

*Middle Tennessee State University  
Facilities Services Department*

# Summary of Services

## Annual Report *July 2012 — June 2013*



**FACILITIES SERVICES DEPARTMENT**

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October 2013





**MIDDLE  
TENNESSEE**  
STATE UNIVERSITY



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Facilities Services is a department reporting to Senior Vice President John W. Cothorn of the Division of Business and Finance.



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# Assistant Vice President's Summary

David Gray

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**F**iscal Year 12/13 has concluded and FY 13/14 is underway. Campus growth and aging facilities continue to be drivers for Maintenance and Operations (M&O) and utilities. New facilities and new road and infrastructure projects add to the utility and M&O requirements for Facilities Services. In addition, the existing facilities and infrastructure continue the normal aging process which also increases the utility and M&O requirements.

The M&O budget for Educational and General facilities has remained fairly flat straining the departmental resources and personnel. To that end, Facilities Services provides constant attention to productivity management, innovation, informed decision making, and effective communication in serving the campus community.

This report highlights many accomplishments in FY 12/13 for the department, updates the O&M and capital budget situations, and revises deferred capital renewal projections. The following is a sample of the Accomplishments and Challenges.

## Accomplishments

### Performance Metrics

The Summary of Services report from the previous FY identified a combined total of 83 individual goals across the departmental work units for the FY 12/13. Overall, 75 of the goals were completely met or had substantial progress toward their completion providing for a success rate of approximately 90.4%.

### Capital Projects and Construction Renovation Projects

- 10 capital construction projects were completed totaling \$87.4 million
- 171 renovation projects were completed totaling \$3.9 million
- The Student Union Building is operational
- Construction on the Science Building and the Student Services Building has progressed
- Construction of two Parking Garages was completed

### Customer Service and Communication

- All work units combined to complete just over 17,200 work orders for the year
- Facilities Services provided an updated brochure to academic and administrative personnel that outlines campus maintenance and operations and work order processing



### Management and Productivity

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

### Energy Management

- The TN Sustainable Design Guidelines are used to design energy efficiency and sustainability features into capital projects
- Facilities Services applies for and has been awarded numerous Sustainable Campus Fee projects to improve energy efficiency and sustainability of several existing facilities across 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

### 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

(Continued on page 4)

*The FSD Mission: To maintain the facilities and grounds and present them to the University 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)

been fairly flat over the years. FY 12/13 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 need of approximately \$12 million just to remain level.

**In FY 12/13, MTSU received \$5,320,000 for capital maintenance.** This under funding of capital maintenance accumulates over time to a condition referred to as "deferred capital renewal." Deferred capital renewal puts an increased burden on the M&O needs because systems that need to be replaced remain in operation and are subject to more failures. As stated above, this condition is reported on in the Campus Master Plan and highlighted in the body of this report.

### Utilities/Energy Costs

On the whole, energy and utility costs remained fairly flat in FY 12/13. Natural gas continues to remain fairly low compared to pricing peaks a couple of years ago. This continues to be 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. These increases create additional incentive to be judicious in our utilities operations and more efficient in every aspect of energy usage 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. Construction on the Science Building project is progressing. Construction of two parking garages is complete.

The Middle Tennessee Medical Center facilities and property (Bell St. properties) have been acquired. In addition, several renovation projects were completed as was another phase of the Parking and Transportation project.

### Energy and Sustainability

Sustainability is both an opportunity and challenge for the campus. 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.

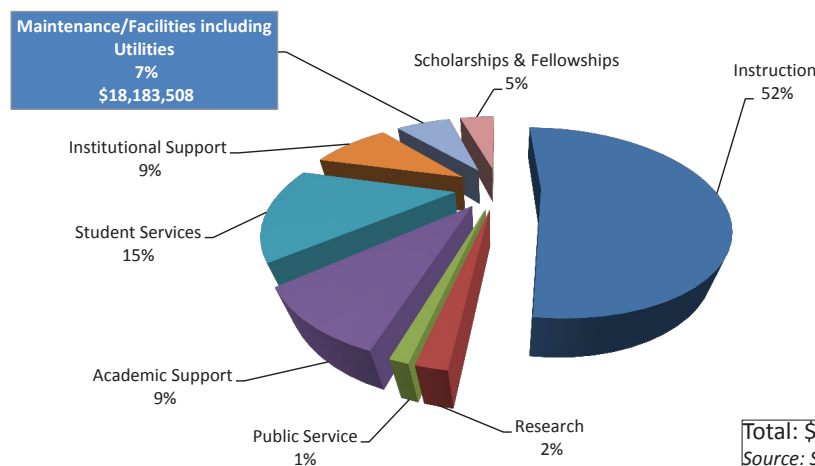
### Summary

Although highly 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 while facing real challenges to success.

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.

—David Gray

MTSU E & G Expenditures 2012-2013

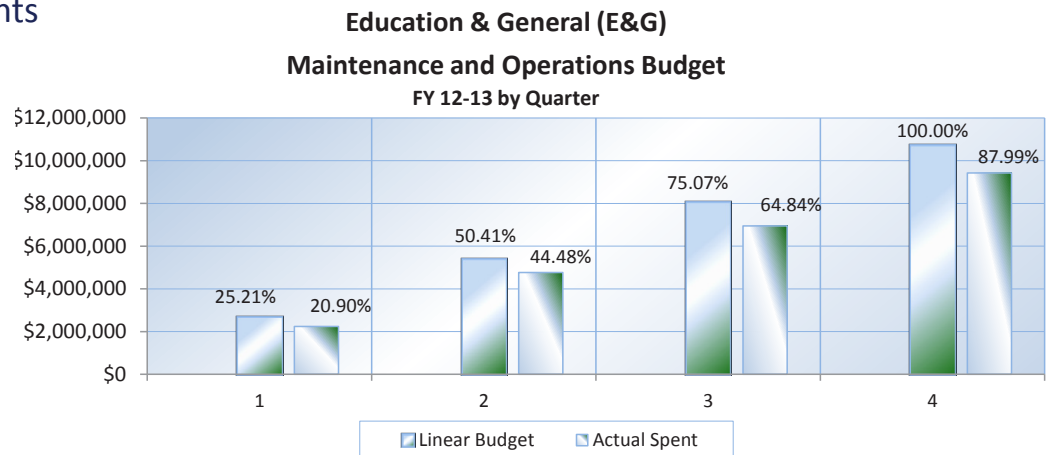


Total: \$257,037,072

Source: Schedule 3 - Current Funds Expenditures & Transfers by Function

## Accomplishments & Highlights 2012/2013

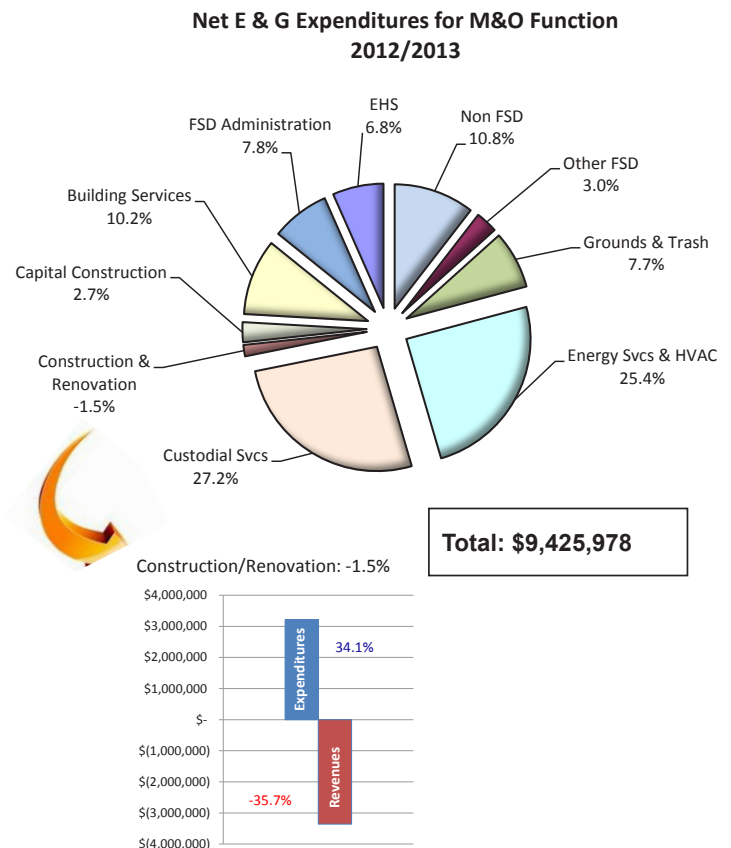
- Trained additional employees on QuickBooks Pro
- Improved the timeliness of invoice payments by creating a bi-weekly report of outstanding invoices
- Revised the P-Card log receipt for better accuracy
- All staff attended a leadership seminar together
- College Business Management Institute (CBMI) 1st year conference attended by one staff member



