
SUSTAINABILITY PROPOSAL

(ROBOTIC LAWN MOWER: HUSQVARNA
AUTOMOWER 435X AWD;
STIHL BATTERY POWERED EQUIPMENT)

SUBMITTED BY:
(MEHGAN SEIBERT, BRITTANY BYRAM, JOSH SEIBERT,
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I. **Identification of Sponsors**

a. **Project Sponsors**

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b. **Faculty/Staff advisor**

1. Jeff Chambers
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c. Project Manager

1. Jeff Chambers

II. Description of Proposed Project



a. General Description of Proposal

1. This proposal requests funding for a Husqvarna Automower 435X AWD Robotic Lawn Mower. This machine is a pioneer in the world of smart home robotic lawn mowers that deliver a perfect lawn. Equipped with exclusive all-wheel drive technology, this cutting-edge mower is built to tackle tough terrain and the steepest slopes. This mower will primarily be used for the north hill on the football field. This mower will eliminate the need for human mowing on the steep hills.
2. Second part of the proposal is Stihl battery operated equipment including a lightweight weedeater, blower, lightweight trimmer, chainsaw, and a Kombi system.

b. Proposal Details

1. This robotic mower would save fuel, time, and be a safer option when mowing the perimeter of the football field and other areas around the Missouri State campus. The robotic mower charges in thirty minutes and lasts 100 minutes on one charge. Husqvarna Automower 435X AWD Robotic Lawn Mower is designed to tackle steep slopes and inclines up to 35°. Gas mowers are noisy and interrupt students while learning or studying. Having the robotic mower will help eliminate some of the noise on campus and allow students to focus in the classroom. It will also help eliminate some emissions produced by fuel powered lawn mowers.
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2. The small battery equipment will save time, save fuel, and the equipment is lighter than the traditional gas powered small engine equipment. Gas small engine equipment can sometimes be difficult to start wasting time and often requires a lot of maintenance. These motors are also noisy and disruptive especially next to residence and academic halls. The battery operated machine would cut back on noise and allow students to concentrate in class while groundskeepers do their job. Battery powered equipment is equipped with automatic starting capabilities. Gas machines require a pull start which is often irritating. Gas vehicles let off emissions that pollute the environment. Since 90% of the equipment used on the grounds crew is gas powered, getting battery operated equipment would allow MSU grounds department to move forward in their going green mission.

Name	Picture	Model
Battery powered blower		BGA 57 Set
Battery powered chainsaw with 12' bar		MSA 140 C-B Set

Handheld, Lightweight Trimmer		HSA 56 Set
Kombi system		KMA 130R
Lightweight, battery operated weedeater		FSA 57 Set
Husqvarna Automower		\n 435X AWD

c. Proposed location for the object of the proposal

1. The primary location for the mower would be used for the football field on the north corner hill. This hill can be

extremely dangerous when mowing. This mower will help eliminate the danger factor.

2. The small battery equipment can be used anywhere on campus.

d. **Alternative Uses**

1. Battery powered blower

- Blowing off sidewalks
- Clean bigger equipment

2. Battery Powered Chainsaw

- Cut trees
- Cut dangerous limbs over sidewalks

3. Handheld, Lightweight Trimmer

- Shape all bushes

4. Kombi System

- Many different attachments that fit this system.
 1. Chainsaw head
 2. Trimmer head
 3. Tiller head
 4. Bristle Brush head

5. Lightweight Battery Weedeater

- Trim around athletic fields
- Trim around anywhere it is needed

6. Robotic Mower

- Mow Turf

e. **Drawbacks**

1. Some drawbacks would be the battery expense of the mower and the grounds crew training up on how to use the technology of the mower.

2. Expense of the small equipment batteries. Upkeep of equipment.

f. **Necessary modifications to existing structures**

1. N/A

III. **Estimated Cost of the Project (\$5500)(\$2399.55)**

a. **Provisions of Alternatives in Order of Preference**

1. The alternative for mowing these critical areas is to use a gas mower to complete the task. This robot mower will help save fuel, time, help prevent accidents, and lessen emissions in the air.

b. **Provisions of Complete Cost Breakdowns**

Product	Company	Model Number	Price	Total
Robotic Mower	Husqvarna	435X AWD	\$5500	\$5500
Weed Eater	Stihl	FSA 57 Set	\$257.29	\$257.29
Blower	Stihl	BGA 57 Set	\$257.29	\$257.29
Two Trimmers	Stihl	HSA 56 Set	\$499.98	\$499.99
Chainsaw	Stihl	MSA 140 C-B Set	\$399.99	\$399.99
Battery	Stihl	AK 30	\$396	\$396
Kombi System	Stihl	KMA 130 R	\$589	\$589
			Grand Total	\$7899.55

c. **Provisions of any Ongoing Costs**

1. Some ongoing costs could be any maintenance to the mower, maintenance to small equipment, battery replacement, and the energy to recharge the battery.

IV. **Estimated Completion Time of Project**

1. N/A

V. **Estimated Life of Project**

1. This project will benefit the University until the robot and the small equipment are no longer working.
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VI. Justification of Project

1. This project will benefit Missouri State University in the fact it will save fuel cost, man hours, lessen emissions, reduce noise, and help with the safety of the Grounds staff. This project is a small push to help make Missouri State University green with eliminating some gas powered equipment used. As students of Missouri State University, we would like to see our tuition dollars used to benefit the safety of the grounds staff who are always supporting the students of this university.

VII. University Support

- a. This project is supported by Jeff Chambers, Assistant Director of Grounds services. All grounds staff support the upgrades that will happen.
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