

Positioning the University for the Future
Energy Efficiency and Conservation Workgroup

Final Report

February 18, 2009



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Charter

The charge for the Energy Efficiency and Conservation Initiatives work group (EEC) is as follows:

- A. Make recommendations regarding how the institution may improve conservation of its energy and other physical resources that will lead to cost effectiveness and efficiencies
- B. Make recommendations on ways to improve internal processes that will lead to the elimination of unnecessary duplication of efforts. Another area of focus should be on coordination of work issues among divisions and units, effective intra- and inter-communication among divisions, work flow processes, and customer service issues.

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Strategic Work Groups Energy Efficiency and Conservation Initiatives

I. Executive Summary

The Energy Efficiency and Conservation (EEC) workgroup investigated the energy/utilities operations, physical plant operations, and internal processes across the campus identifying various measures that would reduce annual operating costs, or improve the university's position, or both. Great emphasis has been placed on reviewing the individual services and activities for their essential level of support to the university and prioritizing them accordingly. These activities were bolstered by reviewing numerous suggestions and recommendations provided by the campus community through the "Positioning the University for the Future" Initiative.

The purpose of this report is to present the findings of the work group and to provide relevant information to quantify and qualify them. The following table summarizes the formal recommendations:

Category	Immediate Cost Savings			Positioning for the Future	
	# of Recommendations	Annual Cost Savings		# of Recommendations	
		Lower	Upper		
Energy/Utilities	5	\$217,500	\$277,500	3	
Physical Plant	6	\$426,500	\$506,500	2	
Internal Processes	2	\$61,000	\$113,500	3	
Other	2	\$50,000	\$112,000	\$166,000	
Totals	15	\$755,000	\$1,009,500	\$166,000	8

This report provides additional context and information for the recommendations within the categories as well as more detailed information on the individual recommendation forms. Other resources used in the preparation of the recommendations include:

- MTSU Campus Master Plan, February 14, 2008
- MTSU Summary of Services, Annual Report for Facilities Services Department, September 2008

II. Overview

The EEC workgroup convened on numerous occasions to review three broad areas of university business for to identify and prioritize specific actions and initiatives that provide positive economic outcomes. These action items and initiatives are written as a formal recommendation.

Areas of Focus

1. Energy/Utilities

This area involves the relevant services required in providing utilities (electricity, heating, cooling, water, sewer, etc) to the campus for facilities to function adequately. These services include utilities purchasing, central plant operations, system functionality, system efficiencies, and end-user needs and practices.

2. Physical Resources/Physical Plant

This area primarily involves the relevant services required to preserve, operate, and maintain the physical assets (namely the facilities and associated infrastructure) of the campus. The services are predominately performed by Facilities Services and they include all forms of routine maintenance and operations such as HVAC, Central Plant, Custodial, Grounds, etc.

3. Internal Processes and Workflow

This area is quite broad and focuses on the major work flow processes, practices, and issues that involve most or all divisions, departments, and work units.

In each of the areas, the EEC work group assessed the cost and relative benefits of the major activities. The costs, and subsequent savings, are determined by considering annual operating (recurring) costs and one-time (non-recurring) costs. The benefits are determined by the contribution made towards the functionality, safety, and cleanliness of the campus.

Desired Economic Outcomes

1. Immediate Cost Savings

Recommendations were evaluated for their ability to produce an annual cost reduction or savings in the upcoming fiscal year in response to the budget reductions and good business practice. Any one-time savings were noted as such. In addition to the savings, any recommendation has considered the cost to implement the action as well as any increases in costs in other areas.

2. Positioning for the Future

Recommendations were evaluated for their impacts (negative and positive) to the campus considering present and future needs. For services that are reduced or eliminated, emphasis was placed on their ability to be readily restored at an appropriate time in the future.

III. Recommended Measures

The EEC workgroup has reviewed dozens of potential measures for their feasibility, costs, and benefits (immediate savings, positioning for the future, both). The measures rating the highest in terms of benefits are presented in this section as Recommended Measures. As such, these measures each have a corresponding recommendation form in the appendix providing additional details and qualifiers.

For recommendations having an immediate savings, conservative estimates were provided including a range of possible savings.

Energy/Utilities

In FY 07/08, University expenses for utilities were approximately \$6.9 million for Education and General facilities (E&G), \$3.6 million for auxiliaries, and \$230 thousand for green power purchase. Utility rate increases (particularly electrical rate increases from TVA) are expected to increase utility expenditures for FY 08/09 by approximately 15%.

MTSU has been aggressively implementing energy cost savings projects and initiatives over the years. These projects and initiatives include:

- \$8.3 million in energy retrofit projects involving lighting, HVAC, cogeneration plant operating schedule revisions, back-up electrical generation and interruptible power contract, etc.
- Several minor projects involving windows replacements, lighting replacements, HVAC controls, etc. via the sustainable campus fee (SCF) program often referred to as the “green fee” or the “clean energy fee.”
- Central Plant fuel management practices through scheduling the operation of the turbine in the cogeneration plant during economically advantageous times and purchasing natural gas through a marketer working to negotiate a reduced price.

