

Strategic Work Groups

Energy Efficiency and Conservation Initiatives

Interim Report

January 29, 2009

I. Executive Summary

The Energy Efficiency and Conservation (EEC) work group has been investigating the energy/utilities operations, physical plant operations, and internal processes across the campus identifying various measures that would reduce annual operating costs, improve the university's position, or both. 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 recommendations that produce an immediate cost savings:

Table I-A: Immediate Cost Savings					
Category	# of Recommendations	Annual Cost Savings		One-time Cost Savings	Comments
		Lower	Upper		
Energy/Utilities	5	\$217,500	\$277,500		
Physical Plant	5	\$381,500	\$456,500		
Internal Processes	4	\$ 26,000	\$ 40,000		Cost Reductions TBD
Other	1	TBD	TBD	TBD	Under investigation
Totals	14	\$625,000	\$774,000	TBD	

The following table summarizes the recommendations that are considered to better position the university for the future:

Table I-B: Positioning for the Future		
Category	# of Recommendations	Comments
Energy/Utilities	3	
Physical Plant	5	
Internal Processes	2	
Other	2	

The EEC work group is continuing its efforts to quantify the cost and benefits of the current recommendations and proposals (as well as any new proposals) and make solid recommendations to the Strategic Working Groups Steering Committee.

II. Overview

The EEC work group has convened on several occasions to review three broad areas of university business for the purpose of identifying and prioritizing specific actions and initiatives that provide positive economic outcomes. These action items and initiatives are being 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 is assessing 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 will be 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 will be noted as such. In addition to the savings, any recommendation should also consider the cost to implement the action and determine any residual increases in costs in other areas.

2. Positioning for the Future

Recommendations will be evaluated for their impacts (negative and positive) to the campus considering present and future needs. For services that are reduced or eliminated, emphasis will be placed on their ability to be readily restored at the appropriate time in the future. In addition, there may be recommendations whereby certain services need to be implemented today, perhaps at some cost, because they will provide a future advantage to the campus.

III. Considerations and Recommendations

Energy/Utilities

In FY 07/08, University expenses for utilities were approximately \$6.9 million for 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. 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 attempting to reduce the price.

Never the less, the EEC work group is considering several recommendations for initiatives to conserve energy/utilities in the facilities during both the occupied hours as well as unoccupied hours. These recommendations are summarized in the following tables:

Recommendation	Annual Energy Cost Savings		Comments	Recommendation Form Complete
	Lower	Upper		
Lights Out Campaign	\$102,000	\$102,000	Target 20% reduction in lighting energy *	X
Reset Temperature Setpoints – Occupied Hours	\$50,000	\$75,000	Target 2% reduction in heating and cooling energy *	X
Reset Temperature Setpoints – Unoccupied Hours	\$50,000	\$75,000	Target 2% reduction in heating and cooling energy *	X
Reduce Plug Load Energy	\$10,000	\$20,000	Target 1% electrical energy *	X
Delamp Pepsi Vending Machines	\$5,500	\$5,500		X
Totals	\$217,500	\$277,500		

* Conservative estimates – Requires participation from building occupants and administrative support for meeting/exceeding targets.

In addition, the EEC work group is considering several recommendations that are important to strategically positioning the university for the future. These recommendations are summarized in the following table:

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

Other measures being investigated as either stand-alone or part of other initiatives include:

- Expand cooking oil collection opportunities in food service contracts for use in bio-diesel bus. **Position for Future**
- Update, if necessary, the procurement standards for equipment to require Energy Star labels or efficiency features are provided. **Immediate Savings/ Position for Future**
- 4-day work week. This item has been initially reviewed for the energy savings impacts. 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 shutting down the university. **Immediate Savings/ Position for Future -TBD**
- Develop a training module for employees related to energy and resource conservation policy, guidelines, and standards. **TBD**

Physical Resources/Physical Plant

The EEC work group 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 is being placed on the safety and functionality of the facilities first while still 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.) is certainly getting more serious as capital funding for major maintenance becomes less available. As the deferred maintenance condition increases, the negative impacts on the Operations and Maintenance increase as well.

The recommendations below are focusing in 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 Complete
	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)	X
Rebid Custodial Contract	\$50,000	\$100,000	Leverage competitive process	X
Reduce Grounds/Greenhouse Services to E&G	\$75,000	\$100,000	Convert to less intensive maintenance areas – decrease aesthetics	X
Discontinue Lease for Off-campus Warehouse	\$86,500	\$86,500	Relocate to on campus function- requires space	X
Reduce Standards for Uniforms for Facilities Services	\$20,000	\$20,000	Furnish uniform shirts only – discontinue laundering services	X
Totals	\$381,500	\$456,500		

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

Recommendation	Comments	Recommendation Form Complete
Prioritize Capital Maintenance Projects	Seek to have Capital Maintenance funding restored/increased to address aging facilities and infrastructure	
Initiate Campus Facilities Fee	Request facilities fee (similar to other institutions) to apply toward improving various facility conditions	
Incorporate economically sound sustainability initiatives	Implement Tennessee Sustainable Guidelines as required on future capital projects	
Develop program/funding source to address deferred maintenance	Reduce deferred maintenance through combination of funding sources	
Preserve/expand maintenance-related budgets to prevent untimely and costly system failures	Lack of capital funding for replacing systems will require additional operating resources to repair systems and prolong life	

Other measures being investigated as either stand-alone or part of other initiatives include:

- Review chargeback procedures to non-E&G customers for O&M services and event support.
- Immediate Savings/ Position for Future**
- Review outsourcing and insourcing opportunities. **TBD**
 - 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 system failures. **Immediate Savings - TBD**

Internal Processes/Work Flow

This is the area where the EEC work group is looking 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 Complete
	Lower	Upper		
Expand P-Card use for travel (airlines)	\$26,000	\$40,000		X
Reduce Paper Usage - guidelines	TBD	TBD	Target a reduction or 25% in paper usage	
2 sided copying				X
Minimize printing/copying				X
Implement cost effective business travel guidelines	TBD	TBD		X
Totals	\$26,000	\$40,000		

Table III-F: Positioning for the Future – Internal Processes/Workflow		
Recommendation	Comments	Recommendation Form Complete
Increase tenant awareness and participation in efficient work flow practices		
Increase participation in paperless activities		

Other measures being investigated as either stand-alone or part of other initiatives include:

- Investigate telecommuting opportunities **TBD**
- Pooling of clerical workers. **Immediate Savings - TBD**
- Cost effective expansion of recycling. **TBD**

Other

There are other measures that have been discussed by the EEC work group.

- Review Motor Pool economics/options. **TBD**
- Reduce bus schedules/outsourcing bus service. **Immediate Savings – TBD**
- Expand use of Work Study students. **TBD**