2012-2013	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Annual Totals	Percent of Total
Total M & O Expenditures	\$ 3,679,886	\$ 4,150,949	\$ 3,820,557	\$ 5,026,208	\$ 16,677,600	
Work for Others	(1,440,433)	(1,625,398)	(1,639,143)	(2,546,649)	(7,251,623)	43%
Net E & G Expenditures	\$ 2,239,453	\$ 2,525,551	\$ 2,181,414	\$ 2,479,559	\$ 9,425,977	57%
E & G Budget	\$ 10,713,079	\$ 10,713,079	\$ 10,713,079	\$ 10,713,079	\$ 10,713,079	
% of Budget	20.90%	23.57%	20.36%	23.15%	87.99%	

## Goals 2013/2014

- Implement automated work order billing
- Reorganize pre-billing procedure for automated work order billing process
- Update Motor Pool billing by using work orders & FuelMaster reports
- Pursue bookkeeping training and Argos software training for account clerks
- Add budget to QuickBooks Pro
- Ensure that Mainsaver financial amounts reflect Full Cost Recovery (FCR)
- Update plant cost allocation spreadsheets
- Update year-end allocations to reflect how services are provided
- Seek new technological processes and integrate software to improve workflow and reduce redundancies
- Produce training video, procedure manual, PowerPoint presentation to train staff on administrative processes
- Encourage employee development, education and certification, including team building and communication



## Accomplishments &amp; Highlights 2012/2013

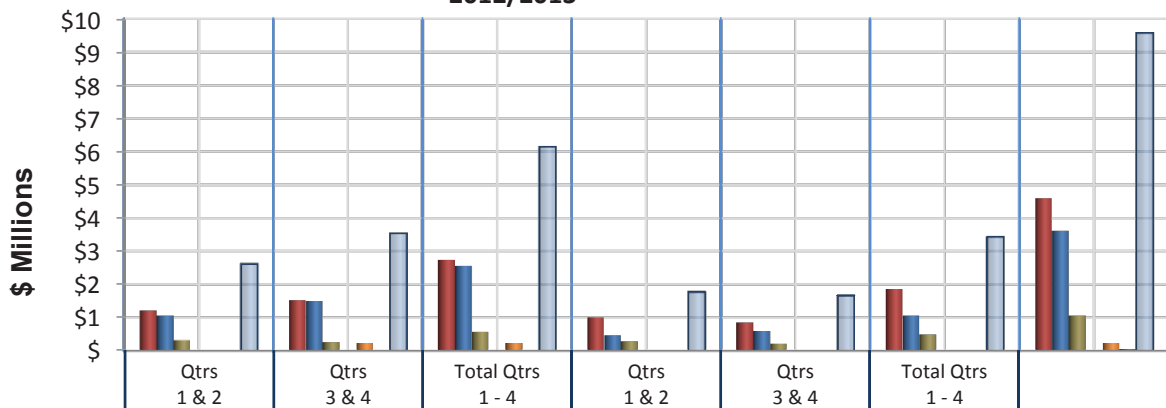
- Negotiated utility related contracts with Tennessee Valley Authority and Murfreesboro Electric (Amended MED utility contract, Generation Partners, Green Power Purchase Agreement)
- Worked with underground electrical project pertaining to IDGS (Interactive Distributed Generation System)
- Supported utilities planning for new Student Services Building and two parking garages
- Worked with State Architect and TBR to develop High Performance Building Standards (updates to TN Sustainable Design Guidelines)
- Completed THEC and NCAA annual reporting
- Continued working with the MTSU Sustainable Campus Fee Committee (Page 20)
- Updated Facility Surveys for TBR and Construction Administration
- Provided regular column for Facilities Manager Magazine (J Whitefield)
- Continued on the President's Commission on the Status of Women
- Continued serving on planning and funding committees for Tennessee Higher Education Sustainability Association
- Published Summary of Services Annual Report for 11/12
- Attended TNAPPA 2013

## Goals 2013/14

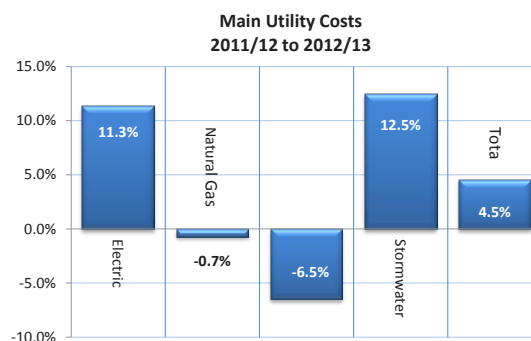
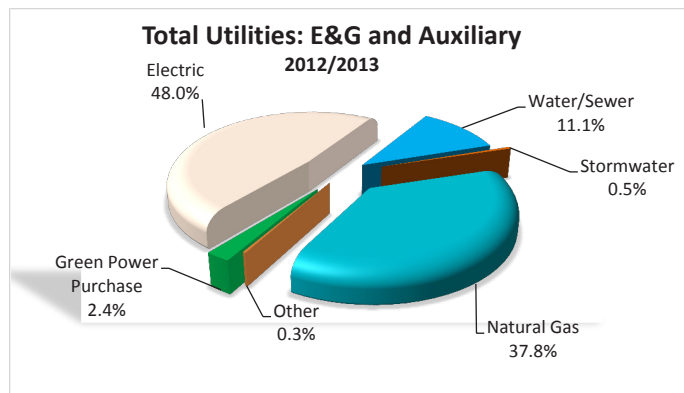
- Create intern position for Center for Energy Efficiency
- Continue to support planning for new MED substation for campus
- Provide transition support for newly acquired Bell St Center properties
- Establish new gas service and metering for Ellington Human Sciences Building
- Support utilities planning for new Science Building
- Continue to monitor alternative electric utility with MED into time of use rate system
- Support APPA Institute for Facilities Management and Leadership Training
- Continue to provide utility and energy management support to university departments
- Continue support of MTSU Sustainable Campus Fee Program
- Continue serving on Tennessee Higher Education Sustainability Association committee
- Continue to support Engineering Technology, Honors, and other classroom instruction and projects where possible (on-going)
- Incorporate *The 7 Habits* Quad II (Important, but not Urgent) Time Matrix in decision making
- Continue training and professional development

## Total Campus Utilities

2012/2013



	Qtrs 1 & 2	Qtrs 3 & 4	Total Qtrs 1 - 4	Qtrs 1 & 2	Qtrs 3 & 4	Total Qtrs 1 - 4	Total E&G & Aux
Electric	\$1,214,374	\$1,526,061	\$2,740,435	\$1,012,589	\$845,691	\$1,858,281	\$4,598,716
Natural Gas	\$1,056,023	\$1,502,325	\$2,558,348	\$467,486	\$590,768	\$1,058,253	\$3,616,601
Water/Sewer	\$318,620	\$247,230	\$565,850	\$282,865	\$214,487	\$497,351	\$1,063,201
Other	\$12,642	\$15,191	\$27,832	\$-	\$-	\$-	\$27,832
Green Power Purchase	\$-	\$230,000	\$230,000	\$-	\$-	\$-	\$230,000
Stormwater	\$12,429	\$13,971	\$26,400	\$8,655	\$8,655	\$17,311	\$43,711
Total	\$2,614,088	\$3,534,778	\$6,148,865	\$1,771,595	\$1,659,601	\$3,431,196	\$9,580,061



## Recycling Program - MTSU Recycles

Linda Hardyman

### Accomplishments & Highlights 2012/2013

- Maintained recycling program to meet campus needs employing student workers
- Utilized MTSU Sustainable Campus Fee project funds for improvements to the recycling program (bins and equipment)
- Supported Capital Construction at new Science Building through cardboard and other recycling efforts
- Supported Construction/Renovation projects
- Provided safety and diversity training for recycling staff
- Attended workshops and tours geared towards recycling education
- Add a visual and security presence with student workers wearing recycling vests