The EEC reviewed the submitted recommendations from the campus community and generated numerous ideas focusing on reducing energy consumption. The synthesis of these efforts is reflected in the final recommendations. These recommendations are summarized in the following tables:

Table III-A: Immediate Savings – Energy/Utilities				
Recommendation	Annual Energy Cost Savings		Comments	Recommendation Form ID
	Lower	Upper		
Lights Out Campaign	\$102,000	\$102,000	Target 20% reduction in lighting energy	E/U-IS-1
Reset Temperature Set-points – Occupied Hours	\$50,000	\$75,000	Target 2% reduction in heating and cooling energy	E/U-IS-2
Reset Temperature Set-points – Unoccupied Hours	\$50,000	\$75,000	Target 2% reduction in heating and cooling energy	E/U-IS-3
Reduce Plug Load Energy	\$10,000	\$20,000	Target 1% electrical energy	E/U-IS-4
De-lamp Pepsi Vending Machines	\$5,500	\$5,500	Includes “green” marketing campaign from University and vendor	E/U-IS-5
Totals	\$217,500	\$277,500		

Notes

1. Annual energy cost savings are based on projected energy reduction of each measure at current utility rates. It does not account for energy increases in other areas of the campus or utility rate increases.
2. Most measures require participation from building occupants and administrative support for meeting/exceeding targets.

Table III-B: Positioning for the Future – Energy/Utilities

Recommendation	Comments	Recommendation Form ID
Provide/Expand Opportunities for Energy Efficient Projects	Incorporate TBR, MTSU resources where possible (including Sustainable Campus Fee)	E/U-PF-1
Implement Watering/Irrigation Strategy to Reduce Watering Costs	Could produce immediate savings once implemented	E/U-PF-2
Incorporate Economically Sound Sustainability Initiatives in New Construction	Implement Tennessee Sustainable Guidelines as required on future capital projects	E/U-PF-3

Physical Resources/Physical Plant

The EEC workgroup viewed the physical plant services as the essential services required to operate and maintain the campus so that it is safe, functional, and clean. Priority was placed on the safety and functionality of the facilities first while recognizing the need to maintain an acceptable level of cleanliness and campus appearance.

Also, the MTSU Campus Master Plan, February 14, 2008 details the existing building conditions in appendix A. The information quantifies the deferred maintenance condition of the E&G facilities at approximately \$112 million. This condition (determined by factors such as age of the facility, existing physical condition, current replacement value, etc.) gets more serious as capital funding for major maintenance becomes less available. As the deferred maintenance condition increases, the negative affects on Operations and Maintenance increase as well.

The recommendations below focus on preserving as many of the true maintenance services to the campus as possible.

Table III-C: Immediate Savings – Physical Resources/Physical Plant

Recommendation	Annual Cost Savings		Comments	Recommendation Form ID
	Lower	Upper		
Reduce Cleaning Standards for E&G Facilities	\$150,000	\$150,000	Reduce cleaning levels from 3 to 4 (maintain level 2 in restrooms)	PP-IS-1
Rebid Custodial Contract	\$50,000	\$100,000	Leverage competitive process	PP-IS-2
Reduce Grounds/Greenhouse Services to E&G	\$75,000	\$100,000	Convert to less intensive maintenance areas – decrease aesthetics	PP-IS-3
Discontinue Lease for Off-campus Warehouse	\$86,500	\$86,500	Relocate to on campus function- requires space	PP-IS-4
Reduce Standards for Uniforms for Facilities Services	\$20,000	\$20,000	Furnish uniform shirts only – discontinue laundering services	PP-IS-5
Update Chargeback Procedures to Auxiliaries for Trash Services	\$45,000	\$50,000	Charge Auxiliary Services a prorated share (based on building square footage) of the Trash Services costs	PP-IS-6
Totals	\$426,500	\$506,500		

Table III-D: Positioning for the Future – Physical Resources/Physical Plant

Recommendation	Comments	Recommendation Form ID
Initiate Campus Facilities Fee	Request facilities fee (similar to other institutions) to apply toward improving various facility conditions	PP-PF-1
Develop program/funding source to address deferred maintenance	Reduce deferred maintenance through combination of funding sources	PP-PF-2

Internal Processes/Work Flow

This is the area where the EEC workgroup looked across all of the divisions in an effort to determine activities and processes that are unnecessary, inefficient, redundant, not cost effective, etc.

These recommendations are summarized in the following tables:

Table III-E: Immediate Savings – Internal Processes/Workflow

Recommendation	Annual Cost Savings		Comments	Recommendation Form ID
	Lower	Upper		
Expand P-Card use for travel (airlines)	\$26,000	\$40,000		IP-IS-1
Reduce Paper Usage – guidelines	\$35,000	\$73,500	Target a reduction of 25% in paper usage	IP-IS-2
2 sided copying				
Minimize printing/copying			Would produce additional savings from reduced purchase of toner and ink cartridges	
Totals	\$61,000	\$113,500		

Table III-F: Positioning for the Future – Internal Processes/Workflow

Recommendation	Comments	Recommendation Form ID
Implement cost effective business travel guidelines	Will require appropriate communication and/or training	IP-PF-1
Increase tenant awareness and participation in efficient work flow practices	Will require appropriate communication and/or training	IP-PF-2
Increase participation in paperless activities	Will require appropriate communication and/or training	IP-PF-3

Other

There are other measures that were discussed by the EEC workgroup that do not easily fit into the focus areas. These recommendations are summarized in the following table:

Recommendation	Annual Cost Savings		One-time Cost Savings	Comments	Recommendation Form ID
	Lower	Upper			
Reduce Depreciation Charges for Motor Pool	\$50,000	\$112,000		Remove vehicles that are fully depreciated per the R&R account balance	OTR-IS-1
Eliminate Motor Pool			\$166,000	Savings based on selling fleet vehicles only. Not recommended due to the one-time nature of the savings	OTR-IS-2
Totals	\$50,000	\$112,000	\$166,000		

IV. Additional Considerations

In addition to the recommendations above, other measures were investigated as either stand-alone or part of other initiatives. While a recommendation form was not completed, the EEC workgroup believes several of these measures merit consideration by the appropriated business units.

