & Generators

- Incorporate new requirements for ADA phone communication lines in the campus standards for greater reliability of systems
- Initiate targeted auditing of highly trafficked elevators on campus to reduce downtime and entrapments
- Provide assistance for replacement of back-up generators serving Telecommunications Systems on campus

PERFORMANCE MEASURES: Engineering Services

2015/2016		# Work Orders Completed		% Completed Past Due	
CORRECTIVE MAINTENANCE (CM)		Mid-Year	Annual	Mid-Year	Annual
	Keyshop	283	612	8.1%	8.3%
	Locating/GIS	78	193	9.0%	4.1%
	SCI BLDG	0	1	0.0%	0.0%
	Total	361	806	8.3%	7.3%
PREVENTIVE MAINTENANCE (PM)		Mid-Year	Annual	Mid-Year	Annual
	Keyshop	0	1	0.0%	100.0%
	Locating/GIS	101	265	33.7%	25.3%
	SCI BLDG	0	7	0.0%	28.6%
	Total	101	272	33.7%	25.4%
SERVICE WORK ORDERS		Mid-Year	Annual	Mid-Year	Annual
	Keyshop	474	969	8.2%	6.5%
	Locating/GIS	60	145	13.3%	13.1%
	SCI BLDG	2	5	50.0%	40.0%
	Total	536	1119	9.0%	7.5%

Accomplishments & Highlights 2015/16

- The EH&S Laboratory Safety Inspection Program provides the opportunity to identify safety issues and concerns associated to research labs, teaching labs and shops. Laboratories' safety audits performed to ensure compliance with local, state and federal regulations such as OSHA, NFPA, NRC, TDEC, ANSI standards included a total of 208 lab inspections. The following departments and number of labs are inspected semi-annually:
 - Chemistry Department: 30 labs
 - Biology Department: 41 labs
 - Physics Department: 5 labs
 - Arts Department: 12 labs
 - Geophysics Department: 2 labs
 - Agricultural Science Department: 6 labs
 - Engineering Department: 6 labs
 - Concrete Management: 2 labs
- Radioactive material license supervised under the EH&S Radiation Safety Program with the Tennessee Department of Environment and Conservation (TDEC), Division of Radiation Safety authorizes the purchase, possession, use and storage of radioactive material. Highlights of this year's activities include:
 - Provided annual radiation safety training to both Facilities Services and Campus police
 - Developed campus wide fire drill procedure approved by the EH&S campus committee to be conducted annually for all non-residential buildings on campus
 - TDEC conducted (1) a radioactive safety inspection in December of 2015 with no items of non-compliance found; (2) two Low Level Radioactive Waste (LLRW) inspections in 2016 with no items of non-compliance found
- In addition to life safety systems testing conducted by Simplex Grinnell, EH&S instituted annual testing of the smoke evacuation systems involving a system wide check of the HVAC, Building Automation System, elevators, and life safety systems. Completed smoke evacuation systems testing on 6 buildings: New Science Building, Student Union, College of Education, Bragg Media and Entertainment, Walker Library, and the Miller Education Center
- Stormwater Program- completed \$10,000 Sustainable Campus Fee Project for bank stabilization

PERFORMANCE MEASURES: Environmental Health & Safety

2015/2016		Corrective Maintenance (CM)	Preventive Maintenance (PM)	Service Work Orders	Work Orders Completed	Program Total
EH&S	Mid-Year	2	236	51	289	2,653
	Annual	3	475	104	582	
Safety Systems	Mid-Year	48	860	138	1,046	
	Annual	90	1,727	254	2,071	

Goals 2016/17

- Complete update of the MTSU Campus Safety Handbook
- Complete update of the MTSU Emergency Operations Plan
- Incorporate latest updates and revisions into the EH&S website
- Implement new online training module system including new and updated content
- Continue working with MT Engage for student involvement and participation for the Stormwater Program
- Continue with online and departmental training throughout the year