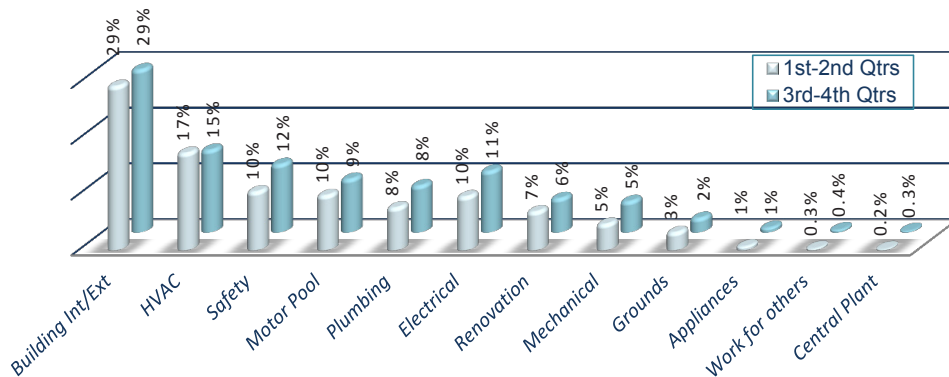
### Goals 2013/2014

- Continue to work with Murphy Center Complex staff to provide recycling at athletic events
- Work with student organization to provide football tailgating in Walnut Grove
- Continue to provide campus recycling education, upgrade appearance of recycling containers through bin replacement program, and add ergonomic improvements (lift-gates on vehicles)
- Continue to support Capital Construction and Construction/Renovation project work
- Support recycling planning for new construction: Student Services Building and Science Building
- Continue working with MTSU Sustainable Campus Fee Program for recycling project funding
- Continue involvement with Tennessee Higher Education Sustainability Association
- Explore new initiatives as the opportunity arises to grow the program and increase commodities collection
- Continue partnership opportunities with Recycle Rutherford and TN Department of Safety and Homeland Security
- Continue to provide classroom support for environmental seminars and storm water initiatives
- Continue participation in training and development programs

Recycling Program Collections	
Commodity	Pounds
	2012/2013
Aluminum	7,426
Mixed/White Paper	413,320
Newspaper/Magazines	385,842
Maintenance Metals	44,139
Cardboard	381,880
E-waste	65,000
Plastics	120,640
Units	
Batteries	1,047
Ink Cartridges	1,693
Pallets	1,811



### Work Orders Originated 2012/2013



### Accomplishments & Highlights 2012/2013

- Worked with accounting staff to revise labor, material and contract processing so Mainsaver data reflects full cost recovery
- Provided support for moving Mainsaver from SQL to Windows authentication
- Helped coordinate ITD virtualized desktop project
- Assisted in FSD iPad implementation and one-on-one training
- Served on MTSU Classified Employee Recognition Committee
- Participated in Chick Fil-A Leadercast Training and Evelyn Wood Speed Reading Course

### Goals 2013/2014

- Work with Energy Services to design and implement filter tracking database
- Hire consultant to help export reports to Argos; learn to design and edit Argos reports; investigate possibility of distributing reports via web
- Coordinate with accounting group to adapt internal procedures and practices to be compatible with Mainsaver to Banner interface requirements.
- Assist FSD personnel in moving email messages to first tier, learning new processes for remote desktop, complex passwords and sending FAX messages.
- Coordinate with Building Services Engineer to design and implement asset and work order tracking systems for new science building.

[http://www.mtsu.edu/facserv/work\\_request\\_forms.php](http://www.mtsu.edu/facserv/work_request_forms.php)

### 2012/2013 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	30	1%	25	1%	38	1%	22	0%	115	1%
Building Interior/Exterior	1,289	28%	1,145	31%	1,223	27%	1,218	27%	4,875	28%
Central Plant	11	0.2%	8	0.2%	13	0.3%	12	0.3%	44	0.3%
Electrical	418	9%	374	10%	514	12%	369	8%	1,675	10%
Grounds	162	4%	99	3%	101	2%	182	4%	544	3%
HVAC	860	19%	580	16%	614	14%	699	16%	2,753	16%
Mechanical	215	5%	168	5%	277	6%	218	5%	878	5%
Motor Pool	458	10%	352	10%	418	9%	605	14%	1,833	11%
Plumbing	321	7%	307	8%	367	8%	266	6%	1,261	7%
Renovation	327	7%	242	7%	246	6%	287	6%	1,102	6%
Work for others	13	0.3%	14	0.4%	20	0.4%	18	0%	65	0.4%
Safety	507	11%	359	10%	626	14%	571	13%	2,063	12%
<b>Total</b>	<b>4,611</b>	<b>100%</b>	<b>3,673</b>	<b>100.0%</b>	<b>4,457</b>	<b>100.0%</b>	<b>4,467</b>	<b>100.0%</b>	<b>17,208</b>	<b>100.0%</b>



## Accomplishments & Highlights 2012/2013

- Facilitated employee training sessions for FSD work units
- Coordinated forklift hands-on training session by certified trainer; offered enrollment to employees in other University departments



## Goals 2013/2014

- Review current training program; add new training sessions (as required or requested)
- 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



2012/2013 FSD Employee 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	2	2	16	108	2	3	20
-Accounting Services	5	5	22	116	5	6	0
-Center for Energy Efficiency	3	3	8	26	3	5	5
-Employee Development	1	1	2	25	1	2	0
-Work Orders	3	3	23	0	3	14	0
Building & Engineering Services	33	33	81	249	33	132	53
Construction Administration	4	4	11	0	4	11	0
Custodial Services	23	23	42	8	23	83	0
Energy Services	18	18	32	40	18	65	5
Grounds Services/Motor Pool	16	16	30	23	16	54	0
<b>Total</b>	<b>108</b>	<b>108</b>	<b>264</b>	<b>595</b>	<b>108</b>	<b>374</b>	<b>83</b>

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	2				2
-Accounting Services	5				5
-Center for Energy Efficiency	3		1	1	1
-Employee Development	1				1
-Work Orders	3		2		1
Building & Engineering Services	33		21	7	5
Construction Administration	4		3		1
Custodial Services	23		23		
Energy Services	18		17		1
Grounds Services/Motor Pool	16		14	1	1
<b>Total</b>	<b>108</b>	<b>0</b>	<b>81</b>	<b>9</b>	<b>18</b>

## Accomplishments & Highlights 2012/2013

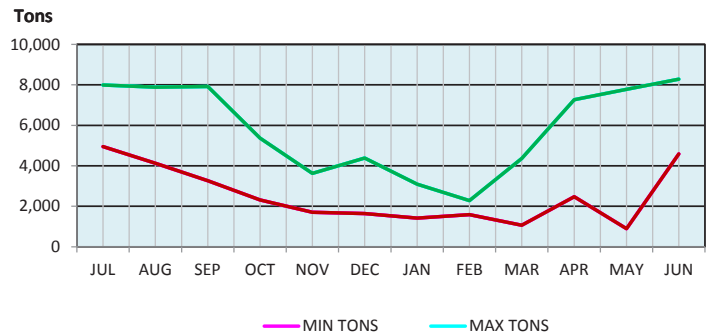
- Managed 79 after hours callbacks
- Improved HVAC building air filtering system in parallel with the MTSU Sustainable Campus Fee program
- Completed several projects for the MTSU Sustainable Campus Fee program
- Participated in training for staff
- Monitored construction projects for 'out of warranty' state
- Reviewed implementation procedures on services to auxiliaries and zone maintenance
- Attended APPA Individual Effectiveness Training
- Supported construction and renovation projects
- Reduced filter budget
- Supported renovation of Learning Resource Center

## Goals 2013/2014

- Develop an inventory system for monitoring filters
- Continue improving HVAC filtering systems
- Continue work with TVA on Energy Right Program
- Prepare new project applications for the MTSU Sustainable Campus Fee program
- Continue participation in additional training for HVAC staff
- Support construction of new science building
- Continue support of construction/renovation projects
- Expand preventative maintenance to improve life of equipment
- Support construction of Student Services Building
- Installation of boilers for Ellington Human Sciences eliminating building from campus Central Plant steam
- Support campus steam manhole repair project