Energy/Utilities

1. Update procurement standards for equipment to require Energy Star labels –
The Governor’s Energy Task Force is preparing to require Energy Star labels on all appropriate equipment and appliances for State institutions. MTSU will have to ensure that this requirement is fully adhered to in the future by updating any procurement documents that are deficient.
2. Implement a 4-day work week to save energy/utilities –
This measure has been reviewed for the energy savings benefits. It is estimated that there is a \$2,000 to \$2,400 per day savings in energy/utilities. This was not considered significant compared to the lost value of closing the university.
3. Energy savings measures and projects –
There are several energy saving measures that were reviewed by the EEC workgroup including lighting, LEDs, wind power, photovoltaics, geothermal applications, methane, etc. These measure further consideration on a project by project basis. The Tennessee Sustainable Design Guidelines serve as the primary vehicle by which this will occur on both new buildings and retrofits.

Physical Resources/Physical Plant

1. Review chargeback procedures to non-E&G customers for O&M services and event support – Recently, a new policy for event charge-backs was developed. However not every group using university facilities for events is charged for the costs of event. Non-paying group events should be minimized.
2. Review outsourcing and insourcing opportunities – Each department should consider contracted services that could be economically brought in-house as well as in-house services that could economically be out-sourced. There may be opportunities for both scenarios.
3. Reduce preventative maintenance – This involves reducing various maintenance services to save the associated costs. Maintenance is considered a priority due to the negative impacts on the functioning of facilities and systems and the potential costs of running systems to failure. **The EEC workgroup is opposed to these actions.**
4. Access the affects of furloughs on the departments within the O&M function – In general, furloughing employees across the campus (as has been recommended by other work groups) would “save” approximately \$12,900 per day (excluding employees making less than \$25,000 per year) for the personnel in the O&M function. One consideration for furloughing, would be to have a university-wide furlough date(s), similar to holidays. This would allow a more complete closing of the campus providing greater opportunities for some energy savings. One negative implication is the effect(s) on maintenance activities that are performed during days and weeks the university is closed or classes are not in session.

Internal Processes/Work Flow

1. Investigate telecommuting opportunities – This has the potential to reduce the need for on-campus office space.
2. Cost effective expansion of recycling – The recycling program on campus provides economic benefits in the form of both revenues for recycled materials and reduced waste disposal fees. Any plans to expand the program must include the costs of the expansion as well as the calculated benefits. The primary opportunities for expansion consist of optimizing the collection processes to decrease the costs and increase the volumes of materials.

Other

1. Reduce bus schedules/outsourcing bus service – While there may be some savings opportunities with this measure, the EEC work group did not pursue because of master plan parking /transportation considerations, non-E&G funding, etc.
2. Expand use of Work Study students – Potential measure in the area would include redefining work activities for student workers to include recycling collection support, exterior trash pickup support, and other activities similar to an “adopt-a-building” program

Appendix

Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-IS-1

I. Title of Recommended Action:

Establish "lights out" campaign

II. Keywords used to identify or classify action:

energy, conservation, efficiency, lighting

III. Description of action:

Provide recommended/required parameters for (1) aggressively turning off lights when not needed and (2) reducing the amount of light required for routine tasks. This campaign would incorporate guidelines for manually turning off lights where switches are present, increasing the use of occupancy sensors and automatic controls where possible (cost considerations for labor and materials), and delamping – remove lamps in fixtures, keep some fixtures switched off, better use of task lighting and natural daylighting where possible.

IV. Rationale for action:

Produce immediate energy/cost savings. Promote a culture of conservation on campus.

V. Quantitative cost savings calculations/estimate:

Target \$102,000 (Based on 20% savings of lighting electrical energy – lighting is approximately 30% of total campus electrical energy.

VI. How action positions MTSU for future:

Reduction of light levels during off-hours in unoccupied spaces and some reduction during occupied hours. Effects of lighting changes would have to be considered against cost saving benefits.

VII. How action impacts personnel and/or AMP:

Since most actions are taken at the individual level, personnel would have to participate and adjust behaviors accordingly. The primary change is from a mindset of convenience to one of conservation.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-IS-2

I. Title of Recommended Action:

Reset Temperature Set-points in E&G Facilities – Occupied Hours

II. Keywords used to identify or classify action:

temperature, heating, cooling, set-points, energy, conservation, efficiency

III. Description of action:

Reset the temperature set-points for E&G spaces to 68 degrees winter and 76 degrees summer (this may vary depending on type of HVAC system serving the building) during the occupied hours. This would require reprogramming the energy management system for newer buildings and strict adherence to these set-points by individuals accessing wall mounted thermostats in all buildings.

IV. Rationale for action:

Produce immediate energy/cost savings. Promotes a culture of conservation on the campus.

V. Quantitative cost savings calculations/estimate:

Target \$50,000 – \$75,000 (Based on 2% savings of heating and cooling energy. could be higher if aggressively implemented and adhered to)

VI. How action positions MTSU for future:

Set-points could be returned to more comfortable range in future.

