

Project Title

UVM Grounds Electric Lawn Equipment Purchase

Person who proposed it

Matt Walker, UVM staff (Grounds Manager)

Decision

Funding Approved

Budget

\$15,600

Project explanation

As part of a staff-led initiative, we are seeking \$15,600.00 to cover the purchase of electric lawn equipment for UVM's Physical Plant Department (PPD). PPD staff are committed to the UVM Facilities Sustainability Plan and are interested in shifting three work crews to electric lawn equipment. Transitioning three crews at once better integrates the electric equipment into the daily use of staff and more immediately reduces noise and air pollution around campus buildings. While PPD has recently purchased some gas-powered lawn equipment to replace aging tools, the funds requested would enable PPD to replace two thirds of the remaining aging gas-powered lawn tools with electric equivalents. The upfront cost of electric lawn care equipment is higher (up to 50% more) than gas-powered tools, and budget constraints limit PPD's ability to purchase electric tools to cover three crews. The funding requested would allow for flexibility and security to have functioning tools – gas-powered and electric – for campus lawn maintenance while helping UVM accelerate its decarbonization goals. Given this increased upfront cost of electric tools over fossil-fuel equivalents, PPD is seeking financial support from the Sustainable Campus Fund for the purchase of 15 pieces of electric lawn equipment to serve the campus, including:

- Three 20" – 21" electric push mowers
- Six commercial electric leaf blowers
- Six commercial electric trimmers

This proposal is a direct result of a successful student-led research pilot initiated by Niels Arentzen and funded by the Clean Energy Fund in 2020. As part of Niels' initial proposal process, he created a petition for the university to stop purchasing or leasing gas-powered lawn equipment and begin an

immediate conversion to electric lawn care equipment that was signed by hundreds of UVM students. The electric lawn mower pilot introduced staff member to the technology, and demonstrated the efficacy of electric lawn mowers and a living pedagogical model of how we think about and live with lawns and lawn care at the university. In the short time the pilot zero-turn e-mower has been in service (July – October 2021), it had approximately 150 running hours resulting in: 7582 kWh of energy used, saving 225 gallons of gasoline and \$731 dollars on fuel, reducing noise pollution from 100 decibels to 85 decibels, and over 2,000 lbs. of CO2 emissions.

For the current proposal, the purchase of electric lawn tools will help PPD decarbonize a significant portion of its landscaping tools. More importantly, equipment electrification will have a direct and positive impact on campus climate by improving students' learning and health by reducing localized air pollution, noise pollution and greenhouse gas emissions around residential and academic buildings. According to an EPA study, a new gas-powered push mower running for an hour, produces volatile organic compounds and nitrogen oxides emissions that are equal to 11 cars driving for one hour and contributes 88 lbs. of CO2 every year. Using a fossil-fuel powered leaf blower is equivalent to driving a car for 100 miles in terms of emissions and measures about 75 decibels at 50 feet distance. In addition to reducing carbon emissions, electric leaf blowers will comply with the new City of Burlington Ordinance and will not exceed the noise level of 65 decibels, achieving a cleaner and quieter campus for the university community. PPD receives calls several times a year about lawn equipment noise and gas fumes around campus buildings. During final exams, and when windows are open, the Grounds

Staff must adjust its mowing and landscaping schedules in order to avoid disrupting living, studying and learning due to fumes, fine particulate emissions and noise entering classrooms and residence halls. This proposed funding to purchase electric lawn tools will benefit all members of the University community, and supports the Sustainable Campus Fund's goals and the University's Climate Action Plan by reducing fossil fuel use on campus and climate neutrality by 2025.

Finally, prior to purchasing the electric lawn tools, PPD will work with Vermont Clean Cities Coalition at the Transportation Research Center to set up multi-day equipment demonstrations from 3-5 manufacturers. These opportunities will allow staff to use the tools under normal day-to-day conditions. PPD will draw from the metrics established during the electric lawn mower pilot to

evaluate these tools and decide which ones will handle the workload at UVM. Once the electric lawn equipment is in use, PPD will add these items to its growing list of alternative fuel assets. The total emission reductions, and fossil fuel savings will be added into the University's sustainability profile, as well as submitted to the Department of Energy by the Vermont Clean Cities Coalition.

Budget table

This Money will Supply	Requested funds	Justification
Electric Equipment Purchase	\$15,600	Converts lawn equipment (push mowers, weed whackers, and leaf blowers) to electric