Annual Lab Clean-out



Training Modules



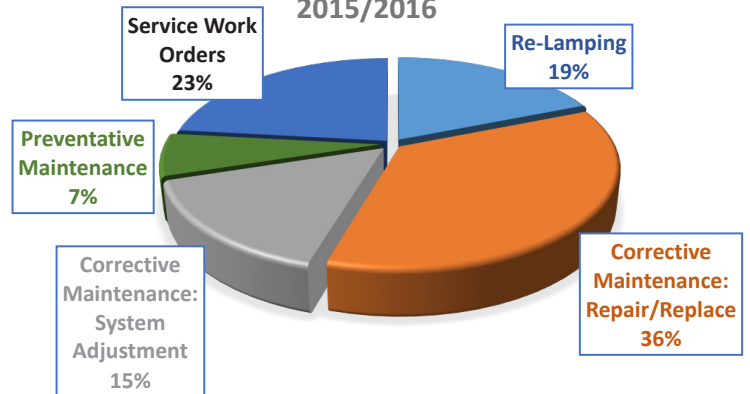
STORMWATER PROGRAM ACTIVITIES 2015/2016

Targeted Education	
Events (stream cleanups, tree plantings, tree day, rain barrel workshops)	7
Trash removed - lbs.	770
Invasive plants removed	14,649
Participants signed up for volunteer list	934
Number of volunteers	1,214
Trees planted/given out	988
Mailouts to residents	66
Door hangers to residents	149
By the numbers - Targeted	18,777
General Education	
Overall Events (Booths and workshops)	16
Classroom visits	8
TV ads played	547
Educational Print media	1,216
Promotional items distributed	1,159
Overall public educated/served	5,507
MTSU Customs Events	10
Training	945
By the numbers - General Education	9,408

Accomplishments & Highlights 2015/16

- Minimized departmental expenditures promoting the purchase of equipment
- Supported and contributed to Capital Construction and Construction/Renovations projects – document reviews and project implementation
- Replaced 1348 campus fire extinguishers as part of Safety protocol
- Updated multiple fire panels and devices to improve reporting abilities
- Various staff actively participated in educational opportunities

**BUILDING SERVICES
ANNUAL IN-HOUSE MAN HOURS
2015/2016**



Goals 2016/17

- Continue to improve inter-departmental and campus customer relations
- Minimize departmental expenditures while maximizing budget
- Advance promotion of work place safety
- Promote replacement/upgrade of life safety equipment
- Advertise and fill vacant positions
- Develop educational training opportunities for staff
- Participate in the TNAPPA/ SRAPPA/ APPA Conference in Nashville, Tennessee

Student Services and Admissions Building



Fiscal Year PERFORMANCE MEASURES: PREVENTATIVE MAINTENANCE & SERVICE

2015/2016		#Work Orders Completed	Man Hours	Avg Man Hours/WO	#Closed past due
PREVENTIVE MAINTENANCE (PM) REQUESTS	Building Interior/Exterior	425	631	1.5	105
	Electrical	190	88	0.5	17
	Plumbing	218	559	2.6	35
	Total	833	1,278	1.5	157
SERVICE WORK ORDERS	Appliances	5	25	4.9	0
	Building	1,722	2,264	1.3	502
	Electrical	15	24	1.6	2
	Plumbing	20	184	9.2	5
	Renovation	745	1,920	2.6	31
	Sub-total	2,507	4,416	1.8	540

Fire Extinguisher Inspections



Fiscal Year PERFORMANCE MEASURES: Building Services CORRECTIVE MAINTENANCE

2015/2016		#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	18	20	49	85	2.7	4.2	17%	5%
	Building Interior/Exterior	940	579	3,790	1,745	4.0	3.0	21%	12%
	Electrical	168	411	678	602	4.0	1.5	7%	6%
	Plumbing	1,117	289	2,268	514	2.0	1.8	4%	8%
	Sub-total	2,243	1,299	6,783	2,945	3.0	2.3	12%	9%
	Re-Lamping	792	11	3,567	23	4.5	2.0	10%	18%
	Total	3,035	1,310	10,350	2,967	3.4	2.3	11%	9%

Accomplishments & Highlights 2015/16

- Completion of Flight Simulator Building, Central Plant Chiller/Tower Replacement and Midgett Air Handler Replacement
- Completion of Miller Education Building renovation
- Completion of final phase of underground electrical project
- Continued participation in APPA Educational opportunities
- Continued participation in improvement of storm water efforts on capital construction projects
- Continued improvement efforts on Campus Standards

Goals 2016/17

- Update Campus Standards with maintainability component
- Continued cooperation efforts with Murfreesboro City Departments and Utilities
- Continued participation in APPA and other education opportunities
- Continue efforts towards better customer and campus communications



