

Rec  
2/8/19

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## MTSU Clean Energy Initiative Project Funding Request

1. General Information	
Name of Person Submitting Request Forrest Higginbotham; Linda Hardymon	
Department/Office Building Services	Phone # (Office) 615-898-5537
MTSU Box # 32	Phone # (Cell)
E-mail Forrest.Higginbotham@mtsu.edu; Linda.Hardymon@mtsu.edu	Submittal Date 1/29/19

2. Project Categories (Select One)	
Select the category that best describes the project.	
<input checked="" type="checkbox"/> Energy Conservation/Efficiency	<input type="checkbox"/> Sustainable Design
<input type="checkbox"/> Alternative Fuels	<input type="checkbox"/> Other
<input type="checkbox"/> Renewable Energy	

3. Project Information	
<p>a. Please provide a brief descriptive title for the project.</p> <p>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. <b>Any funding request is a 'not-to-exceed' amount. Any proposed expenditure above the requested amount will require a resubmission.</b></p> <p>c. List the source of project cost estimates.</p> <p>d. Provide a brief explanation in response to question regarding previous funding.</p>	
3a. Project Title	Retrofitted LEDs for Outdoor Lamps Across Campus: Old Main Circle and Walnut Grove
3b. Project Cost Estimate	\$19,706
3c. Source of Estimate	Sternberg Lighting
3d. If previous funding from this source was awarded, explain how this request differs?	N/A

#### 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 outdoor lamps across campus are in the process of being retrofitted for LEDs. At present, we replace about 180/year, as CosmoPolis metal halide bulbs—the current proprietary technology—is being phased out.

This project involves removing the current (~55) metal halide bulbs and installing retrofitted LED lights in the lamps around Old Main Circle and Walnut Grove.

##### 4b. Scope: Benefit Statement

Approval of this project would bring to campus all of the advantages LED lights have over metal halide lights—efficiencies of energy, cost, and labor. Though LEDs cost more up front, they save in electrical costs over the course of their lifespan because, unlike metal halide bulbs, they produce very little heat, emit focused light, and require no warm-up time. Moreover, whereas metal halide bulbs last for about 2-3 years, LEDs can last for about 12 years, resulting in labor savings and reduced waste production.

<b>4. Project Description (continued)</b>
<p>4c. Location of Project (Building, etc.) Old Main Circle/Walnut Grove</p>
<p>4d. Participants and Roles The labor will be provided by Facilities Services.</p>
<p>4e. Student participation and/or student benefit This project benefits students by keeping campus safely-lit at night.</p>
<p>4f. Future Operating and/or Maintenance Requirements The LED lights will need to be replaced in about 6-12 years.</p>
<p>4g. Additional Comments or Information Pertinent to the Proposed Project The current proprietary technology is being phased out by the manufacturer.</p>

### 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.)

5781.6 kWh total (105.12 kWh per fixture) saved annually

5b. Annual Energy COST Savings (\$)

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

TOTAL SAVINGS over the lifespan of the LEDs = \$49,626 (\$902 per fixture)

ROI = 4 years

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

N/A

# LED Waves' LED Savings Calculator

## Making the switch to LED lighting?

Answer the following questions on your current lighting usage, plus the LED replacement, to calculate your savings.