VII. How action impacts personnel and/or AMP:

Comfort of personnel would be impacted.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-IS-3

I. Title of Recommended Action:

Reset Temperature Set-points in E&G Facilities – Unoccupied Hours

II. Keywords used to identify or classify action:

temperature, heating, cooling, set-points, energy, conservation, efficiency

III. Description of action:

Reset the temperature set-points for E&G spaces to 65 degrees winter and 78 degrees summer (this may vary depending on type of HVAC system serving the building) during the unoccupied hours. This would require reprogramming the energy management system for newer buildings and strict adherence to these set-points by individuals accessing wall mounted thermostats in all buildings. Also would require the buildings being able to be brought back to occupied set-points at proper times. It should be noted that there are fewer unoccupied hours for many academic buildings where classes begin earlier than normal, run later, and have weekend uses.

IV. Rationale for action:

Produce immediate energy/cost savings. Promote a culture of conservation on campus.

V. Quantitative cost savings calculations/estimate:

Target \$50,000 – \$75,000 (Based on 2% savings of heating and cooling energy.

VI. How action positions MTSU for future:

Set-points could be returned to more comfortable range in future.

VII. How action impacts personnel and/or AMP:

Comfort of personnel in buildings during unoccupied hours would be impacted.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-IS-4

I. Title of Recommended Action:

Establish Guidelines/Policy to Reduce Facility Plug Load Energy

II. Keywords used to identify or classify action:

energy, conservation, efficiency

III. Description of action:

Provide recommended/required parameters for owning and using various types of equipment that consume electrical energy. These parameters would include: (1) minimizing use of space heaters, refrigerators, etc., (2) consolidating/optimizing the use of printers, copiers, etc., (3) establishing appropriate shutdown schedules for personal computers, monitors etc. (this would need to be coordinated with ITD for virus protection applications).

IV. Rationale for action:

Produce immediate energy/cost savings. Promote a culture of conservation on campus.

V. Quantitative cost savings calculations/estimate:

Target \$10,000 – \$20,000 (Based on 1% savings of electrical energy).

VI. How action positions MTSU for future:

No negative impact. Guidelines could be modified as appropriate in future.

VII. How action impacts personnel and/or AMP:

Since most actions are taken at the individual level, personnel would have to participate and adjust behaviors accordingly. The primary change is from a mindset of convenience to one of conservation.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-IS-5

I. Title of Recommended Action:

De-lamping Vending Machines

II. Keywords used to identify or classify action:

Vending, lighting, energy, Pepsi, conservation, efficiency

III. Description of action:

Remove the illumination lamps in the front of the Pepsi vending machines. The vendor can remove the lamps (or turn off a switch if available) in the front of machines. The vendor has prepared a marketing snipe to be placed on each machine (see Below).

IV. Rationale for action:

Produce immediate energy/cost savings

V. Quantitative cost savings calculations/estimate:

\$5,500 (Based on 100 machines at 80 watts each.)

VI. How action positions MTSU for future:

Lamps could be replaced if desired – possible charge vendor for energy costs.

VII. How action impacts personnel and/or AMP:

No impact



Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-PF-1

I. Title of Recommended Action:

Provide/Expand Opportunities for Energy Efficient Projects

II. Keywords used to identify or classify action:

energy, conservation, efficiency, savings, funding

III. Description of action:

This measure involves giving stronger consideration for energy efficiency in the development of projects on campus. One opportunity involves the use of the Sustainable Campus Fee funding of energy projects. Twice a year, the SCF committee reviews submissions for local energy and sustainability projects to be implemented on campus. Currently, the committee is reviewing the funding allocation to determine if additional funds could be allocated to increase the number of energy projects on campus providing greater benefits.

IV. Rationale for action:

Produce immediate energy/cost savings once projects are implemented.

V. Quantitative cost savings calculations/estimate:

TBD on a project by project basis.

VI. How action positions MTSU for future:

Improved facilities through implementing appropriate projects.

VII. How action impacts personnel and/or AMP:

No impact on personnel. Better facilities support the AMP.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-PF-2

I. Title of Recommended Action:

Implement Watering/Irrigation Strategy to Reduce Watering Costs

II. Keywords used to identify or classify action:

energy, conservation, efficiency, savings, water, irrigation

III. Description of action:

This measure involves developing a watering/irrigation strategy to reduce the watering costs associated with landscaping on campus. This would involve appropriate (more drought tolerant) plants selections, appropriate number of planting etc. In general, irrigation systems would only be used to establish new plants (typically first year) and in the event of severe drought conditions after that. This strategy would be applied to existing landscape areas and incorporated in the design process for new facilities.

IV. Rationale for action:

Produce water savings once strategy is implemented.

V. Quantitative cost savings calculations/estimate:

TBD on a project by project basis.

VI. How action positions MTSU for future:

Landscape areas would not be a lush – diminishing the campus appearance somewhat. Watering could be increased in future if funding allows.

VII. How action impacts personnel and/or AMP:

No impact on personnel.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

E/U-PF-3

I. Title of Recommended Action:

Incorporate Economically Sound Sustainability Initiatives in New Construction

II. Keywords used to identify or classify action:

energy, conservation, efficiency, savings, sustainability

III. Description of action:

This measure involves the application of the Tennessee Sustainable Design Guidelines (TNSDG) on the design and construction of new projects. This is a new requirement for TBR capital projects. Many measures in the TNSDG are designed to provide for energy and operating cost savings for the facilities once they are occupied. These measures are currently, and should continue to be, highly favored in the design process provided there is an economic benefit.

