



CANNABIS GROWER ACHIEVES 1.3 GRAMS PER WATT

ECO FIRMA FARMS SAVES \$63,000 IN ANNUAL ENERGY COSTS THROUGH ENERGY-EFFICIENT HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS AND LED LIGHTING

Eco Firma Farms, a cannabis grower in Canby, strives to craft the highest quality cannabis for body and mind, while working to leave the earth a better place. The farm's sustainability practices include running entirely on purchased wind power, achieving 100 percent organic pest management and repurposing a former canning facility into the center of its grow operation. When it came time to expand its operation from medicinal to adult recreational production, Eco Firma opted for a high level of energy efficiency—choosing high performance HVAC systems and LED lighting that slashed annual electricity use by more than 755,000 kilowatt hours.

"Thanks to the energy improvements we've made so far, our electricity costs are down about \$63,000 per year and we're achieving a yield of 1.3 grams per watt," said Jesse Peters, owner. "And we're not done yet."

In its flower rooms, Eco Firma replaced 136 high-pressure sodium light fixtures with an equal number of LED fixtures, at a savings of 430 watts per fixture. The farm also replaced T5 high-output fluorescent fixtures in its vegetative rooms with LED fixtures. Those investments cut lighting energy use in these areas by 41 percent.



Energy Trust makes it possible for us to spend money on more efficient, better equipment and to justify the added expense to our investors.

Jesse Peters, owner
Eco Firma Farms



PROJECTS-AT-A-GLANCE

► LED lighting in flower and vegetative rooms

Financial analysis

- \$161,545 project cost
- \$79,864 cash incentive from Energy Trust
- \$33,827 estimated annual energy cost savings
- 41 percent rate of return
- 2.4-year payback

Estimated annual savings

- 388,816 kWh saved
- 185 tons of carbon dioxide

► High-efficiency HVAC improvements

- Three-coil ground-mounted roof-top units
- Variable speed drive
- Hot-gas reheat coil
- Advanced controls for temperature, humidity and CO₂

Financial analysis

- \$71,019 project cost
- \$20,138 cash incentive from Energy Trust
- \$29,646 estimated annual energy cost savings
- 9-month payback

Estimated annual savings

- 366,900 kWh saved
- 174 tons of carbon dioxide



"Switching to LEDs significantly reduced the number of staff hours needed to replace and dispose of bulbs," said Peters. "With LEDs, we don't have to change bulbs for at least five years and they are recyclable. The bulbs we were using contained hazardous materials, requiring a drive to an approved disposal site. It's mind boggling how much time and fuel we're saving."

Lighting improvements also reduced the load on the farm's HVAC systems, which is one reason Eco Firma did the lighting and HVAC projects almost in tandem. "LEDs put out a lot less heat, which is great for temperature control and also from a pest management perspective," said Peters.

Each of the flower rooms has a three-coil ground-mounted roof-top HVAC unit. A three-coil system can reject heat either to the outside or inside, saving energy by eliminating simultaneous heating and cooling. A variable speed fan further saves energy by matching fan speed to the heating and cooling load. Advanced controls maintain precise temperature control and also monitor carbon dioxide, contributing to a CO₂-rich atmosphere where plants thrive. With these features, the new units have cut HVAC energy use by 30 percent.



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Eco Firma received a total of \$99,800 in cash incentives from Energy Trust of Oregon to help pay the incremental cost of energy efficiency measures for the two projects. Energy Trust also provided technical assistance studies to help Eco Firma make the right energy decisions.

"The array of talent provided by Energy Trust is incredible," said Peters. "Our employees continue to learn from them about ways to improve the business as well as energy use in our personal lives. It's quite a swath of education."

Eco Firma is already embarking on new projects with Energy Trust, including energy-efficient lighting and HVAC systems in new vegetative and flower rooms and a 249-kilowatt solar system that will further Eco Firma's goal of becoming Oregon's first carbon neutral cannabis farm.

"In an unforgiving industry where we run into a lot of 'no's,' it's refreshing to have such a positive experience with Energy Trust," said Peters. "Their attitude is always: 'How can I help you save?'"