Form	Results	
<b>Number of fixtures to be replaced</b> 55 units	<b>Number of light units to be replaced to LED units: 55 units</b>	
<b>Old fixture (to be replaced)</b> <b>Wattage:</b> 140 Watt <b>Price per unit:</b> 58.00 US\$ <b>Lifespan:</b> 7,000 hr Incandescent / Halogen: 1,250 hours Metal Halide: 6,000 hours Fluorescent/CFL: 8,000 hours Pulse Start Metal Halide (PSMH): 15,000 hours High Pressure Sodium (HPS): 20,000 hours	<b>Old fixture</b> Total of \$3,190.00 (\$58.00 each)	<b>LED fixture</b> Total of \$17,914.05 (\$325.71 each)
<b>LED fixture (new fixture)</b> <b>Wattage:</b> 96 Watt <b>Price per unit:</b> 325.71 US\$ <b>Lifespan:</b> 50,000 hr LED: 50,000 hours	<b>Wattage</b> Total of 7,700 Watt (140 Watt each)	<b>LED fixture</b> Total of 5,280 Watt (96 Watt each)
<b>Energy rate (electricity cost)</b> 10¢/kWh The average residential price of electricity in the U.S. in 2015 was 12.66¢/kWh. To find the price per kWh (Kilo Watt hour) for your state and sector, check your energy bill or go to the EIA website.	<b>Electricity cost (10¢/kWh)</b> \$2,248.40 per year	<b>LED fixture</b> \$1,541.76 per year
<b>Hours of operation</b> Used 7 days a week 8 hours/day	<b>Lifespan (continuous use)</b> 7,000 hours	<b>LED fixture</b> 50,000 hours
<b>Other factors (optional)</b> <b>Labor cost for relamping:</b> \$75 per fixture	<b>Lifespan when used for 8 hours a day, 7 days a week</b> 2 years 4 months 23 days	<b>LED fixture</b> 17 years 1 month 14 days
<input type="button" value="Calculate savings"/>	<b>No. of times an old fixture to be replaced each year</b> Total of 22.94 times per year (0.42 times each fixtures)	-
	<b>No. of times an old fixture to be replaced during the LED fixture's lifespan (17 years 1 month 14 days)</b> Total of 385 times (7 times each fixtures)	-
	<b>Cost of replacements each year</b> ((Incand. bulb cost) × [Number of replacement per year])	Total of \$1,330.69 per year (\$24.19 each fixtures)
	<b>Annual labor cost for relamping</b> ((Labor cost per relamping) × [Number of replacement per year])	\$1,720.71 per year
	<b>Total annual cost</b> ((Cost of replacing fixtures) + [Electricity] + [Labor cost])	<b>\$5,299.80 per year</b> (same as the annual electricity cost)
	<b>Total cost</b> (after 17 years 1 month 14 days)	<b>\$93,940</b>
	<b>Total savings /w LED fixture (ROI)</b> (after 17 years 1 month 14 days)	<b>\$93,940 - \$44,314 = \$49,626</b>
	<b>Break-even point (per unit)</b> (The amount of time necessary to save as much money as you invested initially)	<b>3 years 11 months</b>
	<input type="button" value="Print the result"/>	



825 8TH AVE SOUTH  
 NASHVILLE TN 37203-4143  
 Phone: 615-743-3300  
 Fax: 615-254-4337

To: MTSU-ELECTRICAL  
 1500 GREENLAND DR  
 MURFREESBORO TN 37132-3100  
 Attn: LINDA HARDYMON  
 Phone: 615-898-2944  
 Fax: 615-904-8007  
 Email: carey.smith@graybar.com

Date: 02/04/2019  
**Proj Name: STERNBERG OLD MAIN CIR &**  
**GB Quote #: 0231982937**  
 Release Nbr:  
 Purchase Order Nbr:  
 Additional Ref#  
 Valid From: 02/04/2019  
 Valid To: 03/06/2019  
 Contact: CAREY SMITH  
 Email: carey.smith@graybar.com

*Walnut Grove*

**Proposal**

We Appreciate Your Request and Take Pleasure in Responding As Follows

Item	Item/Type	Quantity	Supplier	Catalog Nbr	Description	Price	Unit	Ext.Price
100		87 EA	STERNBERG	STERNBERG	LED RETROFIT	\$325.71	1	\$28,336.77
***Item Note:***		DOES NTO INCLUDE COPE LOTS & SIDEWALKS XRLED-1130-12L30T3-MDL14						
		Line Note: QTY: 20+ pricing						
200		16 EA	STERNBERG	STERNBERG	LED RETROFIT	\$325.71	1	\$5,211.36
***Item Note:***		COPE LOTS AND SIDEWALKS ONLY XRLED-1130-12L30T3-MDL14						
		Line Note: QTY: 20+ pricing						

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**Total in USD (Tax not included): \$33,548.13**

This equipment and associated installation charges may be financed for a low monthly payment through Graybar Financial Services (subject to credit approval). For more information call 1-800-241-7408 to speak with a leasing specialist.

