



PENNSYLVANIA E2/P2 SITE ASSESSMENT CASE STUDY

Bedner's Farm & Greenhouse

Bedner's Farm & Greenhouse is owned and operated by Bob and Sue Bedner, their son Russ and his wife Melanie. Bob was raised on and worked for the family farm that his grandfather started in Upper St. Clair, Pennsylvania. Bob and Sue purchased 42 acres in Cecil Township in 1985 to start their own business. Their garden center was open for business in the spring of 1996. There are fifteen greenhouses on the farm, as well as produce fields. Annual and perennial plant production begins every January. In the summer and fall, produce is picked daily, including: homegrown sweet corn, tomatoes, zucchini, eggplant, hot and sweet peppers, cabbage, broccoli, cauliflower, cantaloupe, watermelon, pumpkins, gourds, and more. Their plants are available at their one retail location, in Cecil Township. Wholesale produce is supplied to local grocery stores and restaurants.



A PennTAP Senior Technical Specialist and PennTAP's Penn State Greater Allegheny Engineering Student Interns visited the facility on several occasions to observe operations and collect data regarding the existing heaters used to heat the greenhouses. PennTAP performed substantial research, data review, calculations, and analysis of options for replacing the greenhouse furnaces with newer more energy efficient models.

The results of this analysis served as a basis for applications for financial assistance under both the USDA Rural Energy Assistance Program (REAP) as well as the Pennsylvania Department of Environmental Protection (PADEP) Small Business Advantage Grant (SBAG). PennTAP also provided assistance completing the grant applications.

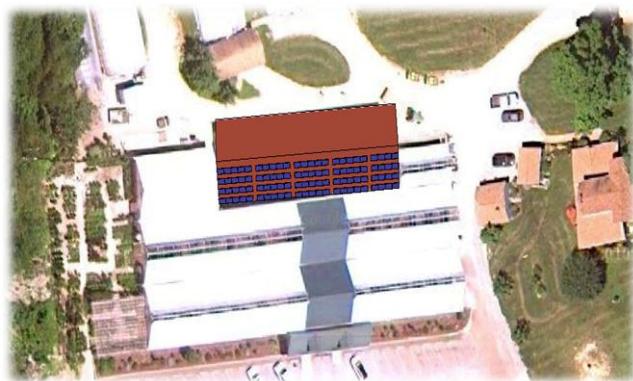
From a review of last years' utility billing and the most recent costs for fuel oil and propane, it was determined that annual consumption of fuel oil for fueling the existing heaters was 3,500 mmBTU, which at today's price for fuel oil would cost \$80,000. The technical analysis determined that 2710 mmBTU of propane fuel will be required to generate the same heat output using the more efficient Modine Effinity-93 unit heaters, which at today's price for propane would cost a little less than \$60,000. This improvement will save Bedners Farm & Greenhouse more than \$20,000 in fuel cost annually, or 26%. The energy required to heat the greenhouses will be reduced by almost 800 mmBTU annually, or 23%.





In addition, PennTAP conducted a solar photovoltaic system assessment that provided both photos depicting a proposed solar array, and an economic analysis based on the size of the proposed

system, the electric generation potential, and the financial incentives which may be available for this installation. The analysis determined that the cost for installation after incentives will be approximately \$7,000 and provide an electric energy savings of approximately \$1,860 per year giving a simple payback of 3.6 years.



one of eleven awards received in Pennsylvania, 1 of 430 received nationwide. In addition to the USDA REAP grant, Bedner's was also awarded a PADEP Small Business Advantage Grant in the amount of \$9,500.

The client commented "Roger and his interns were professional, thorough, and timely in all areas of help and service. We appreciate it!"

Russ & Melanie Bedner, Bedner's Farm & Greenhouse, 315 Coleman Road, McDonald, PA 15057; 724-926-2541; Melanie@bednersgreenhouse.com

Roger L. Price, P.E., CP EnMS-Industrial, Senior Technical Specialist, PennTAP, Penn State University; 412-889-5821; rogerprice@psu.edu