New Sub-station

Construction Administration Capital Project Summary

2015/2016	1st Qtr		2nd Qtr		3rd Qtr		4th 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	8	\$ 28,015,884	10	\$ 28,272,934	6	\$ 22,100,425	5	\$ 22,640,912	8	\$ 28,015,884
Added Projects	3	\$ 957,050	1	\$ 225,000	2	\$ 1,450,383	1	\$ 577,500	7	\$ 3,209,933
Completed Projects	1	\$ 700,000	5	\$ 6,397,509	3	\$ 909,896	2	\$ 2,087,365	11	\$ 10,094,770
Ending Active Projects	10	\$ 28,272,934	6	\$ 22,100,425	5	\$ 22,640,912	4	\$ 21,131,047	4	\$ 21,131,047

2015/2016 Capital Projects Review

	New Projects	Completed Projects
July - September	<ul style="list-style-type: none"> ✓ Midgett AHU Replacement ✓ Health Services Reroof ✓ Stark Ag Envelop Repair - Phase 2 	<ul style="list-style-type: none"> ✓ Flight Simulator Building
October - December	<ul style="list-style-type: none"> ✓ Student Union Food Court Renovation - Steak & Shake 	<ul style="list-style-type: none"> ✓ Warehouse Building Renovation ✓ Health Services Reroof ✓ Saunders Fine Arts HVAC Updates ✓ Chiller & Tower Replacement ✓ Bell Street Renovation
January - March	<ul style="list-style-type: none"> ✓ Corlew & Cummings Elevator Replacements ✓ Parking & Transportation Improvements 	<ul style="list-style-type: none"> ✓ Student Union Food Court Renovation - Steak & Shake ✓ Steam/Condensate Line Upgrade ✓ Midgett AHU Replacement
April - June	<ul style="list-style-type: none"> ✓ Chiller Replacement 	<ul style="list-style-type: none"> ✓ Underground Electrical - Phase 3 ✓ Stark Ag Envelop Repair - Phase 2



Miller Education Building

Accomplishments & Highlights 2015/16

- Construction/Renovation completed approximately 127 projects and managed more than \$3,200,000 worth of products and services during the course of those projects.
- Major renovations include:
 - Haynes-Turner renovation for Facilities Services personnel
 - College of Business – Financial Analysis Center
 - College of Business – Stock ticker additions to BAS and MEC
 - New Charlie and Hazel Daniels Veterans and Military Family Center
 - University Police renovations at University Heights and Miller Education Center
 - Bragg Media and Entertainment Building lighting upgrade
 - Greek Row – House #8 renovation
 - Multiple master classroom conversions and equipment upgrades
 - School of Nursing – Video recording technology in multiple classrooms
 - College of Education – Center for Educational Media – classroom and media upgrades
 - Chamber of Commerce – Conference media upgrades
- Our student designer, Kat Harrell, graduated and is employed at prestigious firm in Memphis, TN.
- Hired new student designer as part of the work-study scholarship program.
- Attended APPA Institute for Facilities Management and Supervisor's Toolkit

Goals 2016/17

- Complete departmental paperwork flow process to be published for other shops to use when tracking Special Project requests
- Work with in-house shops on more project-based jobs
- Hire new project manager/coordinator for permanent, full-time work
- Attend TNAPPA, SRAPPA, and APPA conferences
- Successfully complete major renovations:
 - Cope Administration spaces for new Board of Trustees and ITD Administration
 - MT-Engage central office in James Union Building
 - Coordinate back-fill projects in Peck Hall, KOM, AMG, SAG, etc.
 - Plan and begin major renovation for Speech Clinic relocation

BAS Financial
Analysis Center-
Stock TickerCharlie and Hazel Daniels
Veterans and Military
Family Center

Construction/Renovation Project Summary

	1st Qtr		2nd Qtr		3rd Qtr		4th Qtr		Annual Totals	
	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects	# Projects	Value of Projects
2015/2016										
Beginning Active Projects	231	\$1,066,761	227	\$209,566	218	\$57,441	238	\$453,234	231	\$1,066,761
Added Projects	38	\$484,146	17	\$436,798	53	\$1,266,866	48	\$777,033	156	\$2,964,843
Completed Projects	42	\$1,341,341	26	\$588,923	33	\$871,073	26	\$486,678	127	\$3,288,015
Ending Active Projects	227	\$209,566	218	\$57,441	238	\$453,234	260	\$743,589	260	\$743,589