IV. Rationale for action:

The TNSDG is now required for new capital projects. However, its effectiveness is greatly determined by the diligence of the design team. MTSU maintains a strong commitment to the effective use of this tool. The primary benefit will be to reduce the energy and operating cost of future facilities.

V. Quantitative cost savings calculations/estimate:

TBD on a project by project basis.

VI. How action positions MTSU for future:

More sustainable facilities in the future with lower operating costs.

VII. How action impacts personnel and/or AMP:

The qualifications of design team personnel are essential. Better facilities will support and possibly enhance the AMP.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

PP-IS-1

I. Title of Recommended Action:

Cleaning Standards/Services Reduction for E&G Facilities

II. Keywords used to identify or classify action:

cleaning, custodial

III. Description of action:

Reduce the cleaning services provided to E&G facilities. Facilities Services and the Provost Office will collaborate to identify areas where cleaning services can be reduced. Emphasis/priority will be placed on the health and hygiene of restrooms, and the basic cleanliness of classrooms and public areas in buildings. This effectively reduces the cleaning standards from APPA level 3 to APPA level 4 (level 2 will be retained for restrooms)

IV. Rationale for action:

Reducing cleaning services will result in immediate cost savings – primarily through a reduction of the contracted cleaning services provided to the university.

V. Quantitative cost savings calculations/estimate:

Target \$150,000 +. This represents approximately 12 % of the current contract value.

VI. How action positions MTSU for future:

While cleaning services are being reduced, they may be reinstated when funding becomes available.

VII. How action impacts personnel and/or AMP:

Much of the impact of this action will be born by the contractor. Some E&G space is cleaned by in-house personnel, there could be a reduction of services and/or in-house personnel.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

PP-IS-2

I. Title of Recommended Action:

Re-bid Custodial Services Contract for E&G Facilities

II. Keywords used to identify or classify action:

cleaning, custodial

III. Description of action:

Upon completion of the reduction of cleaning standards/services, the current custodial contract is to be re-bid. The current contract has a one-year renewal remaining. This action would forego the renewal in anticipation of better pricing through the competitive process.

IV. Rationale for action:

There is a possibility that a competitive procurement could yield a lower cost.

V. Quantitative cost savings calculations/estimate:

Target \$50,000 - \$100,000. This is an estimate based on the range of cost proposals received the last time the contract was bid.

VI. How action positions MTSU for future:

Successful bidder will have to provide appropriate (albeit reduced) cleaning services. Adequate performance will result in continuing savings. A competent custodial contractor will benefit the university presently and in the future.

VII. How action impacts personnel and/or AMP:

Contract management responsibilities for in-house personnel would be required. Additionally, the procurement could require successful contractor provide hiring opportunities to displaced MTSU custodial personnel (if any).

Strategic Work Group: Energy Efficiency and Conservation Initiatives

PP-IS-3

I. Title of Recommended Action:

Reduce Grounds and Greenhouse Services

II. Keywords used to identify or classify action:

grounds, greenhouse, landscaping

III. Description of action:

Reduce the level of services provided to the upkeep of the E&G grounds across campus. This would result in replacing high maintenance areas (flower beds, etc.) with lower maintenance areas (turf, etc). Services for Auxiliary grounds (Residential Life, Campus Recreation, Parking, etc) would remain the same.

Reduce/eliminate the Greenhouse services not directly related to the campus landscape. These would include event decorations, interior plants, poinsettias, etc.

IV. Rationale for action:

Produce immediate savings by scaling back the services associated with the campus grounds, landscaping, and interior plants.

V. Quantitative cost savings calculations/estimate:

Target \$75,000 – \$100,000.

VI. How action positions MTSU for future:

The campus will be somewhat less attractive, but addition grounds services could be restored in the future.

VII. How action impacts personnel and/or AMP:

There would be a net loss in personnel for E&G related services. This can be off-set by reallocated work to non-E&G grounds activities.

Strategic Work Group: Energy Efficiency and Conservation Initiatives
PP-IS-4

I. Title of Recommended Action:

Discontinue lease for off-campus warehouse space located at 880 Esther Lane, Murfreesboro.

II. Keywords used to identify or classify action:

Physical plant conservation initiative.

III. Description of action:

Allow lease of 20,750 s.f. warehouse space to expire on 7/31/09. Relocate/dispose of contents as appropriate for stored materials. Consider storage of items in the Tennessee Livestock Center if they cannot be disposed or relocated back to departments, and if TLC space is available.

IV. Rationale for action:

The space is used for 1) storage of furnishings and equipment for renovation staging, 2) Speech and Theater for prop storage, 3) various departmental file storage, 4) bulk paper storage by Purchasing, 5) miscellaneous storage for Facilities items. If on-campus space is available to store items currently in the warehouse, then this action will increase efficient use of existing physical resources. Consider whether bulk purchase of paper justifies cost of warehouse rental for paper storage. Lease will expire this summer, and a new RFP will be required to locate another facility or continue the lease, perhaps at a higher cost. If leased warehouse space is a critical need in the future, it should not be difficult to obtain. Within the current budget crisis, the current warehouse storage may not be vital to the mission of the University.

V. Quantitative cost savings calculations/estimate:

\$86,500 / year (\$7,014.58 per month plus utilities) of O & M dollars. Approximately \$10,000 to \$12,000 collected by Purchasing Dept. from various departments, including about 4,000 s.f., primarily for Speech and Theater stage sets, and box storage to various departments.

