(13) Rec 2/25/11

MTSU Clean Energy Initiative Project Funding Request

There are five (5) sections of the request to complete before submitting. See http://www.mtsu.edu/~sga/cleanenergy.shtml for funding guidelines. Save completed form and email to cee@mtsu.edu or mail to MTSU Box 57.

1. General Information	
Name of Person Submitting Request Heather Cavitt	
Department/Office Building Services	Phone # (Office) 898-2349
MTSU Box # P.O. Box 32	Phone # (Cell)
E-mail hcavitt@mtsu.edu	Submittal Date 02/25/2011

2. Project Categories (Select One)			
Select the category that best describes the project.			
☑	Energy Conservation/Efficiency	☑	Sustainable Design
☐	Alternative Fuels	☐	Other
☐	Renewable Energy		

3. Project Information
a. Please provide a brief descriptive title for the project. **b.** The project cost estimate is the expected cost of the project to be considered by the committee for approval, which may differ from the total project cost in the case of matching funding opportunities. **Any funding request is a 'not-to-exceed' amount. Any proposed expenditure above the requested amount will require a resubmission.** c. List the source of project cost estimates. d. Provide a brief explanation in response to question regarding previous funding.
3a. Project Title James Walker Library LED Lamps
3b. Project Cost Estimate $18,608.00
3c. Source of Estimate Manufacture information and KWH calculation
3d. If previous funding from this source was awarded, explain how this request differs?

4. Project Description

(Completed in as much detail as possible.)

a. The scope of the work to be accomplished is a detailed description of project activities.
b. The benefit statement describes the advantages of the project as relates to the selected project category.
c. The location of the project includes the name of the building, department, and/or specific location of where the project will be conducted on campus.
d. List any departments you anticipate to be involved. Were any departments consulted in preparation of this request? Who? A listing may be attached to this form when submitted.
e. Provide specific information on anticipated student involvement or benefit.
f. Provide information for anticipated future operating and/or maintenance requirements occurring as a result of the proposed project.
g. Provide any additional comments or information that may be pertinent to approval of the project funding request.

4a. Scope: Work to be accomplished

The scope of this project is to remove (120) 90 watt incandescent lamps and (60) MR-16 20 watt quartz halogen lamps. The 90 watt lamps are to be replaced with 8 watt LED (Light Emitting Diode) lamps. MR-16 quartz lamps are to be replaced with 3.3 watt LED MR-16 lamps.All incandescent lamps are to be recycled.

4b. Scope: Benefit Statement

The benefits of the LED lamps are multiple. The LED lamps have a lower energy consumption that promotes environmentally friendly. They contain no Mercury, no Lead. In comparison to incandescent lamps, LED lamps have lower CO2 emissions than incandescent; 451 lbs/year vs. 4500 lbs/year.

LED's do not have special recycling issues.

LED is made with recycled plastics.

4. Project Description (continued)

4c. Location of Project (Building, etc.)

Walker Library, Walkways throughout library.

4d. Participants and Roles

Facility Services - Purchase LED lamps and remove/recycle incandescent lamps.

Vendor - Supply LED lamps.

4e. Student participation and/or student benefit

With less intrusion from maintenance having to replace burned out lamps, the students will also have a better lit environment..

4f. Future Operating and/or Maintenance Requirements

Lamp replacement on average of 10 years.

4g. Additional Comments or Information Pertinent to the Proposed Project

The ROI, or Return on Investment, has a payback of less than 2 years. This project will assist in providing an atmosphere that will promote a better learning environment and assist in protecting the environment.

5. Project Performance Information

Provide information if applicable.

a. Provide information on estimated annual energy savings stated in units such as kW, kWh, Btu, gallons, etc.
b. Provide information on estimated annual energy cost savings in monetary terms.
c. Provide information on any annual operating or other cost savings in monetary terms. Be specific.
d. Provide information about any matching or supplementary funding opportunities that are available. Identify all sources and explain.

5a. Estimated Annual Energy Savings (Estimated in kW, kWh, Btu, etc.)

44,150.40 kwh.

5b. Annual Energy COST Savings ($)

$2,964.48

5c. Annual Operating or Other Cost Savings. Specify. ($)

Labor cost savings after initial investment: $5,040.00 per year on average for up to 10 years.