Accomplishments & Highlights 2015/16

- Developed and implemented a new winter trimming/pruning schedule for trees, shrubs, and bushes which has improved our ability to manage landscaping on campus
- Developed and implemented a weed control/fertilizer program for academic core and other areas of campus; turf has dramatically improved in these areas
- Began re-landscaping of areas around campus to require less maintenance and improve overall look of campus; areas include southwest side of Corlew and south side of Walker Library
- Developed and implemented a pre-emerge/mulch strategy on landscape beds to improve weed control
- Performed another round of sidewalk grinding to

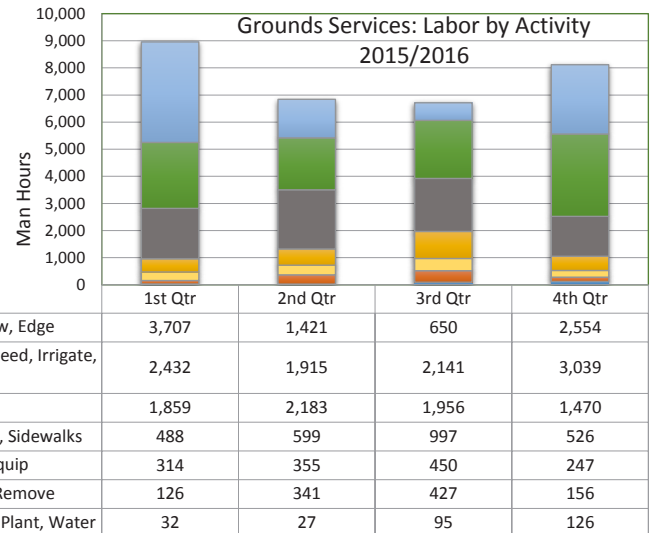
remove small imperfections and uneven spots on sidewalks and installed new sidewalks in multiple areas around campus

- Began new organic fertilizer program on athletic fields
- Worked with Biology Department to install a butterfly garden at the New Science Building
- Achieved Tennessee Arboretum Certification Level 1
- Continued training and attended APPA

Roundabout Landscaping



New Sidewalk at Corlew



PERFORMANCE MEASURES: Grounds Services

2015-2016	#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	22	38	89	202	4.0	5.3	4.5%	7.9%
Preventive (PM)	8	13	30	61	3.8	4.7	0.0%	0.0%
Corrective (CM)	14	25	59	141	4.2	5.6	7.1%	12.0%
Service	313	637	3,615	58,831	11.5	92.4	17.6%	19.5%
Routine	313	599	3,615	37,053	11.5	61.9	17.6%	20.7%
Annual	0	38	0	21,778	0.0	573.1	0.0%	0.0%
Total	335	675	3,704	59,033	11.1	87.5	16.7%	18.8%

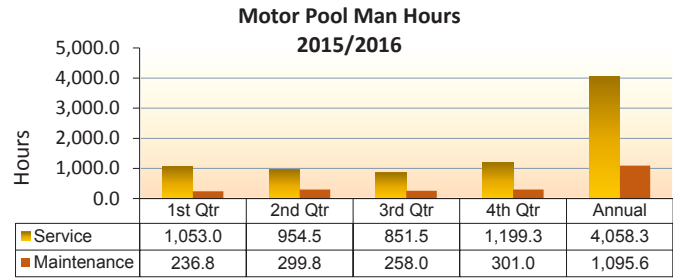
Goals 2016/17

- Continue re-landscaping projects around campus to help improve curb appeal and maximize efficiency of landscaping maintenance
- Continue weed control/fertilizer program to help improve turf around campus and develop a plan to aerate these areas as well
- Refine snow removal plan and look for more efficient ways/equipment to deal with ice removal
- Work with Biology Department and Campus Planning to finish creating tree inventory list
- Evaluate and begin plan to improve irrigation systems on campus
- Continue required training and seek more training opportunities for staff
- Continue to provide design review on new construction projects



Accomplishments & Highlights 2015/16

- Upgraded motor pool fleet by replacing several older vehicles with new ones
- Successfully continued on site emissions testing. Performed annual fuel tank cleaning and maintenance
- Worked with TDEC Division of Underground Storage Tanks to ensure our tanks were in compliance with all EPA regulations
- Installed new Fuel Master system for tracking vehicle fuel fill-ups on campus
- Attended training