VI. How action positions MTSU for future:

In the future, off-campus storage may be desirable for archive records or rarely used Library book storage if that storage allows more critical functions to remain in close proximity on-campus, and/or it eliminates the need for high-cost capital construction of that space. However, the University can remain flexible on this issue until it is a more critical need.

VII. How action impacts personnel and/or AMP:

No positions would be lost. Action will require personnel time to absorb and/or reformat files, and dispose or relocate equipment and furnishings. Space for renovation staging will need to be identified. Alternate bulk paper storage location will need to be identified, or modify process for paper delivery. Consider digital storage of archived paper files.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

PP-IS-5

I. Title of Recommended Action:

Reduce Uniform Standards for Facilities Services Personnel

II. Keywords used to identify or classify action:

Physical plant, cost savings

III. Description of action:

Reduce the uniform standards for Facilities Services personnel to include only a shirt with MTSU logo and person's name patch. This will result in savings from leasing fewer articles of clothing and will eliminate the laundering services for the uniforms. In addition to the shirts, appropriate protective clothing will be provided to meet certain job function requirements.

IV. Rationale for action:

Produce immediate cost savings.

V. Quantitative cost savings calculations/estimate:

Target \$20,000. Based on review of current contract

VI. How action positions MTSU for future:

Uniform standards could be increased in future if desirable.

VII. How action impacts personnel and/or AMP:

Decreased morale for employees losing clothing and laundering services.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

PP-IS-6

I. Title of Recommended Action:

Charge Auxiliary Services for Trash Pickup Services

II. Keywords used to identify or classify action:

Auxiliary, trash, physical plant, services, savings

III. Description of action:

Facilities Services provides trash pickup and disposal services for the campus 5 to 6 times per week. The service includes emptying the dumpsters and hauling the trash to a landfill transfer station. Currently, Auxiliaries Services does not share in the costs of this service. FSD proposes to allocate a pro-rated share of the costs to Auxiliary Services using the building square footage as the primary basis for determining the trash generation levels.

IV. Rationale for action:

Produce immediate savings by having Auxiliaries share in the costs of the campus wide trash service.

V. Quantitative cost savings calculations/estimate:

Estimated \$45,000 – \$50,000.

VI. How action positions MTSU for future:

Increased costs to Auxiliaries Services

VII. How action impacts personnel and/or AMP:

No net impact to E&G personnel. Auxiliaries would have to budget for or absorb the costs.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

PP-PF-1

I. Title of Recommended Action:

Initiate Campus Facilities Fee

II. Keywords used to identify or classify action:

Physical Plant, deferred maintenance, maintenance

III. Description of action:

This measure calls for initiating a new Facilities Fee when feasible, similar to other institutions in the TBR system.

IV. Rationale for action:

The Campus Master Plan estimates the current level of deferred maintenance exceeding \$112 million. In addition, the annual capital maintenance needs of the campus are estimated to be approximately \$8 million/yr. With insufficient capital maintenance funding and aging facilities and infrastructure, the impacts of this deferred maintenance are being felt physically and fiscally.

The Facilities Fee would be used in support of the maintenance needs of the facilities and infrastructure on campus. There would be considerable benefit in several areas such as repair, maintenance, painting, carpet replacements, etc.

V. Quantitative cost savings calculations/estimate:

Added value through increased levels of maintenance and stewardship. One sister institution has a Facilities Fee of \$30/student/semester.

VI. How action positions MTSU for future:

Provides needed funding for maintenance support

VII. How action impacts personnel and/or AMP:

No net impact to E&G personnel. Improved facilities should increase morale and support the AMP in a positive way.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

PP-PF-2

I. Title of Recommended Action:

Develop program/funding source to address deferred maintenance

II. Keywords used to identify or classify action:

Physical Plant, deferred maintenance, maintenance

III. Description of action:

This measure calls for developing a comprehensive program to target the reduction of deferred maintenance in existing facilities and infrastructure on campus. The program would include identifying appropriate funding sources (existing and new) and implementing capital maintenance projects in accordance with the needs identified in the Campus Master Plan. In addition to capital maintenance funding, the program should explore other possible funding sources such as R&R typed accounts, Facilities Fee (See PP-PF-1), etc.

IV. Rationale for action:

The Campus Master Plan estimates the current level of deferred maintenance exceeding \$112 million. In addition, the annual capital maintenance needs of the campus are estimated to be approximately \$8 million/yr. With insufficient capital maintenance funding and aging facilities and infrastructure, the impacts of this deferred maintenance are being felt physically and fiscally.

Additional funding sources are going to be required to keep many facilities safe and functional. Also, this lack of adequate funding for replacing systems will require additional operating resources to repair systems and prolong useful life.

V. Quantitative cost savings calculations/estimate:

Capital investment is required to approach the \$8 million per year need.

VI. How action positions MTSU for future:

Improved facilities supporting the academic mission of the university

VII. How action impacts personnel and/or AMP:

No net impact to E&G personnel. Improved facilities should increase morale and support the AMP in a positive way.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

IP-IS-1

I. Title of Recommended Action:

Ability to use P-Card to Purchase airline tickets

II. Keywords used to identify or classify action:

P-Card Travel

III. Description of action:

In lieu of booking travel through a travel agent let individual purchase them on a P-Card

IV. Rationale for action:

Ability for individuals to search internet for best rates

V. Quantitative cost savings calculations/estimate:

Departments will not have to pay the booking fee (\$25 or \$30) per ticket through a travel agent. Could possibly save the university between \$26,000 and \$40,000 depending on travel habits of each department.

