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10/5/18

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MTSU Clean Energy Initiative Project Funding Request

1. General Information	
Name of Person Submitting Request Mike Yarlett	
Department/Office Building Services	Phone # (Office) 615-898-5537
MTSU Box # 32	Phone # (Cell)
E-mail mike.yarlett@mtsu.edu	Submittal Date 10/5/18

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. Any funding request is a 'not-to-exceed' amount. Any proposed expenditure above the requested amount will require a resubmission.</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 Rutherford Lot Sternberg Retrofit
3b. Project Cost Estimate \$19,706.00
3c. Source of Estimate Material provider
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 work involves removing the current (55) bulbs and installing the LEDs, retrofitted for the outdoor lamps.

4b. Scope: Benefit Statement

The current technology is proprietary which is being phased out. Replacements are becoming more difficult to obtain. The LED lamps are anticipated to last 8 times longer than the traditional technology; reducing the calls for re-lamping. The energy usage is also reduced from the existing technology.

4. Project Description (continued)
4c. Location of Project (Building, etc.) Rutherford Lot
4d. Participants and Roles Building Services staff and material supplier.
4e. Student participation and/or student benefit This project benefits students by keeping campus safely-lit at night.
4f. Future Operating and/or Maintenance Requirements Future costs unknown due to the anticipated longevity and energy savings.
4g. Additional Comments or Information Pertinent to the Proposed Project There is a price reduction for the lamps if 50+ are purchased.

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.)

105.12 kWh per fixture (5781.6 kWh total) saved annually

5b. Annual Energy COST Savings (\$)

\$28.03 per fixture (\$68.33) saved annually

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

TOTAL SAVINGS over the lifespan of the LEDs = \$903.00
ROI = 4 years

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

Facilities Services will provide the labor for changeover.

Form

Number of fixtures to be replaced

1 units

Old fixture (to be replaced)

Wattage: 140 Watt

Price per unit: 58.00 US\$

Lifespan: 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

LED fixture (new fixture)

Wattage: 96 Watt

Price per unit: 325.71 US\$

Lifespan: 50,000 hr

LED: 50,000 hours

Energy rate (electricity cost)

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.

Hours of operation

Used 7 days a week 8 hours/day

Other factors (optional)

Labor cost for relamping: \$75 per fixture

Calculate savings

Results

Number of light units to be replaced to LED units: 1 unit

	Old fixture	LED fixture
Initial cost	\$58.00	\$325.71
Wattage	140 Watt	96 Watt
Electricity cost (10¢/kWh)	\$40.88 per year	\$28.03 per year
Lifespan (continuous use)	7,000 hours	50,000 hours
Lifespan when used for 8 hours a day, 7 days a week	2 years 4 months 23 days	17 years 1 month 14 days
No. of times an old fixture to be replaced each year	0.42 times per year	-
No. of times an old fixture to be replaced during the LED fixture's lifespan (17 years 1 month 14 days)	7 times	-
Cost of replacements each year (Incand. bulb cost) × [Number of replacement per year]	\$24.19 per year	-
Annual labor cost for relamping (Labor cost per relamping) × [Number of replacement per year]	\$31.29 per year	-
Total annual cost (Cost of replacing fixtures) + [Electricity] + [Labor cost]	\$96.36 per year	\$28.03 per year (same as the annual electricity cost)
Total cost (after 17 years 1 month 14 days)	\$1,708	\$805
Total savings /w LED fixture (ROI) (after 17 years 1 month 14 days)	\$1,708 - \$805 = \$903	
Break-even point (per unit) (The amount of time necessary to save as much money as you invested initially)	3 years 11 months	

Print the result