Goals 2016/17

- Continue monitoring and cleaning of underground storage tanks
- Upgrade shop equipment to keep up to date with the newest technology on vehicles
- 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

2015-2016	#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	486	1080	537	1,096	1.3	1.6	11.3%	7.2%
Preventive (PM)	481	1071	536	1,091	1.1	1.0	11.4%	7.3%
Corrective (CM)	5	9	1	5	0.2	0.6	0.0%	0.0%
Service	472	977	2,008	4,058	4.3	4.2	28.8%	28.0%
Total	958	2057	2,545	5,154	2.7	2.5	19.9%	17.1%

Custodial Services

Connie Hagberg David Feagans Brenda Wunder

Accomplishments & Highlights 2015/16

- Service for the renovated Miller Education Center, Spring Semester
- Worked closely with Custodial Services contract administration to ensure terms firmly upheld
- Coordinated special event/conference cleaning requirements with contractor and in-house Custodial Services
- Updated/refreshed Custodial Services information on the FSD homepage
- Completed safety and administrative training sessions



Goals 2016/17

- Ensure custodial contractor service is completed according to contract terms
- Inspection of facilities for cleanliness according to Cleaning Standards & Frequencies
- Continue productivity studies of in-house custodial service; review and finalize plans for in-house custodial assignments for building service

E&G Space 2015/2016	Gross Square Feet	Cleanable Square Feet	% Cleanable Square Feet
Facilities Services Department			
In-house	499,749	154,218	7%
Contract Labor	2,346,073	1,689,522	72%
Murphy Center Complex			
In-house	0	0	0%
Contract Labor	606,239	502,312	21%
Total	3,452,061	2,346,052	100%

Facility Assessment: Education and General Use Facilities

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

2014 - 2015	Priority	Project Name	FY 14/15 Request	Appropriated Funding
	1	Absorption Chiller/Tower Replacement	\$ 1,320,000	\$ 1,320,000
	2	Several Buildings Electrical Equipment Upgrade	\$ 1,300,000	\$ -
	3	Several Buildings Exterior Renovations	\$ 1,320,000	\$ -
	4	HVAC Control Upgrade	\$ 915,000	\$ -
	5	Domestic Water/Sewer Systems Updates	\$ 610,000	\$ -
	6	Peck Hall HVAC Updates Phase II-VAV	\$ 1,115,000	\$ -
	7	Jones Hall Plumbing Upgrade	\$ 1,300,000	\$ -
	8	Campus Stormwater BMP	\$ 715,000	\$ -
	9	Sidewalk Repair/Replacement	\$ 500,000	\$ -
	Total:		\$ 9,095,000	\$ 1,320,000

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	\$ 2,700,000	\$ -
	2	Steam, Condensate & Manhole Repair/Replacement	\$ 1,900,000	\$ -
	3	Keathley University Cntr Mechanical/HVAC Upgrades	\$ 1,750,000	\$ -
	4	Several Buildings Roof Replacement	\$ 1,790,000	\$ -
	5	Several Buildings Elevator Modernizations	\$ 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:		\$ 18,646,000	TBD

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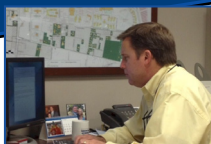
FSD Staff Involvement 2015/2016

	Attended APPA 2015 - Chicago, IL
	Joe Whitefield, Gerald Grimes
	Facility Manager Magazine
	Joe Whitefield - Columnist
	Institute for Facilities Management
	Amanda Witt - July 2016 Brenda Wunder - January 2016
	Supervisor's Toolkit
	Terri Carlton Ashley Sisco
	SRAPPA 2015 - Baton Rouge, LA
	Officer - Gerald Grimes- Emerging Professionals Committee Rep Attendees - Gerald Grimes, Linda Hardyman, Connie Hagberg, Reggie Floyd

	TNAPPA
	Current Officer Secretary/Treasurer - Gerald Grimes
Upcoming in 2016/2017 Tri-Appa Conference - Nashville - Joint conference with APPA, SRAPPA, TNAPPA	