VI. How action positions MTSU for future:

Provides an avenue for the most cost effective airfare rates to be utilized

VII. How action impacts personnel and/or AMP:

Controls and accounting procedures must be in place

Strategic Work Group: Energy Efficiency and Conservation Initiatives

IP-IS-2

I. Title of Recommended Action:

Reduction in copying/printing volume

II. Keywords used to identify or classify action:

Paper consumption reduction, waste reduction, greening efforts

III. Description of action:

The university needs to look at ways to institute guidelines or suggestions for changing printing/copying habits as well as improving the paper recycling on campus. Such things as printing on 2-sides or a reduction in font size, or printing Powerpoint presentation as 'handouts' (with 6-9 slides per page) could have a drastic reduction in paper consumption. A greater security measure needs to be put in place to help eliminate guests from being able to print items in the library. A greater emphasis needs to be put in place to get faculty to utilize such programs as D2L to host syllabi, homework assignments, notes, lectures, etc.

IV. Rationale for action:

Reducing paper consumption by students, faculty and staff could help save money for the university. It would eliminate the need for as much paper to be purchased; it would eliminate the need to store as much paper as we have. By teaching students, faculty and staff ways they can help reduce what they print we will be changing a behavior to help them become more efficient and consume less paper. By offering documents through D2L, there are the possibilities that the student will never need to print the items hosted or they could print the documents at home.

V. Quantitative cost savings calculations/estimate:

Target cost savings \$35,000 - \$73,500

MTSU currently consumes approximately 10,000 cases of paper at \$29.40 per case (\$294,000). A 25% reduction in consumption would produce a cost savings of \$73,500 per year for paper alone.

Some labs, such as the LRC already have set limits on printing (1-sided w/20 pgs per visit), Housing puts out a set amount for each week, increasing the amount during peak times (mid-term and final exams) and once it's used for the week it won't be replenished until the following week. Currently 4 million sheets are printed in the BAS computer lab alone. However, this lab (as well as others) is paid for out of TAF funding so a change in procedure would need to be approved. 2-sided printed is not mandated in these labs, but students have the option to pursue these printing methods if they wanted. There can be software purchased to implement some of these changes and if, for example, a student needed to print 1 sided to turn in a term paper, they could then override the default setting.

Every staff member has a different printer and not all of them even have the capabilities to print two-sided however, measure could be taken to illustrate how easy it is to change the settings on their printers for those who have it available to them. The same could be implemented for office copying.

VI. How action positions MTSU for future:

It makes us like a more 'green campus' and more efficient use of our paper.

VII. How action impacts personnel and/or AMP:

D2L usage would increase bandwidth.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

IP-PF-1

I. Title of Recommended Action:

Best Travel Practices

II. Keywords used to identify or classify action:

Travel Practices

III. Description of action:

Restrict the amount of travel for conferences, seminars...etc. Have individuals carpool, reimburse individuals mileage at less than state rate (.30 per mile), have individuals "double-up" on short road trips, and utilize teleconferences when available. Also have university rewards accounts for travel (airlines, hotels, rental cars...etc). This would enable the university to receive discounted/free trips/hotels/cars.

IV. Rationale for action:

To reduce travel costs for the university

V. Quantitative cost savings calculations/estimate:

Depends on each department and travel habits

VI. How action positions MTSU for future:

VII. How action impacts personnel and/or AMP:

Limits the number of conferences/seminars that they can attend

Strategic Work Group: Energy Efficiency and Conservation Initiatives

IP-PF-2

I. Title of Recommended Action:

End-User Conservation Campaign

II. Keywords used to identify or classify action:

Conservation, end-user, energy efficiency, office efficiency, work-flow efficiency, waste reduction, greening efforts, environmental efforts

III. Description of action:

There are several small ways that end-users (students, staff, faculty) and university entities (departments, organizations, colleges, divisions) can help the university become more energy efficient and reduce waste consumption. This proposal will outline the many ways that we, as a community, can both improve our greening efforts on campus and eliminate wastefulness. These will be guidelines and suggestions for end-users and entities, hopefully causing a cultural change on our campus.

IV. Rationale for action:

The rationale for these actions is to save the university money for operating expenses. Just like making a house more energy efficient to reduce utility cost and usage to save money – end-user habits can and must be changed for the benefit of the whole.

V. Quantitative cost savings calculations/estimate:

Many of the cost savings are included as part of other specific recommendations. However, an estimated 1-3% reduction in energy use and 1-3% reduction in waste in addition to an increase in recyclables on campus appears to be a reasonable goal. How quickly end-users can adapt and change habits/behaviors and how many actually change is up to each individual end user.

VI. How action positions MTSU for future:

By implementing and suggesting these habit/cultural changes we can make a significant impact on how our university is viewed in the public eye (as well as to potential students) through becoming more efficient, less wasteful and more eco-friendly. MTSU is already one of the more efficient universities in the state. The students also passed a SGA resolution to pay 'green fees' to make the university more environmentally friendly by purchasing TVA green power as well as funding other projects locally to make facilities more energy efficient. We also have a large recycling program that reduces our waste, provides us with a small revenue stream (that helps to sponsor scholarships) and provides a service to both MTSU and Rutherford county. These standards and ideas need to be publicized and used as a selling point for the university -- both as becoming more environmentally friendly and as making better use of tax-payer/tuition dollars.