Recycling savings: $45.60 annually

5d.Matching or Supplementary Funding (Identify and Explain)

TECHNICAL SPECIFICATIONS VER. 4.1

PROJECT:	TYPE:
VOLTAGE:	COMMENTS:

Array™ LED R30 7.8 Watt

SPECIFICATIONS FEATURES

Approximate Equivalence	45 Watt Incandescent
Base Type	MED (E26 or E27), GU24
Power Factor	All lamps > .92
Voltage	120VAC (60Hz) 230VAC (50Hz)
Average Wattage	7.8 Watts at 120V 9.0 Watts at 230V
Color Temp (ANSI)	Cool White (6500K) Natural White (5000K) Warm White (3000K) Incandescent WW (2700K)
CRI	Cool White: 78 Natural White: 77 Warm White: 84 Incandescent WW: 85 Quantum WW: 90
Output (Lumens) *+/- 5%	Cool White: 536 Natural White: 545 Warm White: 500 Incandescent WW: 470 Quantum WW: 519
Beam Angle	Flood (60° - 100°) Narrow Flood (25° - 30°)
Weight	6.8 oz
Width	3.75" (95.3mm)
Length	4.7" (120mm)
Operating Temp.	-40°F to 113°F (-40°C to 45°C)
Dimmable[1]	100% to 10% on most commercial and incandescent dimmers
RoHS Compliant	Contains no mercury or lead
Rating	Open or Enclosed Fixtures
Rated Life	50,000 Hours
Listings	UL Listed, CE
IEC Certified	IEC61000-4-5/ IEC61000-4-12
Warranty	3 Years

** All Array LED lamps are tested to LM-79 and LM-80 standards.*

[1] Some dimming systems require a minimum load to operate properly. Array lamps are energy efficient, low power devices. With only a few lamps in a circuit, they may not meet the minimum load required for an existing dimming systems. As a result the LED lamps may glow or may not dim properly. Please consult the dimming systems manufacturer for minimum load requirements or contact Array Lighting to help you determine the proper dimming systems to operate the LED lamps.
**Data subject to change without notice.*

U.S. PATENT NO. D560, 077, D601, 276 AND OTHER WORLDWIDE PATENTS PENDING

ENERGY STAR

SKU: AE26R3083060
SKU: AE26R3083025

Available Colors:

- *Over 500 lumens at 3000K at only 7.8 watts*
- *UL Listed for Open or Enclosed Fixtures*
- *RoHS Compliant*
- *Dimmable[1] on most commercial and incandescent dimmers*
- *Lightest weight R30 in it's class.*

DESCRIPTION

Array LED R30 is a LED high output R30 lamp. The Array R30 is equivalent up to a 45 watt incandescent bulb but uses up to 80% less energy and lasts up to 25 times longer. The R30 lamps are Edison based and can be used with standard screw sockets for interior applications. Worldwide patent pending SELECTIVE HEAT SINK TECHNOLOGY™ (SHS) ensures reliable operation for 50,000 hours which makes these lamps ideal for retail, commercial, and hospitality applications, as well as long duty cycle, "always-on" applications and/or hard to reach locations. The Array LED R30 offers a choice of beam angles and is available in cool, natural, warm white, and incandescent warm white color temperatures. Unlike many compact fluorescent bulbs that require a warm up period, the Array R30 is "instant" on and is fully dimmable on most commercial and incandescent dimmers.

c UL us LISTED

CE

RoHS COMPLIANT

ORDERING INFORMATION

MODEL

AE26 (120VAC)
GU24 (120VAC)
AE27 (230VAC)

BE26 (120VAC) - BLACK
BG24 (120VAC) - BLACK
BE27 (230VAC) - BLACK

TYPE

R308

COLOR TEMP

QW - 2700K (QUANTUM)
27 - 2700K (INCAN. WARM WHITE)
30 - 3000K (WARM WHITE)
50 - 5000K (NATURAL WHITE)
65 - 6500K (COOL WHITE)

BEAM ANGLE

25 - NARROW FLOOD (25° - 30°)
60 - FLOOD (60° - 100°)

Ordering Example: **AE26R3082760**

Array Lighting ■ 124 Floyd Smith Drive ■ SUITE 300 ■ Charlotte, NC 28262 ■ t 704.405.9745 ■ f 704.973.0331 ■ arraylighting.com ■ NASDAQ: NEXS

