

Rev 9/30/16



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: John Rozell | |
| Department/Office Engineering Technology, Lab 120, Voorhies Building | Phone # (Office) 615-904-8568 |
| MTSU Box # 19 | Phone # (Cell) |
| E-mail john.rozell@mtsu.edu | Submittal Date 9/30/16 |

| 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 |
|--|
| <ul style="list-style-type: none"> 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 Mechatronics Laboratory LED Lighting Retrofit, Voorhies Room 118. |
| 3b. Project Cost Estimate \$1850 |
| 3c. Source of Estimate Prorated manufacturer cost and RSMeans estimating program data from machine shop room 108 LED retrofit project submitted by Scott Martindale and completed spring 2016. Additional estimate cost data from Internet sourcing. |

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

1. Removal of existing T-8 lamps in 16 light fixtures in the 118 lab and replacement with energy efficient LED lamps and associated ballasts.
2. Replacement of light fixture diffusers to improve light levels.
3. Procurement of 4 standard clamp-on drafting lamps equipped with LED bulbs to provide additional task lighting in the lab.

Note: *The Clean Energy Funding Request submitted by Scott Martindale of Building Services 02/18/2016 incorrectly identifies the room for LED lighting replacement as **118**. The correct room for that request was **108**, which is the machine shop. This request is for room **118**, which is the Mechatronics Lab in the East wing of the Voorhies Building.*

4b. Scope: Benefit Statement

LED lighting retrofits provide several benefits:

1. Lower energy usage (more efficient).
2. Lower maintenance cost (less bulb replacement)
3. Higher light levels increase student comfort and safety.
4. LED lighting improves the overall esthetics of the lab area and promotes newer, more environmentally-friendly technology.

4. Project Description (continued)

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

The 118 Mechatronics Lab is located in the East wing of the Voorhies Engineering Technology building.

4d. Participants and Roles

Facilities personnel will coordinate the procurement and retrofit of sixteen ceiling lighting fixtures.

John Rozell, Director, R&D Labs, will procure table lamps and LED bulbs for task lighting.

4e. Student participation and/or student benefit

The Mechatronics students utilize this lab for design, fabrication, and assembly of their senior projects. Improving the light level in this area will greatly improve the overall usability of the lab for the students.

4f. Future Operating and/or Maintenance Requirements

LED fixtures have an anticipated lifespan of 50,000 hours (+5 years). As LED use grows, the cost per unit will continue to drop.

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

Adapting to brighter, cleaner-looking LED technology not only saves both energy and maintenance costs, but helps showcase our facilities and puts our students and their projects "in a better light."

The LED retrofit to the 108 lab (machine shop) completed by Scott Martindale this spring has provided a dramatic improvement in the overall lab environment and, combined with previous renovation of the walls and floors, fostered a cleaner, more modern look to the area.

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.)

6,167.04 kWh

5b. Annual Energy COST Savings (\$)

\$799.04 per year, lifetime savings: \$4554.53

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

ROI on LED retrofit is 0.75 years (per Scott Martindale calculation)

Total annual operating cost per lamp/system is \$16.54 or \$529.28 for the 118 lab (16 fixtures with two 2-bulb systems per fixture.

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

N/A