VII. How action impacts personnel and/or AMP:

The impact on personnel is asking everyone, students included, to change their behavior/mindset and making them more responsible and capable of doing their part to save the university, save the AMP and ultimately help the environment. It could also serve as a catalyst to help better our university community.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

IP-PF-3

I. Title of Recommended Action:

Going "paperless"

II. Keywords used to identify or classify action:

Paperless, paper consumption reduction, waste reduction, improved efficiency, greening efforts

III. Description of action:

Facilitate as many ways as possible to make the University a more 'paperless' environment. Several factors are in consideration including: Digital Ticketing/Print-at-Home tickets for Athletic events, moving any division/college/department newsletters or publications to digital formats as opposed to printed versions, ensuring campus forms/applications/policies/procedures are available in digital format, and developing forms to accept digital transmissions/signatures for routing purposes.

IV. Rationale for action:

Going paperless can help the university in several ways. First, it would save money for the university for the cost of printing (paper, ink, and maintenance) as well as the electricity to run the printers/copiers. Secondly, it would bring the university more into the digital and green age in that we could help in greening efforts by decreasing our paper consumption. This will also help in improving efficiency of paperwork by accepting signatures and approvals in digital formats, reducing the need to use fax machines, copy machines, and mailings.

V. Quantitative cost savings calculations/estimate:

However, there would be an immediate cost savings in either eliminating or reducing the number of printings of several publications across campus, including Sidelines, The Record, The Alumni Record, etc.

Currently, there are over 180 forms available on our website (these are available in web forms, PDF or Word formats). It would be hard to pinpoint exactly which forms should be reformatted or changed in order to accept digital approvals. However, two forms immediately come to mind (Application to Bring Food on Campus and Application for Use of Facilities) if these forms were to be in digital format it would make it easier on all parties involved (students, advisors, faculty, staff, outside parties, etc). The cost savings for transitioning these types of documents to digital routing would improve efficiencies drastically.

Digital Ticketing/Print-at-Home tickets for Athletic events could help to improve the customer experience, help streamline the ticket office operations and set Athletics up for other future digital services. The cost of printing tickets is put in the hands of the consumer, not the university. It will also eliminate will call lines and automate the labor-intensive, manual processes including printing tickets and stuffing envelopes. This would save money on printing and mailing costs associated with paper-based tickets and a reduction in staff for will call lines could be made. Printed tickets should still be offered, but an increase in order/delivery fees could help drive a behavioral change. Additionally, sponsorships could be offered for the print-at-home option to generate revenues.

Moving division/college/department newsletters or publications to digital formats. Research has shown that currently several of the divisions, departments, colleges, etc. already have their respective publications available online. Further research needs to be provided to determine how many of these groups actually have printed versions, however several offices have already taken this initiative including the Business Office by eliminating paper billing and having student tuition statements only available through Raidernet.

VI. How action positions MTSU for future:

Going paperless can help the university in several ways. First, it would save money for the university for the cost of printing (paper, ink, and maintenance) as well as the electricity to run the printers/copiers. Secondly, it would bring the university more into the digital and green age in that we could help in greening efforts by decreasing our paper consumption. This will also help in improving efficiency of paperwork by accepting signatures and approvals in digital formats, reducing the need to use fax machines, copy machines, and mailings.

VII. How action impacts personnel and/or AMP:

Increase in bandwidth usage, reduction in personnel.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

OTR-IS-1

I. Title of Recommended Action:

Reduce Amount Set Aside for Motor Pool Replacement

II. Keywords used to identify or classify action:

Motor pool, savings

III. Description of action:

Each year, the motor pool sets aside an amount in R&R funds to cover the future replacement costs of motor pool vehicles based on a vehicle depreciation schedule. With several vehicles being fully depreciated, the current depreciation schedule, and subsequent charges could be reduced by \$112,000.

IV. Rationale for action:

The R&R account balance demonstrates that several of the motor pool vehicles have been fully depreciated.

V. Quantitative cost savings calculations/estimate:

\$112,000

VI. How action positions MTSU for future:

The current R&R account for vehicles is adequate to replace the vehicles at the appropriate time.

VII. How action impacts personnel and/or AMP:

No impact on personnel.

Strategic Work Group: Energy Efficiency and Conservation Initiatives

OTR-IS-2

I. Title of Recommended Action:

Eliminate Motor Pool

II. Keywords used to identify or classify action:

Motor pool, savings

III. Description of action:

The motor pool currently provides 21+ vehicles to the university tenants to be rented for university business. Departments are charged rental fees (primarily on a per mile basis) to use the vehicles. Eliminating this rental service would eliminate the costs associated with the fleet and allow the university to sell the current inventory of vehicles associated with this service. The university tenants would need to use an outsourced car rental service when necessary.

IV. Rationale for action:

Realize one-time cost savings from selling the rentable fleet. Possibly realize recurring operational savings by using outsourced rental service – this is difficult to quantify without a true understanding of the driving patterns (types of vehicles, days, mileage, etc.) associated with the future rentals.

V. Quantitative cost savings calculations/estimate:

\$166,000 one-time. The current blue book value for the 21 vehicles totals \$221,300. Assumes 75% of this value can be secured by the selling of the vehicles.

VI. How action positions MTSU for future:

MTSU is out of the motor pool business – inconvenience of dealing with off-campus vendor. Would require a significant purchase of vehicles to restart later.

VII. How action impacts personnel and/or AMP:

No impact on personnel is projected since the university retains many vehicles for Public Safety, Maintenance, departments, etc. – all requiring some level of maintenance, emissions testing, etc.