To: David Toomey, Instructor of ENGL 379 Technical Writing
From: Samantha Leonard, student
Subject: A Report of the Feasibility of Writing and Submitting a Proposal to Seek Funding to Convert Small Combustion Engine Tractors to Solar Electric Power Tractors on Astarte Farm in Hadley Massachusetts, and to Educate Local Farmers in DIY Tractor Conversion
Date: November 8, 2013

Purpose:

The purpose of this memo is to report on the feasibility of whether or not a grant proposal to convert 20 horsepower combustion engine Saukville tractors to run on solar electric power would be completed on time, submitted, and fulfilled.

Summary:

The proposed project would convert the small, gas fueled combustion engine Saukville tractors used on Astarte Farm to solar powered electric machines. Research has shown that although solar electric tractors are ideal for small farms, there are not many readily available options on the market. The electric models that are available are very costly, and completely outdate the tractors currently in use that may still be in good working condition. Rather than replace the current tractor models already in place, this project would entail converting these tractors to run on solar electric power. Once the farmers on Astarte Farm had converted their tractors, they would be able to hold sessions and workshops on the farm in which they would teach other farmers in the Pioneer Valley how to convert their tractors step by step. Because many programs offer tens of thousands of dollars to sustainable agriculture practices and education, and because of the abundance of research and information available on the Internet on solar electric farming, I believe the timely completion of this project proposal is feasible.
Background/Discussion:
Astarte farm is a six-acre, local, certified organic, family run farm in Hadley Massachusetts. Currently, the farm is a key supplier of the Amherst Farmers Market in Amherst, specializing in the growth and selling of market garden fruits and vegetables. To till and cultivate the farm, there are two 20 horsepower Saukville model tractors in place. However, because these tractors run on fossil fuels, there are numerous issues that arise with use, such as noise, cost, and harmful emissions into the environment. Solar electric tractors would ameliorate these problems, as solar electric vehicles are quieter, more cost effective, and reduce pollution.

Although some farmers have converted their small tractors to run on solar electric energy already, many have only considered converting certain types of tractors: the old Farmall Club, Allis-Chalmers Model G, and John Deere L tractors. One problem that arises is that these tractors are hard to come by, with only about 250,000 having ever been produced in the 1940s through 1960. Also, more importantly the Astarte Farm does not use or own these types of tractors. Rather, they use the modern, more powerful small tractor, the Saukville. Through research, I have found that the Saukville tractor has almost exactly the same body frame as the easily convertible Allis-Chalmers Model G. However, because information is so readily available online on how to convert one of the older tractors, not many people have attempted to convert the Saukville to solar electric power. Although fixtures may be slightly different and modernized, it would still be possible to convert the Saukville tractors to run on solar electric power.
To complete this project, I would need to research and consider how the Saukville tractor would be different in terms of battery power needed (voltage and number of batteries), as well as where to place the solar panels. I would also need to research how many solar panels each tractor would need in order to generate enough energy to power the batteries. Each tractor would need enough solar power to last through a workday, to increase efficiency without having to stop to recharge the batteries. That issue would lead me to make the decision about whether or not the farmers would use one big portable solar panel into which a tractor could be plugged in to be recharged, or a solar panel grid placed on the back of the tractor, on top of the engine. Batteries would replace all the internal combustion engine, gas tank, radiator, and fan belt, and a solar grid could easily be secured above the batteries, on the frame of the tractor. If executed in that way, the tractors would have consistent solar power throughout the day. I would need to further research the costs for all of the individual mechanical parts that would be needed to convert each tractor in order to come up with a total cost for the project. I would also need to consider the cost of an on farm held workshop, instruction manuals for the farmers who attend the workshop, or other resources that would teach other farmers in the area how to convert their tractors, and add that to the total. I would then be able to write this grant proposal asking for the specific funding needed to complete the project. As it stands now, the research I have done puts the total cost of the project at roughly 15,000 dollars.

In order to better my chances of securing a grant once my research was completed, I would write this proposal on behalf of The Northeast Organic Farming Association: Massachusetts Chapter (NOFA/Mass). NOFA/Mass is a 501 (c)(3) non-profit organization concerned with sustainable farming methods that can be continued for generations to come. On their website, NOFA/Mass
states that their mission is “…to educate members and the general public about the benefits of local organic systems based on complete cycles, natural materials, and minimum waste for the health of individual beings, communities, and the living planet.” NOFA/Mass’ commitment to sustainable farming and to the education of others about sustainable farming makes it an appropriate organization for which I would write this proposal.

As a representative on the behalf of NOFA/Mass, I would need to write to an organization that has given grants in the past specifically for sustainable farming or solar energy. One such organization that I found is the Sustainable Agriculture Research and Education Program (SARE). Since 1988 in Massachusetts the SARE has awarded 138 grants, 61 of which have been farmer or ranch grants. Of all the grants given, the majority of them have gone to farms. In the past, the SARE has funded projects through NOFA/Mass. They have also funded projects supporting energy and small farm sustainability, awarding one project approximately $88,500.00, as well as a project supporting the training and support of next generation sustainable farmers, awarding $108,450.00 in funding. Even to projects not supported by a non-profit organization, but proposed by individual farmers themselves, the SARE has provided funding up to $15,000.00 for sustainable farming techniques. The SARE is specifically supportive of small farms, as their slogan reads, “Large-scale help for small-scale farmers.” The Astarte Farm tractor conversion project reasonably fits the schema for a project that would be funded by the SARE. Based on the projects the SARE Program have supported in the past, and the generous funding they have contributed to such projects, it is reasonable that they would provide the funding necessary for the completion of this project.
Conclusion:

The possibility of completing a grant proposal for the conversion of gasoline-powered tractors to solar electric powered tractors on Astarte Farm seems feasible. The necessary research would not be too difficult to complete on time as I have already discovered many sources that would help me successfully write the proposal. The actual writing and revision of the proposal once the research is completed could easily be done in time to submit this grant proposal. Once fulfilled, this project would benefit small farms (up to 15 acres or so) across the Pioneer Valley, and ultimately the country. Seminars on the farm would educate local farmers about the process of tractor conversion, and any informational pamphlet created could be posted online for worldwide viewing. Astarte Farm is the best place to focus my efforts at the moment.