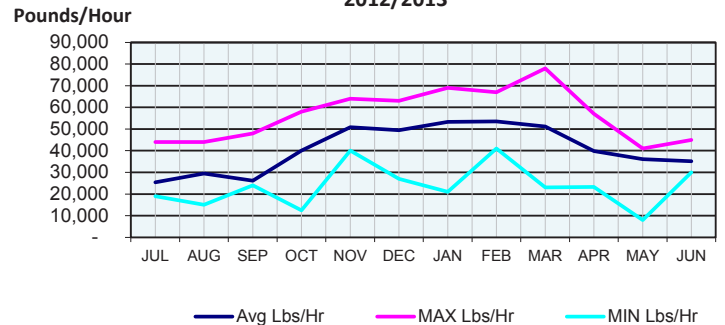
### Chilled Water Tonnage

2012/2013



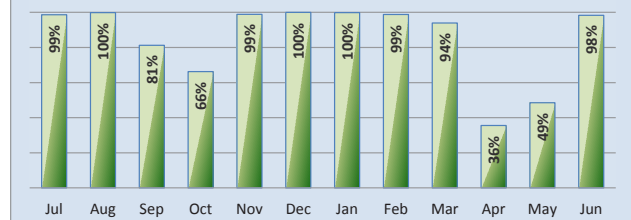
### Steam Production

2012/2013



### Turbine: Percent Runtime By Month

2012/2013



### 2012/2013 Central Plant Equipment Peak Operational Levels

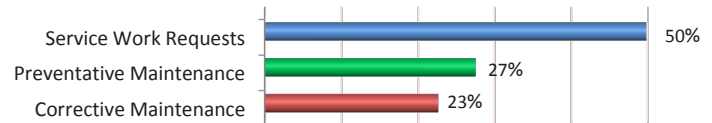
Natural Gas Fired Turbine/Generator					Steam Boilers					Chillers				
5MW (nominal)					85,000 Pounds/Hour (peak)					10,500 Tons (peak)				
	Mid-Year	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	Annual		Mid-Year	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	Annual		Mid-Year	3 <sup>rd</sup> Qtr	4 <sup>th</sup> Qtr	Annual
Peak MW	5.07	5.14	5.05	5.14										
Ave MW	4.54	4.94	4.61	4.67	Ave LBS/Hr	50,803	53,478	39,796	53,748	Max Peak Tons	7,998	4,363	8,281	8,281
Total MWH	18,218	10,414	6107	34,739	Peak LBS/Hr	64,000	78,000	57,000	78,000	Min Tons	3,265	1,063	888	888

Purchased power: 42,045.9 MWH

## Accomplishments & Highlights 2012/2013

- Managed 308 after hours callbacks
- Supported capital construction efforts for the parking garages
- Prepared EPA report for Green House Gas emissions
- Supported new reverse osmosis system installation
- Prepared new air pollution control permit report
- Continued completion of safety training
- Provided training to maintain compliance regarding confined space and code issues
- Continued to evaluate operating schedules for the natural gas turbine generator with respect to natural gas and electric pricing
- Attended APPA Individual Effectiveness Training
- Installed new de-aerator tank and physical plant upgrades
- Supported design and installation of new lube oil coolers for turbine

### Energy Services Total Work Order Hours 2012/2013



## Goals 2013/2014

- Replace/repair cooling towers at Main Central Plant
- Replace economizer on energy recovery boiler
- Continued to support capital and construction/renovation projects on campus
- Continue to investigate training opportunities
- Continue exploring recovery of loop system condensate
- Support design and construction of new science building
- Retube energy recovery boiler
- Continue to support physical plant upgrades
- Upgrade of Solar turbine controls

PERFORMANCE MEASURES: Energy Services									
2012/2013		#Work Orders Completed		Man Hours		Avg Man Hours/ Work Order		% Closed Past Due	
CORRECTIVE MAINTENANCE (CM)		Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
	Appliances	12	22	54	98	4.5	4.5	8.3%	4.5%
	Central Plant	2	2	5	5	2.5	2.5	50.0%	50.0%
	HVAC	829	1466	2377	4517	2.9	3.1	10.7%	11.1%
	Mechanical	97	194	704	1343	7.3	6.9	16.5%	16.5%
	Total	940	1684	3140	5962	3.3	3.5	11.5%	11.6%

PREVENTIVE MAINTENANCE (PM)		Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
	Appliances	6	10	5	11	0.8	1.1	0.0%	0.0%
	Central Plant	10	18	1257	2560	125.7	142.2	0.0%	0.0%
	HVAC	435	875	1741	3686	4.0	4.2	10.1%	11.9%
	Mechanical	314	653	491	987	1.6	1.5	2.5%	1.4%
	Total	765	1556	3494	7243	4.6	4.7	6.8%	7.3%

SERVICE WORK ORDERS		Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
	Appliances	3	7	1	10	0.0	1.4	0.0%	57.1%
	Central Plant	9	26	2826	8374	314.0	322.1	0.0%	19.2%
	HVAC	135	384	1885	4685	14.0	12.2	23.0%	22.4%
	Mechanical	11	25	16	54	1.5	2.1	0.0%	4.0%
	Total	158	442	4728	13123	29.9	29.7	19.6%	21.7%

## Accomplishments & Highlights 2012/2013

### Construction and Renovation- Terri Carlton

- Construction/Renovation completed approximately 171 projects and managed more than \$3,858,171 worth of products and services
- Completed archived project scans and began recycling effort
- Attended local No Name Conference
- Continued Haynes-Turner renovation programming and design, project to be complete in 2014

### Key Shop – Don Chumney

- Completed 1,753 work orders
- Cut a total of 4,260 keys for Residential Life, Construction Administration and Construction/Renovation projects
- Ordered and installed cores for the Student Union Building
- Supported parking garage project

### Environmental Health & Safety – Doug Brinsko

- Trained 52 campus staff and faculty in AED and Adult/Pediatric CPR
- Managed the identification, collection, packaging, transportation, and disposal of approximately 4.5 tons of hazardous waste.
- Provided seven online safety training modules – 10,407 MTSU participating in training sessions
- Engaged 2,651 people during various stormwater program events
- Planted 2,625 trees and removed 665 pounds of trash from the environment

### Building Services/Construction Services - Gerald Grimes

- Continued implementation of “Safety 411”, a scheduled weekly safety awareness meeting
- Continued implementation and tweaking of Rotational Zone Maintenance
- Reorganized and updated interior of Will Hastings Building

## Goals 2013/2014

- Implement a procedure to schedule classrooms for electronic access by creating an import script connecting teachers to classrooms (on going)
- Assess the viability of aftermarket electric latch retraction kits to retrofit existing mechanical panic devices in order to reduce hardware cost associated with new exterior card reader doors by 50%
- Support Campus Planning and Construction Administration in construction of the new Science Building
- Complete domestic water systems on GIS – complete & ongoing as new projects add system elements
- Haynes Turner Renovation – scheduled for completion 2014
- In-House construction update – submitted to TBR with complete 2013/2014
- Continue training and professional development (on going)
- Develop means to manage operations in a Quadrant II (important but not an urgent manner)
- Fill open positions for Power Systems Engineer; Manager, Building Automation; Radiological Safety Officer; and Building Services Supervisor

### 2012/2013 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
Beginning Active Projects	196	\$ 2,836,229	211	\$ 3,467,665	221	\$ 3,382,586	229	\$ 2,934,851	196	\$ 2,836,229
Added Projects	53	\$ 1,487,152	41	\$ 752,533	58	\$ 540,216	70	\$ 547,122	222	\$ 3,327,023
Completed Projects	38	\$ 855,716	31	\$ 837,612	50	\$ 987,951	52	\$ 1,177,432	171	\$ 3,858,711
Ending Active Projects	211	\$ 3,467,668	221	\$ 3,382,586	229	\$ 2,934,851	247	\$ 2,304,541	247	\$ 2,304,541

