MOW WITH LESS

SOLAR CHARGING MOWER

DEMONSTRATION

FINAL REPORT
Project Grow
September 31, 2002

Grant Results

The project has accomplished its basic goal of demonstrating the charging of a variety of rechargeable battery operated yard equipment. There have been a few changes from the original scope of the grant and these changes are reflected in the final cost of the grant.

The charging station is running in the spray house of the Leslie Science Center where the Project Grow yard equipment is stored. A Black and Decker CM-1000 was purchased and used by the Project Grow staff. It was tested for practicality for mowing around the various gardens and at the Leslie Science Center. The staff found that although it performed quite well, always starting easily, the infrequent nature of their mowing caused some problems. The mower has an automatic overload shutoff that cuts power to the mower for 45 seconds. When cutting tall grass and weeds this created some difficulty(Some of the area surrounding the gardens are more field than lawn). It was decided that instead of getting another mower, they would prefer more string trimmers. Although most who used the electric mower loved it, some of the young volunteers opted for reverting back to the fossil fueled devices. A normal household with a relatively normal mowing schedule and lawn quality would not have this problem.

The photovoltaic(PV) panels charge the devices in a couple of days depending upon sun conditions. The spray house where the panels are mounted does have a less than optimum solar window. Trees to the east and west of the structure shade the panels through part of the day, limiting the hours of charging which is the critical factor.

PV PANELS ON SPRAY HOUSE

TREES THAT SHADE

There was not great difficulty in altering the yard equipment to be charged off of solar power. The string trimmers' chargers were 24V DC and only required matching a plug to allow the PV panels to be connected. The mower was more difficult. It has an integral charger and motor controller on a circuit board inside the unit and the plug in power supply puts out 24VAC to a special plug. It seemed important to continue to have the option of charging off of utility power on all devices. The solution was to mount a charge controller within the mower with a direct connection to the two batteries that power the mower.

The existing Unisolar panels on the roof of the spray house were found acceptable for use for charging the devices and were rewired with a new 24V charger. In order to "take the show on the road" an additional set of PV panels were purchased and the charging units was made to be mobile with auto/trailer electric plugs. A sign will be installed on the front wall of the spray house to educate the more than 16,000 visitors to the Center.

The mower and PV panels have been shown at a variety of functions at the Leslie Science Center and at the MRF recycling education facility in Ann Arbor. To date, perhaps 2000 people have seen the hardware for the project. Mow with Less will continue to show the equipment at events like the annual Earthday Celebration and the sign to be installed on the wall of the spray house will be visible to 16,000 people on an annual basis.

It was decided that a "how to" manual would be an excellent way of extending the reach of the program beyond the normal area of impact by Project Grow (See attached manual).

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Several factors contributed to the change in scope of the project. The only locally available mower(and large production) the Black and Decker CM-1000 was recalled during the project before additional mowers could be obtained(see attached recall notice). The recall involved a possible overheating(and fire) problem that affected all 140,000 units manufactured in the last 7 years. The mowers were pulled from local shelves and sent back to the factory. The one mower that had been purchaser was returned to the service center and repaired and given back to Project Grow. In conversations with the manufacturer it was learned that the mowers will be in production and back on the shelves in the spring of 2003. Barbara Vogel, from Project Grow left her position and moved to the east coast, leaving a void in personnel. The other members of the grant staff were not able to commit as many hours to making the project happen as originally planned.

The Mow with Less Program is hoping to continue with the original vision of educating the residents of the area to the possible alternatives to mowing conventional turf lawns with fossil fuel powered mowers that emit both air and noise pollution. A series of afternoon workshops are envisioned with the help of local landscape architects and enthusiasts.

PROJECT COSTS:

(1) MOWER:			$ 422.94
(2) Weed Trimmers			$ 127.09
(2) 24V charge controllers			$ 149.47
(2) 12V photovoltaic panels			$ 372.25
Misc. hardware, wire plugs etc.			$ 45.00
materials copying cost			$ 15.00
Solar technician time	20 hours @	$50.00	$1000.00
Total Project Cost:			$2131.75

To view the operating manual please visit:

www.michigan.gov/documents/CIS_EO_Inside_MWL2_53802_7.pdf