

Plant Energy Efficiency Case Study

Elite Apple Co LLC

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Background

Elite Apple Co LLC is an apple grading, packing and storage facility located in Sparta Township, Kent County Michigan. The plant is owned by seven apple growers, who decided to build their own packing plant so they could pack their apples without depending on other facilities. Elite Apple is a member of the Michigan Apple Committee, a group that was established in 1965 to represent Michigan apple growers.

Since being built, Elite Apple members have added onto their operation every year, having bought additional farms and added apple trees to their properties over time. While the United States is their largest market, they export products to South and Central America, Canada and Europe. The operation packs fresh fruits year-round, except for two weeks in July and into August that is used for cleaning and maintenance.

In 2016, Elite Apple installed solar panels on their property after being approached by an owner of a solar energy company who explained the associated tax incentives.

System Implementation

One of the owners of Elite apple began solar panel implementation in 2017. To start, panels were used for a couple of the facility's controlled atmosphere storage rooms. After this, all of the owners convened to vote on further solar installation and ended with a positive consensus to continue pursuing solar measures. There were no incentives provided by the Michigan Apple Committee for solar, so Elite Apple turned to other funding opportunities. The owners applied for a REAP grant once but did not qualify at the time and have not applied again since. The solar energy company, Harvest Energy, handled all of the agreements with Consumer's Energy to receive credit for the energy the system would produce. The operation receives a 30% renewable energy tax credit and a tax depreciation credit.

Elite Apple utilized a 150 kW solar system with Canadian Solar Inc. standard modules. The array is fixed and tilted at a 20° angle. The system demonstrates 14% losses and an inverter efficiency of 96%. The system communicates via a SMA Cluster Controller and the owners are able to access their production data on an online portal.

Commented [MOU1]: Why didn't they qualify?
"I thought they did get REAP funding for their high speed doors. Confirm with Jeannie Keiser at Elite Apple. If they did get funded then for subsequent projects a previously funded applicant will not score as high and not be in the fundable range of points with other competing projects."

The first solar panel went online in October of 2016, followed by a second panel in December of 2017. This second panel necessitated a second energy meter as well. The solar company visits Elite Apple every six months with a report on their production on savings.

Figure 1: XXXX

System Impacts

In 2017, the solar system produced 167 MWh of energy, with the majority of this production occurring in May through July. 2018 witnessed an increase in production due to the addition of the second panel. In May of 2018, 43 MWh of energy were produced, compared to only 22 MWh in May of 2017. The savings from January 2017 through December of 2017 were \$23,021. The savings from January 2018 through December 2018 were \$XX,XXX.

(compare solar performance with PVWatts projections)

Figure 2: Elite Apple Solar Production

Conclusions

Any quotes from owner, whether or not they recommend ECM, any advice to other owners, future plans

Since the energy efficiency measures have been taken at Elite Apple, several other apple processors in the area are either applying or have applied and obtained REAP funding for energy efficiency projects such as solar arrays. Elite Apple has numerous other ongoing energy efficiency projects, including high speed doors, lighting, and floating head pressure controls. The members are working with consultants to attain utility incentives for these projects.

- 1) Why did Elite Apple not qualify for a REAP grant the first time they applied? I thought they did receive REAP funding for their high speed doors. Confirm with Jeannie Keizer at Elite Apple. If they did receive funding then their subsequent REAP projects would not score as high, and likely not be funded, as scoring favors those who have not previously received grants.
 - 2) What is the name of the solar energy company Elite Apple used? Harvest Energy
 - 3) Is it possible to get more information on the system and project as a whole, including but not limited to: Jeannie Keizer could provide information or perhaps provide a contact at Harvest Energy for more specific information.
 - a. Timeline of the project
 - b. How/why the system was chosen
 - c. Any challenges that were faced during planning and installation
 - d. Specifications on the solar system
 - 4) Are there any photos of the solar panels available? Google Earth Pro shows the layouts, but otherwise we did not take photos of the installations for our report.
 - 5) I found production and monetary savings data through 2017, could I get updated data? Is there an online portal I could access? Jeannie Keizer provided an online portal link, but I do not have the information.
 - 6) Has a post implementation interview been conducted? Looking for feedback from the owner regarding the following: We did not conduct a post implementation interview with Jeannie or the owners.
 - a. Opinions on how the system is working compared to his expectations?
 - b. Any recommendations he might have for other growers looking at implementing solar? I am aware of several other apple processors in the area that have or are applying and obtaining REAP funding for energy efficiency or solar arrays.
 - c. Did he face any difficulties dealing with the utility company?
 - d. Is he considering any additional energy efficiency projects in the future? Elite Apple has ongoing energy efficiency projects, i.e. high speed doors, lighting, floating head pressure controls, mentioned in our report. Scott Sovereign, Enersave, LLC their refrigeration consultant is also involved with some of these improvements and also works with Consumers Energy to obtain utility company incentives.
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