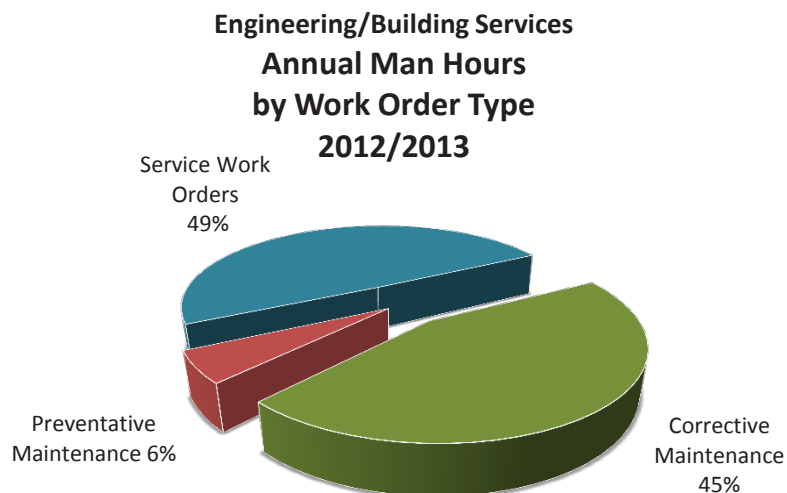


PERFORMANCE MEASURES: Engineering and Building Services									
2012/2013		# Work Orders Completed		Man Hours		Average MH/WO		% Closed Past Due	
CORRECTIVE MAINTENANCE (CM)		Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
	Appliances	19	41	60	67	2	2	0.0%	0.0%
	Building Interior/Exterior	663	1,259	1,922	2,733	2	2	3.5%	4.3%
	Electrical	581	1,178	1,759	4,807	4	4	3.6%	4.6%
	Key Shop	732	1,429	1,548	3,185	2	2	4.0%	4.4%
	Plumbing	604	1,105	1,709	1,880	2	2	1.7%	1.4%
	Safety	106	193	299	64	0.5	0.3	34.9%	22.3%
	<b>Total</b>	<b>2,705</b>	<b>5,205</b>	<b>7,297</b>	<b>12,734</b>	<b>2</b>	<b>2</b>	<b>4.4%</b>	<b>4.4%</b>

PREVENTIVE MAINTENANCE (PM)		Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
	Appliances	0	1	0	3	0	3	0.0%	0.0%
	Building Interior/Exterior	73	191	264	244	2	1	11.0%	38.7%
	Electrical*	90	216	306	206	1	1	16.7%	6.9%
	Plumbing	3	104	107	221	4	2	33.3%	3.8%
	Safety	384	1,235	1,619	921	1	1	0.0%	0.4%
	<b>Total</b>	<b>550</b>	<b>1,746</b>	<b>2,296</b>	<b>1,591</b>	<b>1</b>	<b>1</b>	<b>4.4%</b>	<b>5.6%</b>

\*includes generator PMs performed by Motor Pool Services

SERVICE WORK ORDERS		Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
	Appliances	2	8	10	16	4	2	0.0%	0.0%
	Building Interior/Exterior	850	1,810	1,801	4,177	2	2	11.9%	14.0%
	Electrical	96	242	338	658	2	3	11.5%	8.7%
	Key Shop	114	243	730	1,949	6		12.3%	18.9%
	Plumbing	27	55	82	55	1	1	22.2%	10.9%
	Renovation	418	982	2,719	6,616	7	7	9.1%	8.8%
	Safety	52	199	251	559	8	3	26.9%	18.6%
	<b>Total</b>	<b>1,559</b>	<b>3,539</b>	<b>5,930</b>	<b>14,030</b>	<b>4</b>	<b>4</b>	<b>11.8%</b>	<b>12.7%</b>



## Accomplishments & Highlights 2012/2013

- Continued participation in APPA educational opportunities
- Continued updates of Campus Standards
- Completed Capital Maintenance Budget for 2014-2015
- Continuing Education Hours through AIA Convention



## Goals 2013/2014

- Initiate new series of meetings with City Departments for better cooperation
- Continued participation in educational opportunities both on & off campus
- Complete Underground Electric project
- Complete Campus Standards updates
- Continued participation in "Green, Sustainable" status in Capital Maintenance projects
- Continued communication meetings with Construction Administration staff
- Complete new Science Building

2012/2013 Capital Projects Review		
	New Projects	Completed Projects
July - September	<ul style="list-style-type: none"> <li>✓ Deaerator replacement - Central Plant</li> <li>✓ Science Building</li> </ul>	<ul style="list-style-type: none"> <li>✓ Student Union Building</li> <li>✓ College Heights parking lot</li> <li>✓ Stadium Club renovation</li> <li>✓ Student Rec Center partial roof</li> <li>✓ Todd Hall indoor air quality upgrade</li> <li>✓ Science Building site improvements</li> <li>✓ Reroofs- LRC &amp; Fairview</li> </ul>
October - December	<ul style="list-style-type: none"> <li>✓ MT Conference Center</li> <li>✓ Oil Cooler relocation- Central Plant</li> </ul>	<ul style="list-style-type: none"> <li>✓ Davis Science fume hoods- Phase I</li> </ul>
January - March	<ul style="list-style-type: none"> <li>✓ Central Plant upgrade- steamline</li> <li>✓ Lighting improvements- Phase II</li> <li>✓ KUC renovation</li> <li>✓ Parking &amp; Transportation- Phase IV</li> </ul>	
April - June	<ul style="list-style-type: none"> <li>✓ Domestic water/sewer system updates</li> <li>✓ Track resurfacing</li> <li>✓ Walker Library roof replacement</li> </ul>	<ul style="list-style-type: none"> <li>✓ Deaerator replacement- Central Plant</li> <li>✓ Oil cooler relocation- Central Plant</li> </ul>

2012/2013 Construction Administration Capital 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
Beginning Active Projects	11	\$ 122,977,867	6	\$ 127,524,982	7	\$ 127,954,826	11	\$ 141,453,346	11	\$ 122,977,867
Added Projects	2	\$ 90,767,945	2	\$ 861,363	4	\$ 13,498,520	3	\$ 1,813,000	11	\$ 106,940,828
Completed Projects	7	\$ 86,220,830	1	\$ 431,519	0	\$ -	2	\$ 779,308	10	\$ 87,431,657
Ending Active Projects	6	\$ 127,524,982	7	\$ 127,954,826	11	\$ 141,453,346	12	\$ 142,487,038	12	\$ 142,487,038

## Accomplishments & Highlights 2012/2013

- Designed and installed new sidewalks and landscaping in high traffic areas to help improve the campus safety, cleanliness, and functionality
- Implemented new mowing height schedule to help improve turf quality for athletics during transition periods
- Put into place new street sweeping strategy that has improved the efficiency of curb/street sweeping
- Partnered with Custodial Services to implement a day porter service utilizing tricycle and trailer to improve trash removal on campus
- Compiled daily time-lapse pictures of baseball field into a video documenting a year in the life of Reese Smith Jr. Field
- Implemented new work zones and personnel to improve overall quality and efficiency of mowing, trimming, pruning, trash removal, snow removal, leaf removal, and other services
- Continued trash receptacle improvements by adding new barrels with lids and replacing older/worn barrels to help with litter control and improve overall aesthetics of campus
- Attended APPA and SRAPPA, as well as, maintained quarterly communications, required training, and cross-training activities

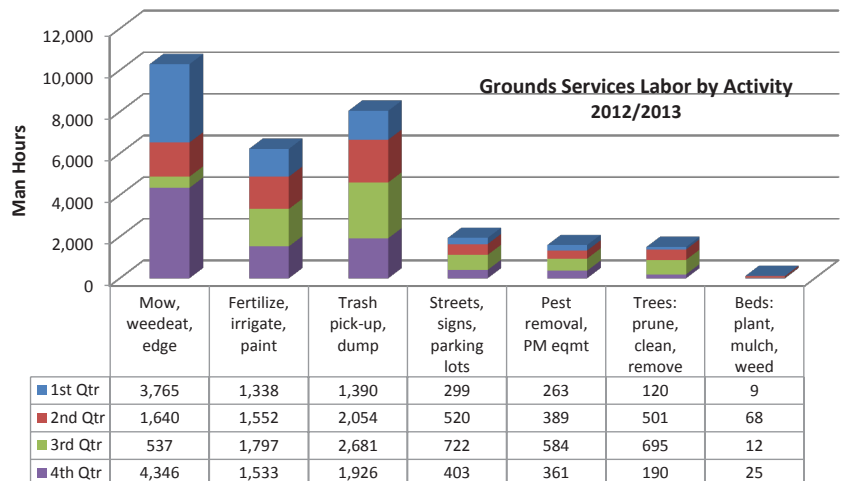


PERFORMANCE MEASURES: Grounds								
2012-2013	#Work Orders Completed		Man Hours		Avg MH/WO		% Closed Past Due	
	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual	Mid-Year	Annual
Maintenance	40	77	121	277	3.0	3.6	7.5%	7.8%
Preventative (PM)	0	8	0	11	0.0	0.0	0.0%	0.0%
Corrective (CM)	40	69	121	266	3.0	3.8	7.5%	7.2%
Service	207	427	3,714	43,861	17.9	102.7	10.1%	12.9%
Routine	207	419	3,714	12,656	17.9	30.2	16.9%	13.1%
Annual	0	8	0	31,205	0.0	3,901	0.0%	0.0%
Total	247	504	3,835	44,138	15.5	87.6	9.7%	12.1%