To learn more about Graybar, visit our website at [www.graybar.com](http://www.graybar.com)

24-Hour Emergency Phone#: 1-800-GRAYBAR

Subject to the standard terms and conditions set forth in this document. Unless otherwise noted, freight terms are F.O.B. shipping point prepaid and bill. Unless noted the estimated ship date will be determined at the time of order placement.

To: MTSU-ELECTRICAL  
1500 GREENLAND DR  
MURFREESBORO TN 37132-3100  
Attn: LINDA HARDYMON

Date: 02/04/2019  
Proj Name: STERNBERG OLD MAIN CIR &  
GB Quote #: 0231982937

## Proposal

We Appreciate Your Request and Take Pleasure in Responding As Follows

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### GRAYBAR ELECTRIC COMPANY, INC. TERMS AND CONDITIONS OF SALE

1. ACCEPTANCE OF ORDER; TERMINATION - Acceptance of any order is subject to credit approval and acceptance of order by Graybar Electric Company, Inc. ("Graybar") and, when applicable, Graybar's suppliers. If credit of the buyer of the goods ("Buyer") becomes unsatisfactory to Graybar, Graybar reserves the right to terminate upon notice to Buyer and without liability to Graybar.
2. PRICES AND SHIPMENTS - Unless otherwise quoted, prices shall be those in effect at time of shipment, which shall be made F.O.B. shipping point, prepaid and bill.
3. RETURN OF GOODS - Credit may be allowed for goods returned with prior approval. A deduction may be made from credits issued to cover cost of handling.
4. TAXES - Prices shown do not include sales or other taxes imposed on the sale of goods. Taxes now or hereafter imposed upon sales or shipments will be added to the purchase price. Buyer agrees to reimburse Graybar for any such tax or provide Graybar with acceptable tax exemption certificate.
5. DELAY IN DELIVERY - Graybar is not to be accountable for delays in delivery occasioned by acts of God, failure of its suppliers to ship or deliver on time, or other circumstances beyond Graybar's reasonable control. Factory shipment or delivery dates are the best estimates of our suppliers, and in no case shall Graybar be liable for any consequential or special damages arising from any delay in shipment or delivery.
6. LIMITED WARRANTIES - Graybar warrants that all goods sold are free of any security interest and will make available to Buyer all transferable warranties (including without limitation warranties with respect to intellectual property infringement) made to Graybar by the manufacturer of the goods. GRAYBAR MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES, AND SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE. UNLESS OTHERWISE AGREED IN WRITING BY AN AUTHORIZED REPRESENTATIVE OF GRAYBAR, PRODUCTS SOLD HEREUNDER ARE NOT INTENDED FOR USE IN OR IN CONNECTION WITH (1) ANY SAFETY APPLICATION OR THE CONTAINMENT AREA OF A NUCLEAR FACILITY, OR (2) IN A HEALTHCARE APPLICATION, WHERE THE GOODS HAVE POTENTIAL FOR DIRECT PATIENT CONTACT OR WHERE A SIX (6) FOOT CLEARANCE FROM A PATIENT CANNOT BE MAINTAINED AT ALL TIMES.
7. LIMITATION OF LIABILITY - Buyer's remedies under this agreement are subject to any limitations contained in manufacturer's terms and conditions to Graybar, a copy of which will be furnished upon written request. Furthermore, Graybar's liability shall be limited to either repair or replacement of the goods or refund of the purchase price, all at Graybar's option, and IN NO CASE SHALL GRAYBAR BE LIABLE FOR INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES. In addition, claims for shortages, other than loss in transit, must be made in writing not more than five (5) days after receipt of shipment.
8. WAIVER - The failure of Graybar to insist upon the performance of any of the terms or conditions of this agreement or to exercise any right hereunder shall not be deemed to be a waiver of such terms, conditions, or rights in the future, nor shall it be deemed to be a waiver of any other term, condition, or right under this agreement.
