Rec 9/30/20

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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 Kevin Corns	
Department/Office Aerospace	Phone # (Office) 615.898.5571
MTSU Box # 67	Phone # (Cell)
E-mail kevin.corns@mtsu.edu	Submittal Date 9/30/2020

2. Project Categories (Select One)			
Select the category that best describes the project.			
	Energy Conservation/Efficiency		Sustainable Design
	Alternative Fuels		Other
XX	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 UAS Operations Solar Project
3b. Project Cost Estimate $32,970.00
3c. Source of Estimate Renew Solar Solutions – see attached quote
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

WORK TO BE PERFORMED:

4.4 kW "Storz Power" ground-mount "off-grid" Solar System will consist of the following: 1 Storz Power AI Stack (1 Sol-Ark Inverter + 10.2 kWh Storz Power batteries) 2 Storz Power Batteries (10.2 kWh) - TOTAL 20.4 kWh combined energy capacity with AI Stack 1 Battery Rack (small) 11 Trina 400w "bi-facial" modules All necessary DC and AC side wiring All necessary AC disconnects, wiring, electrical and service equipment

4b. Scope: Benefit Statement

MTSU's Unmanned Aircraft Systems Operations (UASO) program is an experiential learning concentration within the Department of Aerospace. The UASO program provides students' with knowledge, skills, and abilities necessary to seamlessly transition into the UAS industry after graduation through the operation of unmanned aircraft at off-campus locations. Currently, the UASO program uses two trailers to provide support for off-campus training and flight operations. The trailers use a gasoline generator to provide power for air-conditioning, computers, and aircraft battery charging stations. Recently, the UASO program. In order to provide for a more permanent training and operations facility, the program has received tentative approve to locate a number of shipping containers on off-campus MTSU property. The containers will be provide a workshop for unmanned aircraft construction and maintenance, briefing facility, and

equipment storage. Due to the nature of UASO equipment, a climate controlled environment is required for storage. Due to the off-campus location, power from the electrical grid may either not be available, or too expensive to run to the containers. For these reasons, it would be beneficial to use renewable energy to power the structure. I

4. Project Description (continued)

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

Two potential sites are being evaluated:

MTSU Experiential Learning Center (MTSU Dairy Farm)

MTSU property located on Mason Pike, Murfeesboro, TN

4d. Participants and Roles

UAS Program Coordinator: Kevin Corn Ph.D.

4e. Student participation and/or student benefit

No direct student involvement will be required for installation. Recently, unmanned aircraft are being used for solar power panel inspections. Having an active solar power system will be to provide the UASO students the opportunity to use existing unmanned aircraft and sensors to conduct a real-world solar inspection. In addition, it would allow UASO students valuable insight in using renewable energy while working in austere or remote locations.

4f. Future Operating and/or Maintenance Requirements

One of the requirements for this solar system is that it be scalable as the UASO remote location grows. Other than normal maintenance, there are no expected maintenance requirements.

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

None

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.)

Unknown since there is currently not a remote UASO facility.

5b. Annual Energy COST Savings ($)

Unknown since there is currently not a remote UASO facility.

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

Unknown since there is currently not a remote UASO facility.

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

None

FORM / PROPOSAL

Renew Solar Solutions
203 Omohundro Place,
Nashville, Tennessee, 37210
john@renewroofandsolar.com
(615) 617-6470

For: Kevin Corns
kevin.corns@mtsu.edu
(720) 231-9254

Job Id 2009-1710166-01 **Proposal #** 0318 **Proposal Date** 09/29/2020 **Proposal Amount** **$32,970.00**

Contractor license # 74211

#	Type	Name	Description	Price / Unit / Qty	Line Total
1	MISC	4.4 kW "off-grid" Storz Power energy storage & back-up solar system	LIFETIME Craftsmanship Warranty No Service Charges ever... we are just a phone call away!	($2.30 / Watt) x 4400.00	$10,120.00
2	MATERIALS	AI Stack - Storz Power Technology	BEST Home Solar Energy Storage in the World! Includes: 1 Sol-Ark 12K Inverter; 2 Batteries (10.2 kWh)	($1.00 / AI Stack) x 14250.00	$14,250.00
3	MATERIALS	2 - Storz Power Batteries - "Intelligence in Energy Storage"	Lithium iron Phosphate - Superior Battery Chemistry More stable and safer; charge/discharge 2x faster than Tesla lithium-ion. 2 Batteries (10.2 kWh)+1 AI Stacks (10.2 kWh) = 20.4 kWh total energy capacity.	($3,900.00 / Batteries) x 2.00	$7,800.00
4	MATERIALS	Battery Rack	1 small rack	($800.00 / Rack) x 1.00	$800.00
5	MATERIALS	Trina bi-facial panel technology	FREE UPGRADE Bi-facial technology can increase production upwards of 25% over a traditional panel; by producing energy from both top and bottom of panel vs. top only (traditional panel). Superior linear output warranty - retains 83% of original day 1 production at Yr 30 vs. 80% at Yr 25 (traditional panel)	($0.00 / Watt) x 4400.00	$0.00
				Total	$32,970.00

Notes:

WORK TO BE PERFORMED:

4.4 kW "Storz Power" ground-mount "off-grid" Solar System will consist of the following:

1 Storz Power AI Stack (1 Sol-Ark Inverter + 10.2 kWh Storz Power batteries)
2 Storz Power Batteries (10.2 kWh) - TOTAL 20.4 kWh combined energy capacity with AI Stack
1 Battery Rack (small)

11 Trina 400w "bi-facial" modules

All necessary DC and AC side wiring
All necessary AC disconnects, wiring, electrical and service equipment

"Turn-key" price includes all labor, equipment, necessary permits, inspections and traditional utility application fees for interconnection. If utility requires transformer upgrade, an additional charge may be required.

Steps and Timeline:
1) Sign Contract (50% down payment)
2) Storz Power equipment & accessories are ordered - approx. 4-5 weeks
3) Materials (other) are ordered – approximately 4-6 days
4) Installation is scheduled
5) System is installed – Approximately 2 days (dependent on good weather)
(Final 50% remaining payment due)

Customer Rep Signature:

09/29/2020

Customer Signature:

Signature Date