## Goals 2013/2014

- Install new irrigation system on baseball field and practice football fields to improve overall quality and playability
- Continue to monitor and improve strategy for improving the curb appeal of the academic core of campus
- Develop a plan to document more of our work using technology to help show campus community the value of our service
- Continue to provide design review on new construction projects
- Monitor trash and cleanliness of the new parking garages and develop a plan to keep them as clean as possible
- Continue improvements to athletic field surfaces with fertilizer program and weed control program and investigate ways to improve drainage on fields
- Improve other high traffic areas of campus with wider or new sidewalks and landscaping
- Implement new winter trimming/pruning schedule for trees, shrubs, and bushes

Sidewalk improvements



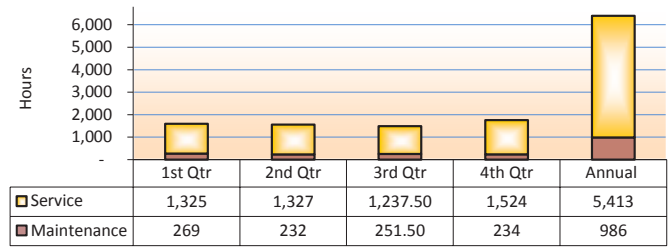
## Accomplishments & Highlights 2012/2013

- Upgraded A/C service equipment
- Established inventory/monitoring system for golf carts, gators, and utility vehicles
- Provided on site emission testing
- Attended training
- Continued service and support to FSD shop with repair and upkeep of vehicles

## Goals 2013/2014

- On site emission testing
- Continue with training and educational opportunities
- Keep up with new EPA reg.
- Work with FSD shops to replace aged vehicles
- Upgrade shop tools

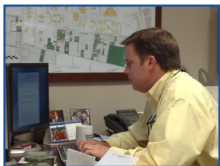
Motor Pool Man Hours  
2012-2013



PERFORMANCE MEASURES: Motor Pool								
2012-2013	# Work Orders Completed		Man Hours		Avg MH/WO		% Closed Past Due	
	Mid-year	Annual	Mid-year	Annual	Mid-year	Annual	Mid-year	Annual
<b>Maintenance</b>	391	942	501	986	1.3	1.0	3.6%	2.8%
Preventative (PM)	382	931	481	965	1.3	1.0	3.4%	2.7%
Corrective (CM)	9	11	20	21	2.2	1.9	11.1%	9.1%
<b>Service</b>	417	847	2652	5413	6.4	6.4	11.5%	9.8%
<b>Total</b>	808	1789	3152.4	6399.4	3.9	3.6	7.7%	6.1%

## 'Coin Toss'

Facilities Manager Magazine - Joe Whitefield



**C** Completion  
**O** Organization  
**I** Innovation  
**N** Being Nice



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



## Accomplishments & Highlights 2012/2013

- Service for the new Student Union Building, increased day porter service for the patio/balcony areas, Commons grounds and weekend custodial service. Worked with Union's administration on specific building needs and services for special events
- Revised Cleaning Standards & Frequencies for High Intensity Buildings (heavy pedestrian traffic and use)
- Increased day porter staff and tasks to improve overall facility cleanliness and appearance
- Amended Custodial Services contract for additional services: KUC former Bookstore location, Murphy Center special event fees for specific Complex areas, and annual floor cleaning service for buildings serviced by in-house Custodial Services staff
- Good working relationship with Custodial Services Contract administration, worked to ensure contract terms firmly upheld
- Coordinated special event/conference cleaning requirements with contractor and in-house Custodial Services
- Completed safety and administrative training sessions

## Goals 2012/2013

- Ensure custodial contractor service is completed according to contract terms
- Transfer of the James Union Building, including event set-ups, to Custodial contractor
- Transfer in-house Custodial Services from 3rd shift to modified 1st shift
- Transfer of specific contractor facilities from 3rd shift to modified 1st shift to allow increased supervision on high-pedestrian traffic/use facilities
- Inspection of contractor facilities during 3rd shift for cleanliness according to Cleaning Standards & Frequencies
- Continue productivity studies of in-house custodial services and facility inspections for cleanliness according to Cleaning Standards & Frequencies

E&G Space 2012/2013	Gross Square Feet	Cleanable Square Feet	% Cleanable Square Feet
<b>Facilities Services Department</b>			
<b>In-house</b>	617,230	318,105	16%
<b>Contract Labor</b>	1,777,811	1,234,839	60%
<b>Murphy Center Complex</b>			
<b>In-house</b>	0	0	0%
<b>Contract Labor</b>	606,239	502,312	24%
<b>Total</b>	<b>3,001,280</b>	<b>2,055,256</b>	<b>100%</b>

## FSD is APPA Active at WORK!



APPA offers premier training for educating and equipping facilities professionals in leadership, management, and latest technologies. As an active member of APPA, at state, regional, and international levels, the MTSU Facilities Services staff supports APPA in a variety of ways from hosting workshops to holding offices.

### FSD Staff Involvement 2012/2013

	<b>Current Officers</b>
	TNAPPA- Secretary/Treasurer - Gerald Grimes
	TNAPPA- Web Master - Kelly Ostergrant
	<b>Facility Manager Magazine</b> Joe Whitefield - Columnist

	<b>Institute for Facilities Management</b>
	Attendee - Kelly Ostergrant

	<b>Leadership Academy - Vancouver, BC</b>
	Attendees- Gerald Grimes, Terri Carlton, Julie Im

	<b>Attended APPA - Denver, CO</b>
	David Gray, Reggie Floyd, Kelly Ostergrant

	<b>TNAPPA - Martin, TN</b>
	FSD Units attending: Assistant Vice-President staff, Center For Energy Efficiency, Employee Development, Energy Services, Building Services, Key Shop, Environmental Health & Safety, Motor Pool, Grounds Services (19 staff members)

	<b>SRAPPA - Lexington, VA</b>
	Attendees - Gerald Caudill, Reggie Floyd, Gerald Grimes, Kelly Ostergrant, Jason Young, Connie Hagberg

<b>Upcoming in 2012/13</b>	
APPA - Immediate Past-president - David Gray	
APPA International Conference (Minneapolis, MN),	
SRAPPA (Buford, GA), TNAPPA (Cookeville, TN)	

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. [www.appa.org](http://www.appa.org)

# Excerpts from Campus Master Plan December 2007--2013

The following information categorizes the Education and General (E&G) facilities according to condition and quantifies the overall level of deferred maintenance.

