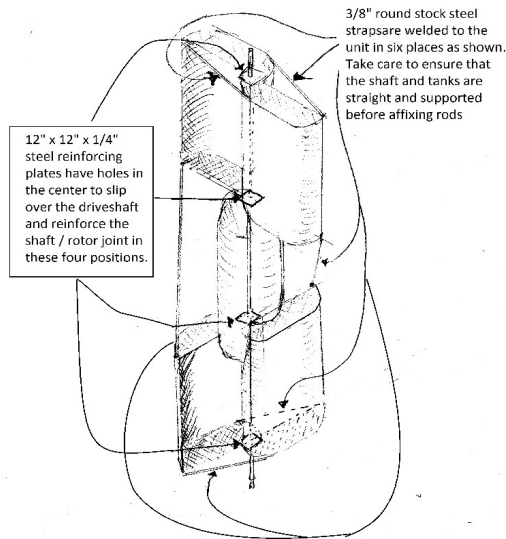


## Why Consider Low-Tech Wind?

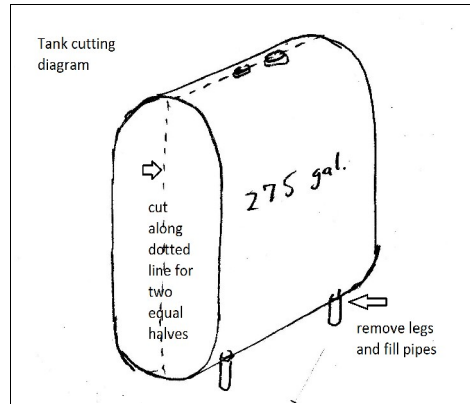
Northeastern Farms depend on energy both in the form of electricity and to power critical devices in farm infrastructure. But investing in commercially-available renewable-energy devices usually requires large capital investments and long payback periods. In the case of wind power generation, this level of investment is often considered inadvisable in areas with marginal average wind speeds.

Low-tech Windpower offers farmers an alternative approach to the problem. The Vertical Axis Wind Turbine (VAWT) design that has resulted from our research provides useful amounts of generative or rotary power yet can be assembled at a material cost of under \$1000. Our design is freely available and can be executed using common materials and skills.



## Low-tech, but High Return

Our Mark II design is primarily constructed of cut-up and reassembled scrap 275-gallon fuel oil tanks.



The design requires basic carpentry, welding, and mechanical skills and requires about two weeks of work to build and install.

For this labor investment and the modest cash outlay, you have a source of rotary power with great durability and modest maintenance requirements.

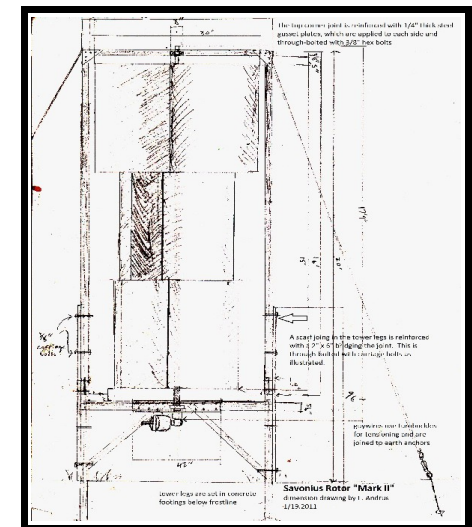
Here are a few potential applications:

<i>Irrigation and drainage pumps</i>	<i>Square bale conveyors</i>
<i>Stone-burr grain mills</i>	<i>Cement mixers</i>
<i>Vacuum pumps for syrup operations</i>	<i>Wood splitters</i>
<i>Woodworking equipment or small lumber mills</i>	<i>Two-stage air compressors</i>

## A High-Torque Unit that Meets Energy Needs

The Mark II prototype was found in our tests to be about 30% efficient. This results in a good portion of the energy in the wind being captured and transmitted to low-speed rotary power through a PTO shaft or a similar means of transmission. For example, in 10 mph winds the unit captures about 400 watts, or 1/2 hp, of power. In typical Champlain Valley wind conditions the device can redeem its material costs in just a few years, and the labor costs as well in under 10 years.

The unit is very durable and is not very susceptible to damage from overspeeding. It tends to reach maximum velocity in windspeeds in the low teens, though torque increases in higher wind conditions.



## Low Profile, Quiet and Visually Appealing

Our Mark II design stands only 20' off the ground. Its rotation, viewed from a distance, has an almost hypnotic, oscillating quality. Despite the unit's weight (about 1000 lbs), it turns with almost no sound. It has even been commented that our unit resembles an art installation more than a windmill.



This is a wind power concept that is in keeping with northeastern landscapes; it achieves usefulness without standing out in the jarring way a 200 foot tower does. It is also intriguing and engaging and may help draw positive community interest in your farm.

To learn more about our project history and to obtain our construction manuals for both the "Mark I" wooden unit and the "Mark II" steel unit, please visit

<http://mysare.sare.org/mySARE/ProjectReport.aspx?do=viewProj&pn=FNE10-676>

Or, contact the offices of Northeast SARE:

**Northeast SARE**  
655 Spear Street, University of Vermont, Burlington, VT  
05405-0107  
Phone: (802) 656-0471



## The Owner-Built Savonius Rotor: Low-Tech Windpower for Farms



### FNE10-676

*A useful, economical device for electrical generation or direct-drive application.*



An on-farm research project funded by Northeast SARE (Sustainable Agriculture Research and Education)