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**

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

enabling leadership

enabling leadership

Leadership and Virtues—Patience

enabling leadership

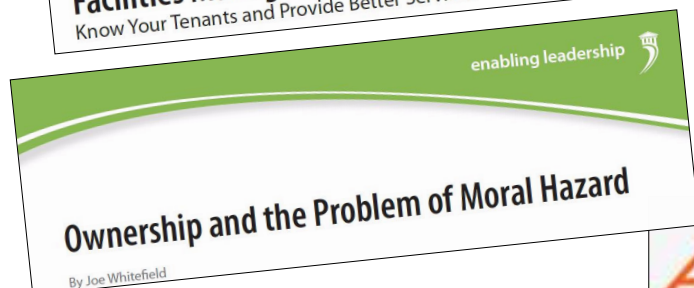
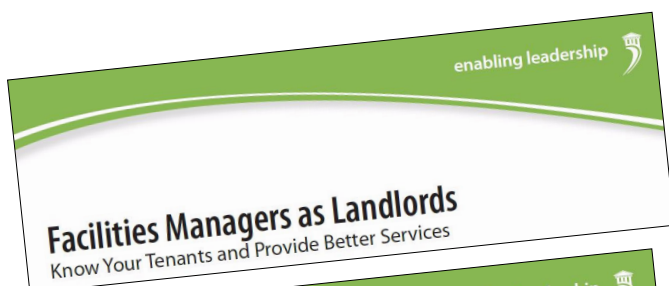
Leadership and Virtues—Justice

By Joe Whitefield

"EVERYONE HAS A BASIC SENSE OF FAIRNESS THAT IS A FOUNDATION FOR HIS OR HER VIEW OF JUSTICE."



16 SEPTEMBER/OCTOBER 2016 FACILITIES MANAGER



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	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Totals
Green Power Purchase	\$ 220,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 2,050,000
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)	\$ 13,000	\$ 41,000									\$ 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
Biofuels- Ultrasonic Generator Research										\$ 6,360	\$ 6,360
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								\$ 13,066	\$ 2,100	\$ 3,089	\$ 18,255
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 (AMG, Mass Comm, Forest Hall, Voorhies, JUB, Fairview, KUC, Telecomm, BDA, Wiser Patten, TN Livestock Cntr, McFarland, Murphy Center, CKN, KOM)			\$ 10,288	\$ 7,490	\$ 17,516	\$ 4,100	\$ 20,157	\$ 15,100			\$ 74,651
'Clickable' Polymers							\$ 600				\$ 600
Closed loop sediment filtering system multiple buildings (KUC, Walker Library, Murphy Cntr, Todd, Stark Ag, VET, LRC, Mass Comm, Jones, Cope, Cason Kennedy; EHS, BDA, BAS, Wright, other buildings)		\$ 12,000	\$ 28,900	\$ 30,900	\$ 30,900	\$ 15,450	\$ 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		\$ 6,000
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- New Science Building, Jones, Fairview, Mass Comm, Cason Kennedy, Horse Science, Holmes, Wright Music, ROTC, COE, Honors, Public Safety								\$ 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
Hot/chilled water valve assessment		\$ 5,000									\$ 5,000
HVAC controls replacement Wright Music	\$ 29,950										\$ 29,950
HVAC pocket filter project (BAS Phase 1 & 2, JUB Phase 1 & 2, Walker Library Phase 1 & 2, Honors, DSB, Todd, McFarland, Stark Ag, LRC, Holmes, COE, Murphy Center first floor, Photography, Peck; BDA)			\$ 6,250	\$ 41,507	\$ 19,250	\$ 25,806	\$ 40,235	\$ 4,801			\$ 137,849
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 on the 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- DSB, WPS, SFA, Wright Music, Ellington, Murphy Center, Stark Ag, McFarland, AMG; Todd, TLC, CKN, Midgett; Mass Comm, Peck, Cogen Plant (3 phases); JUB						\$ 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			\$ 20,000	\$ 21,000	\$ 21,708		\$ 47,000	\$ 32,500	\$ 26,000	\$ 25,000	\$ 193,208

(Continued on page 23)

(Continued from page 22)

Recent SCF Funded Projects:

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



Recycling Bins



Water Refill Stations



Big Belly Solar Trash Compactors



Tailgate Recycling

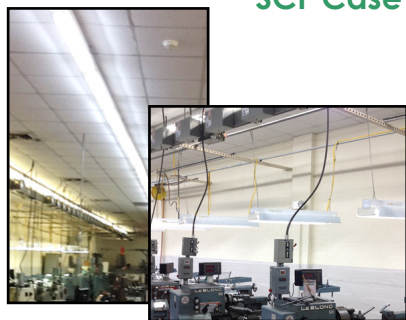


Solar Umbrellas with Charging Stations

MTSU Sustainable Campus Fee (SCF) Program - Continued

Approved Projects	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Totals
Kenaf Agriculture for Sustainable Community (alternative energy crop)			\$ 5,935								\$ 5,935
Lamp crusher	\$ 4,000				\$ 5,681						\$ 4,000
Laser alignment devices											\$ 5,681
Light switch plate labels	\$ 2,500										\$ 2,500
Occupancy Sensors Honors Building			\$ 3,372								\$ 3,372
Permeable Pavers for Sustainable Learning Environment (Forest Hall)			\$ 13,050								\$ 13,050
Poster campaign and Earthwise reusable bag project		\$ 18,160									\$ 18,160
Re-caulk exterior windows (Davis Science Building)		\$ 14,000									\$ 14,000
Recycling - community drop-off relocation/expansion	\$ 3,000										\$ 3,000
Replace older motor with energy efficient motor in Holmes; Wright Music; Stark Ag; Murphy Center Phase 1 & 2; Livestock						\$ 2,279	\$ 5,300	\$ 26,180		\$ 10,784	\$ 44,543
Replace Older Pump with Energy Efficient Pump- KUC									\$ 5,424		\$ 5,424
Replace use of Helium and 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		\$ 35,000	\$ 25,000								\$ 60,000
ReRev Cardio System elliptical machines in Rec Center				\$ 30,000							\$ 30,000
Self Sustainability Initiative through 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 Forres Hall; Ellington Human Science						\$ 28,932					\$ 28,932
Solar- Big Belly solar trash compactor pilot program									\$ 12,000	\$ 11,094	\$ 23,094
Solar boat project								\$ 6,165			\$ 6,165
Solar- Patio Umbrellas										\$ 4,500	\$ 4,500
Solar- Purchase of organic dyes to be used 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; Bioremediation Ponds on MTSU Campus for MS4 Compliance/Maintenance; Bank stabilization; Parking lot run-off				\$ 3,000		\$ 4,000	\$ 3,000		\$ 10,000	\$ 18,859	\$ 38,859
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 project								\$ 3,000	\$ 500	\$ 5,000	\$ 8,500
Turning manure into gold				\$ 1,000							\$ 1,000
Ultrasonic transmitters Middgett			\$ 18,130								\$ 18,130
Variable Frequency Drive- Jones Hall; Walker Library							\$ 5,225		\$ 9,800	\$ 7,490	\$ 22,515
Water Conservation for Rural & Urban Citizens										\$ 25,000	\$ 25,000
Water Refill Stations- SGA Resolution 7-14-F- BAS, COE, Student Union, AMG, Murphy Center, Saunders, Jones, Peck, KOM, LRC, Rec Center								\$ 3,400	\$ 6,132	\$ 20,053	\$ 29,585
Y-pattern Valve Changeout- Cogen Plant									\$ 7,600		\$ 7,600
Annual Total:	\$ 347,000	\$ 425,704	\$ 394,985	\$ 458,162	\$ 508,292	\$ 460,266	\$ 510,417	\$ 440,810	\$ 434,356	\$ 376,377	\$ 4,356,369

SCF Case Study: VET 108



Lathe lighting after the replacement

The Sustainable Campus Fee committee funded a project to replace the existing lighting in Voorhies Engineering Technology 108 with an LED lamp rated for machine shop applications. The proposed technologies were to replace existing 3500K T-8 lamps and ballasts with a 4000K LED lamp and electronic ballast. The benefits of this project include improved visibility for students working on projects, maintainability and efficiency for Building Services staff, and a decrease in energy consumption.

Previously, Building Services staff were frequently being contacted to replace lamps and/or ballasts. The LED and electronic ballast installation provided an anticipated 50,000-hour life rating correlating to 10 years as opposed to the standard 4 years. Operational cost for a twelve-hour period for the newly installed LED's use 1.53 KW of energy costing \$0.15 per day. In contrast, the T-8 fluorescent lamps used 5.76 KW of energy with a daily operating cost of \$0.58 per day. Projected savings is estimated to be \$5,256.00 annually.



Summary of Services 2015/2016 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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