## Existing Building Analysis: Education and General Facilities

Building Name	Year Constructed	Bldg ID	Current Condition (1)	Potential Value (2)	Overall Building Rating (3)	Net SF	Gross SF
Alumni Relations House (2259 Middle Tennessee Boulevard)	1908	P0174	99.8	High	A	5,598	10,105
President's Home **	1910	P0001	87.0	High	B	7,015	7,794
Tom H. Jackson Building **	1911	P0003	86.0	High	B	4,921	8,792
Kirksey Old Main **	1911	P0002	69.8	High	C	45,772	83,705
Jones Hall **	1921	P0005	82.3	High	B	21,110	39,855
Pittard Campus School **	1927	P0007	65.5	High	C	29,805	52,424
Ellington Human Science Annex	1928	P0018	77.6	Low	D	7,254	10,276
Wiser-Patten Science Hall	1932	P0008	83.0	Medium	B	27,991	41,116
Voorhies Industrial Studies	1942	P0009	89.4	Medium	B	28,516	39,289
ROTC Annex	1942	P0010	60.2	Low	D	8,574	10,143
Alumni Office (2263 Middle Tennessee Boulevard)	1948	P0172	100	High	A	1,869	2,796
1114 East Lytle Street (Lytle House)	1948	P0171	95.1	High	A	1,379	1,874
Sam H. Ingram Building (2269 Middle Tennessee Boulevard)	1951	P0169	98.6	High	A	18,907	27,498
Parking Services Building (1403 East Main Street)	1951	P0158	98.2	High	A	7,349	12,099
James Union Building	1952	P0015	84.5	Medium	B	37,101	59,351
Forrest Hall	1954	P0017	90.3	Low	D	8,562	14,177
Photography Building	1957	P0046	76.0	Low	D	8,196	11,873
Todd Hall	1958	P0019	96.0	High	A	65,598	114,388
Saunders Fine Art	1959	P0022	89.6	Medium	B	20,088	32,870
E.W. Midgett Building	1959	P0076	65.0	Low	D	10,804	18,326
Fairview Building	1962	P0149	90.5	Medium	A	22,584	38,250
Ellington Human Science	1962	P0025	83.6	Medium	B	10,828	15,509
Boutwell Dramatic Arts	1964	P0031	81.4	Medium	B	37,655	59,876
Cope Administration Building	1965	P0034	89.4	High	B	30,815	51,184
Keathley University Center	1967	P0042	84.4	Medium	B	78,973	122,671
Davis Science Building	1967	P0041	82.7	Medium	B	44,411	75,258

### Notes:

- 1.) Current condition - Facility Survey Score as of 10/07
- 2.) Potential Value determined by factors including: various land use, program suitability, code issues, original campus structure
- 3.) Overall building rating combines the current condition and potential values

Building Name	Year Constructed	Bldg ID	Current Condition (1)	Potential Value (2)	Overall Building Rating (3)	Net SF	Gross SF
Stark Agribusiness and Agriscience Center	1968	P0045	89.3	High	B	15,059	24,813
Peck Hall	1968	P0044	84.0	Medium	B	52,724	110,440
McFarland Health Service	1969	P0054	81.4	Low	D	6,873	10,285
Tennessee Livestock Center	1972	P0070	91.8	Low	D	135,079	158,191
Ezell Hall	1973	P0072	78.5	Low	D	32,497	52,452
Greenhouse	1975	P0073	100	Low	D	4,709	4,774
Ned McWhorter Learning Resources Center	1975	P0074	85.1	High	B	41,763	65,865
Vocational Agriculture	1979	P0080	90.9	Low	D	5,217	6,000
Wright Music Building	1980	P0081	92.8	Medium	A	20,802	31,141
Telescope Building	1986	P0106	n/a	Low	D	328	412
ProjectHELP	1986	P0088	100	High	A	3,258	4,568
John Bragg Mass Communication Building	1990	P0083	95.5	High	A	53,735	91,114
Cason-Kennedy Nursing Building	1994	P0084	97.3	High	A	18,755	31,494
Telecomm Building	1997	P0089	100	High	A	5,957	10,267
Business & Aerospace Building	1997	P0091	99.3	High	A	100,973	184,931
Horticulture Facility	1997	P0093	94.0	Low	D	6,458	9,002
James E. Walker Library	1998	P0094	99.3	High	A	172,928	254,596
Tennessee Center for the Study and Treatment of Dyslexia	2000	P0155	94.0	High	A	4,148	7,169
Wood-Stegall Center	2001	P0156	100	High	A	4,636	10,142
Paul W. Martin, Sr. Honors Building	2003	P0166	100	High	A	11,605	20,720
Printing Services Building	2005	P0175	100	Low	D	3,927	4,320
Nursing Building Addition	2006	P084A	100	High	A	13,924	24,044

\*\* Original campus structure

### Overall Building Rating - Current Condition

Potential Value	90-100			80-90			<80		
	High			Medium			Low		
	A			B			C		
	A			B			C		
	D			D			D		

## Deferred Maintenance

Educational and General (includes maintenance, utilities, and athletics)		
Overall Buildings Ratings	Square Footage	20-year Deferred Maintenance (1)
A	1,212,841	\$15,758,902
B	1,031,907	\$57,839,731
C	297,334	\$32,098,524
D	95,614	\$6,215,084
Other	67,808	\$2,038,594
Infrastructure		\$28,487,709
20-YR Capital Maintenance Funding		\$(24,380,000)
<b>Totals</b>	<b>2,705,504</b>	<b>\$118,058,544</b>

(1) 20-YR Deferred Maintenance is the sum of the Annual Capital Maintenance calculations for the most recent 20 year period for each facility. The Annual Capital Maintenance formula is:

$$ACM = 2/3 (\text{Building Current Replacement Value}) * \text{Building Age}/1275$$

Like many universities and colleges, MTSU has experienced significant growth and associated financial needs over many years. These conditions have led to a postponement of major repairs and replacements of facilities and infrastructure. The delay, combined with the age of the facilities, is leading to a deterioration of the facilities and an increased backlog of maintenance and capital renewal projects. This backlog is commonly referred to as "deferred maintenance".

The E&G Deferred Maintenance table summarizes the estimated cost of 20 years of accumulated deferred maintenance for the Education and General facilities and the infrastructure on campus according to Overall Building Rating category, the 20-year total of capital maintenance funding, and the net deferred maintenance.

## MTSU Capital Maintenance

### List of Projects for Capital Budget Request

2011 - 2012	Priority	Project Name	FY 11/12 Request	Appropriated Funding
	1	Boiler Feed System & Steam Line Improvements	\$ 1,690,000	\$ 1,690,000
	2	Several Buildings Envelope Repair (pulled)	\$ 1,285,000	\$ -
	3	Domestic Water/Sewer System Updates	\$ 460,000	\$ 460,000
	4	Sauders Fine Arts HVAC	\$ 900,000	\$ 1,290,000
	5	Peck Hall HVAC Updates Phase II - VAV	\$ 635,000	\$ -
	6	Murphy Center Exterior Door Repair/Replacement	\$ 575,000	\$ -
	7	Murphy Center Arena HVAC	\$ 1,470,000	\$ -
	8	Underground Electrical Phase VI	\$ 1,640,000	\$ -
	9	Walker Library Roof Replacement	\$ 950,000	\$ -
	10	Murphy Center Roof Replacement	\$ 2,289,000	\$ -
	Total:		\$ 11,894,000	\$ 3,440,000

2012 - 2013	Priority	Project Name	FY 12/13 Request	Appropriated Funding
	1	Domestic Water/Sewer System Updates	\$ 506,000	\$ 510,000
	2	Murphy Center Arena HVAC	\$ 1,617,000	\$ 1,620,000
	3	Underground Electrical Phase VI	\$ 2,140,000	\$ 2,140,000
	4	Peck Hall HVAC Updates Phase II - VAV	\$ 860,000	\$ -
	5	Murphy Center Exterior Door Repair/Replacement	\$ 633,000	\$ -
	6	Walker Library Roof Replacement	\$ 1,045,000	\$ 1,050,000
	7	Murphy Center Roof Replacement	\$ 2,518,000	\$ -
	8	Jones Hall Plumbing Upgrade	\$ 1,000,000	\$ -
	9	Several Buildings Electrical Equipment Upgrade	\$ 1,000,000	\$ -
	10	Campus Stormwater BMP	\$ 550,000	\$ -
	11	Central Plant Cooling Tower Replacement	\$ 750,000	\$ -
	Total:		\$ 12,619,000	\$ 5,320,000

2013 - 2014	Priority	Project Name	FY 13/14 Request	Appropriated Funding
	1	Murphy Center Roof Replacement	\$ 2,720,000	\$ 2,720,000
	2	Central Plant Cooling Tower Replacement	\$ 810,000	\$ 810,000
	3	Absorption Chiller/Tower Replacement	\$ 1,100,000	\$ -
	4	Murphy Center Accoustical Ceiling Replacement	\$ 800,000	\$ -
	5	Jones Hall Plumbing Upgrade	\$ 1,080,000	\$ -
	6	Several Buildings Electrical Equipment Upgrade	\$ 1,080,000	\$ -
	7	Several Buildings Exterior Renovations	\$ 1,100,000	\$ -
	8	Domestic Water/Sewer Systems Upgrade	\$ 506,000	\$ -
	9	Murphy Center Exterior Door Repair/Replacement	\$ 684,000	\$ -
	10	Peck Hall HVAC Updates Phase II - VAV	\$ 929,000	\$ -
	11	Campus Stormwater BMP	\$ 594,000	\$ -
	12	Sidewalk Repair/Replacement	\$ 350,000	\$ -
	Total:		\$ 11,753,000	\$3,530,000

2014 - 2015	Priority	Project Name	FY 14/15 Request	Appropriated Funding
	1	Absorption Chiller/Tower Replacement	\$ 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	TBD

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 on the campus of non-renewable energy.