9. MODIFICATION OF TERMS AND CONDITIONS - These terms and conditions supersede all other communications, negotiations, and prior oral or written statements regarding the subject matter of these terms and conditions. No change, modification, rescission, discharge, abandonment, or waiver of these terms and conditions shall be binding upon Graybar unless made in writing and signed on its behalf by a duly authorized representative of Graybar. No conditions, usage of trade, course of dealing or performance, understanding or agreement, purporting to modify, vary, explain, or supplement these terms and conditions shall be binding unless hereafter made in writing and signed by the party to be bound. Any proposed modifications or additional terms are specifically rejected and deemed a material alteration hereof. If this document shall be deemed an acceptance of a prior offer by Buyer, such acceptance is expressly conditional upon Buyer's assent to any additional or different terms set forth herein.
10. REELS - When Graybar ships returnable reels, a reel deposit may be included in the invoice. The Buyer should contact the nearest Graybar service location to return reels.
11. CERTIFICATION - Graybar hereby certifies that these goods were produced in compliance with all applicable requirements of Sections 6, 7, and 12 of the Fair Labor Standards Act, as amended, and of regulations and orders of the United States Department of Labor issued under Section 14 thereof. This agreement is subject to Executive Order 11246, as amended, the Rehabilitation Act of 1973, as amended, the Vietnam Veterans' Readjustment Assistance Act of 1974, as amended, E.O. 13496, 29 CFR Part 471, Appendix A to Subpart A, and the corresponding regulations, to the extent required by law. 41 CFR 60-1.4, 60-741.5, and 60-250.5 are incorporated herein by reference, to the extent legally required.
12. FOREIGN CORRUPT PRACTICES ACT - Buyer shall comply with applicable laws and regulations relating to anti-corruption, including, without limitation, (i) the United States Foreign Corrupt Practices Act (FCPA) (15 U.S.C. §§ 78dd-1, et. seq.) irrespective of the place of performance, and (ii) laws and regulations implementing the Organization for Economic Cooperation and Development's Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, the U.N. Convention Against Corruption, and the Inter-American Convention Against Corruption in Buyer's country or any country where performance of this agreement or delivery of goods will occur.
13. ASSIGNMENT - Buyer shall not assign its rights or delegate its duties hereunder or any interest herein without the prior written consent of Graybar, and any such assignment, without such consent, shall be void.
14. GENERAL PROVISIONS - All typographical or clerical errors made by Graybar in any quotation, acknowledgment or publication are subject to correction. This agreement shall be governed by the laws of the State of Missouri applicable to contracts to be formed and fully performed within the State of Missouri, without giving effect to the choice or conflicts of law provisions thereof. All suits arising from or concerning this agreement shall be filed in the Circuit Court of St. Louis County, Missouri, or the United States District Court for the Eastern District of Missouri, and no other place unless otherwise determined in Graybar's sole discretion. Buyer hereby irrevocably consents to the jurisdiction of such court or courts and agrees to appear in any such action upon written notice thereof.
15. PAYMENT TERMS - Payment terms shall be as stated on Graybar's invoice or as otherwise mutually agreed. As a condition of the sales agreement, a monthly service charge of the lesser of 1-1/2% or the maximum permitted by law may be added to all accounts not paid by net due date. Visa, MasterCard, American Express, and Discover credit cards are accepted at point of purchase only.
16. EXPORTING - Buyer acknowledges that this order and the performance thereof are subject to compliance with any and all applicable United States laws, regulations, or orders. Buyer agrees to comply with all such laws, regulations, and orders, including, if applicable, all requirements of the International Traffic in Arms Regulations and/or the Export Administration Act, as may be amended. Buyer further agrees that if the export laws are applicable, it will not disclose or re-export any technical data received under this order to any countries for which the United States government requires an export license or other supporting documentation at the time of export or transfer, unless Buyer has obtained prior written authorization from the United States Office of Export Control or other authority responsible for such matters.

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Signed: \_\_\_\_\_

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