TECHNICAL SPECIFICATIONS VER. 4.1

PROJECT:	TYPE:
VOLTAGE:	COMMENTS:

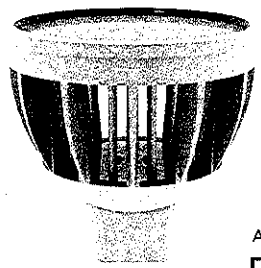
Array™ LED MR16

SPECIFICATIONS FEATURES

Approximate Equivalence	20 Watt Halogen Lamp
Base Type	GU5.3
Power Factor	All lamps > .92
Voltage	12VAC & 12VDC (order separately)
Average Wattage	3.3 Watts
Color Temp (ANSI)	Cool White (6500K) Natural White (5000K) Warm White (3000K) Incandescent WW (2700K)
CRI	Cool White: 78 Natural White: 77 Warm White: 82 Incandescent WW: 85
Output (Lumens) *+/- 5%	Cool White: 185 Natural White: 195 Warm White: 161 Incandescent WW: 149
Beam Angle	Flood (60° - 100°) Narrow Flood (25° - 30°)
Weight	1.2 oz
Width	2.0" (50mm)
Length	2.125" (54mm)
Operating Temp.	-40°F to 113°F (-40°C to 45°C)
Dimmable[1]	100% to 10% on most commercial and incandescent dimmers
RoHS Compliant	Contains no mercury or lead
Rating	Approved for use in indoor and damp locations
Rated Life	50,000 Hours
Listings	UL Recognized, CE
IEC Certified	IEC61000-4-5/ IEC61000-4-12
Warranty	3 Years

** All Array LED lamps are tested to LM-79 and LM-80 standards.*

[1] Some dimming systems require a minimum load to operate properly. Array lamps are energy efficient, low power devices. With only a few lamps in a circuit, they may not meet the minimum load required for an existing dimming systems. As a result the LED lamps may glow or may not dim properly. Please consult the dimming systems manufacturer for minimum load requirements or contact Array Lighting to help you determine the proper dimming systems to operate the LED lamps.



ENERGY STAR

SKU: AACMR16WW25

Available Colors:

- *High efficacy/High Lumen Package*
- *Equivalent to a 20 Watt halogen lamp*
- *RoHS C mpliant*
- *Dimmable[1] on most commercial and incand sc nt dimm rs*

DESCRIPTION

Array LED MR16 is a LED high output MR16 Bi-Pin base lamp. The Array LED MR16 is equivalent to a 20 watt halogen lamp but uses up to 80% less energy and lasts up to 25 times longer. The MR16 lamps are designed for track lighting and spot lighting applications powered by low voltage supplies. Worldwide patent pending SELECTIVE HEAT SINK TECHNOLOGY™ (SHS) ensures reliable operation for 50,000 hours which makes these lamps ideal for retail, commercial, and hospitality applications, as well as long duty cycle, "always-on" applications and/or hard to reach locations. The Array LED MR16 lamp generates very little heat allowing it to be placed in temperature sensitive areas. The Array LED MR16 is available in cool, natural, warm white, and incandescent warm white color temperatures. 12VAC or 12VDC versions are ordered separately.

RoHS COMPLIANT

*UL Recognized for use in indoor and damp locations

Array MR16 + Electronic Transformers: *Like all low power LED MR16 lamps the Array MR16 is not compatible with some electronic transformers due to its low power consumption. In most cases electronic transformers require a minimum load greater than 5 watts in order to function correctly, this is prevalent with fixtures that utilize an integral transformer for each fixture. Typical problems that exist would be flickering, strobing, low output, or no output.*

ORDERING INFORMATION

MODEL	TYPE	COLOR TEMP	BEAM ANGLE
AAC - 12VAC	**R16**	**IW** - 2700K (INCAN. WARM WHITE)	**25** - NARROW FLOOD (25° - 30°)
ADC - 12VDC		**WW** - 3000K (WARM WHITE)	**60** - FLOOD (60° - 100°)
		NW - 5000K (NATURAL WHITE)	
		CW - 6500K (COOL WHITE)	

Ordering Example: **AACMR16WW60**

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