A portion of the fee is designated for purchasing 'green power' to facilitate production of electricity from wind, solar power, and methane gas as a clean alternative to traditional energy sources.

The remainder of the funds generated by the fee provides support for campus projects that increase or improve energy efficiency on campus, such as retrofitting older systems, lowering consumption and decreasing energy expenses.

Projects approved support energy and environmental sustainability.

MTSU Sustainable Campus Fee (SCF) Program							
Approved Projects	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Green Power Purchase	\$ 220,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000	\$ 230,000
Alternative Fuel (Biodiesel) Production Project							\$ 2,500
Atrium lighting project for Walker Library						\$19,366	
Bioremediation of barbiturates for ecofriendly composting						\$16,846	
Blade servers- Server consolidation/Virtualization			\$ 20,000	\$ 21,000	\$ 21,708		\$ 47,000
Blast hand dryers for Campus Rec					\$ 11,270		
Bus conversion to run on used cooking oil	\$ 15,000						
Change hot water valve tops in Murphy Center						\$6,502	
Chilling plant: pressure gauges installation	\$ 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 first floor)			\$ 10,288	\$ 7,490	\$ 6,204	\$4,100	\$ 20,157
'Clickable' Polymers							\$ 600
Closed loop sediment filtering system multiple buildings (KUC, Walker Library, Murphy Cntr, Todd, Stark Ag, VET, LRC, Mass Comm, Jones. Cope, Cason Kennedy)		\$ 12,000	\$ 28,900	\$ 30,900	\$ 30,900	\$15,450	\$ 46,650
Conduct light level studies in Todd, Mass Comm, BAS, Peck				\$ 5,500			
Convert vehicle to operate on natural gas/installation of compressed gas station				\$ 8,500			
Creating MTSU as a bicycle friendly university						\$38,169	
Creation of a rain garden to assist with storm water run off				\$ 3,000			
Dehumidifier project						\$2,100	
Dehumidify Voorhies Room 108							\$ 11,500
Development of a biosensor to detect hydrogen production						\$4,250	
Development of flex-fueled engine 1 and 2 (sun and hydrogen)	\$ 13,000	\$ 41,000					
DRIPS Project (Development and Research into Pervious Surfaces)		\$ 13,500					
Energy Books purchase							\$ 1,823
Environmentally Friendly Bio-Composting of Toxic Horse Carcasses							\$ 8,894
FLIR i7 compact infrared camera for energy audits				\$ 3,450			
Golf cart conversion 1 and 2 (electric to solar)		\$ 10,500					\$ 2,000
Hot/chilled water valve assessment		\$ 5,000					
HVAC controls replacement Wright Music	\$ 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)			\$ 6,250	\$ 41,507	\$ 19,250	\$25,806	\$ 40,235
Hybrid/Alternative fuel vehicle purchase (subsidy)	\$ 17,250						
Increasing Production Capacity of Biodiesel							\$ 9,965
Infrared thermometer guns						\$500	
Install 10kW solar system					\$ 81,224		
Install FilterPave Porous Pavement in parking lot on Champion Way				\$ 18,665			
Install frequency drive in BDA					\$ 12,777		
Install milk cooling system					\$ 17,500		
Installation of a geothermal cooler system on the MTSU farm				\$ 27,150			
Installation of programmable thermostats in F/S maintenance shops	\$ 1,200						
Installation of variable speed compressor in the Central Utilities Plant				\$ 24,000			
Insulate pipes & remove asbestos- DSB, WPS, SFA, Wright Music, Ellington, Murphy Center, Stark Ag, McFarland, AMG						\$37,337	\$ 5,000
Kenaf Agriculture for Sustainable Community (alternative energy crop)			\$ 5,935				
Lamp crusher	\$ 4,000						
Laser alignment devices					\$ 5,681		
LED lamps in Mass Comm and Peck					\$ 39,562		
Library book purchase			\$ 4,500				

(Continued on page 21)



(Continued from page 20)

MTSU Sustainable Campus Fee (SCF) Program							
Approved Projects	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Light switch plate stickers	\$ 2,500						
Multi-fuel bus emission testing project		\$ 10,944					
Occupancy sensors Honors Building			\$ 3,372				
Permeable Pavers for Sustainable Learning Environment (Forest Hall)			\$ 13,050				
Poster campaign and Earthwise reusable bag project		\$ 18,160					
Progression towards becoming a bicycle friendly Univ.							\$ 30,668
Promotion of SCF Program							\$ 1,000
Protreat (kills mold in air handling unit pans)						\$1,400	
Purchase & installation of surge protectors					\$ 1,904		
Purchase of organic dyes to be used in organic dye sensitized solar cells			\$ 1,100				
Rain Gardens/Bioremediation Ponds on MTSU Campus for MS4 Compliance/Maintenance						\$4,000	\$ 3,000
Re-caulk exterior windows (Davis Science Building)		\$ 14,000					
Recycling - community drop-off relocation/expansion	\$ 3,000						
Recycling containers/supplies for MTSU Recycling Program	\$ 1,500	\$ 5,000	\$ 5,500	\$ 6,000	\$ 13,500	\$5,500	\$ 6,500
Re-lamp Cason Kennedy Nursing Building (existing portion) and Fairview	\$ 30,600	\$ 30,600					
Replace filters in AHU & clean coils in CKN & KOM					\$ 11,312		
Replace old V-Belts system (Continued from page 3)					\$ 2,900		
Replace older motor with energy efficient motor in Holmes						\$2,279	
Replace older motors with energy efficient motors-Stark Ag.							\$ 5,300
Replacement of exterior windows McFarland and Holmes		\$ 35,000	\$ 25,000				
Replacement of incandescent lamps in Murphy Center						\$5,729	
ReRev Cardio System elliptical machines in Rec Center				\$ 30,000			
Self sustainability Initiative through Alternative Horticulture							\$ 10,000
Solar attic fans in Ellington Human Science						\$16,720	
Solar exhaust fans						\$12,212	
Steam trap ultrasonic test equipment					\$ 2,600		
Student Suitabilities Education Initiative							\$ 2,500
Studio lighting installed in Mass Comm and LRC			\$ 22,960				
Sub-metering for Chilling Plant and Murphy Cntr	\$ 8,000						
Turning manure into gold				\$ 1,000			
Ultrasonic transmitters Midgett			\$ 18,130				
Variable Frequency Drive- Jones Hall							\$ 5,225
WMTS-FM 88.3 Solar Power Supply Project							\$ 19,900
WMTS-FM Solar power supply						\$12,000	
<b>Annual Total:</b>	<b>\$ 339,000</b>	<b>\$ 425,704</b>	<b>\$ 353,895</b>	<b>\$ 427,162</b>	<b>\$ 505,692</b>	<b>\$ 419,334</b>	<b>\$ 510,417</b>

## Sustainable Campus Fee Case Study:

### Energy Efficient Motors



As part of the Sustainable Campus Fund (SCF), a project was funded to replace old 87% motors with 93% energy-efficient electric motors. Over half of all electrical energy consumed in the United States is used by electric motors. Improving the efficiency of electric motors can save energy, and reduce operating cost.

Energy efficient motors are constructed with improved manufacturing techniques and superior materials. Energy efficient motors usually have higher service factors, longer insulation and bearing lives, lower waste heat output, and less vibration, all which increase reliability.

Savings projection is more than \$1000 per year with a payback of 5 years. The new motor is expected to last 25 years with improved reliability and reduced downtime.

MTSU's Sustainable Campus Funding for this project is making the environment more comfortable for our faculty, students, and staff.



## *Summary of Services 2012/2013 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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