



THE Energy Alliance Group OF MICHIGAN



MILLER FAMILY FARM



NEW LIGHTING

PROJECT OVERVIEW: MILLER FAMILY FARM – CARNEY, MI

The farm primarily grows vegetables including kohlrabi, zucchini, lettuce, tomatoes, kale, spinach and sugar snap peas. The grow areas consist of three greenhouses and the equipment building loft. Two of the greenhouses, as well as the loft, are soil-based; the third is an aquaponics house. The project consisted of lighting the tomato house as well as the barn loft.



The key issue the Miller Farm faced was high energy costs. With a utility rate of \$.14 kWh, supplemental greenhouse lighting during the winter months accounted for a large share of these costs. The initial plan was to use 64 high pressure sodium (HPS) lights in the tomato house and 13 in the barn loft. Subsequent to discussions between EAG and Rob Miller, the tomato house lighting plan was changed to use a combination of 48 TotalGrow fixtures and 48 1000W high pressure sodium. Although a less effective plant lighting technology, the high proton penetration of HPS lamps benefits relatively tall plants such as tomatoes. The lighting plan for the loft was changed to use 39 TotalGrow fixtures exclusively.

TotalGrow lights use a specially engineered lens in conjunction with LED lamps to provide the optimum light spectrum for plant growth and development. Being LED - based, they also have a much longer operating life resulting in a significant reduction in maintenance costs. The TotalGrow heat sink dissipates heat away from the plants, allowing fixtures to be mounted much closer than HPS lamps for maximum effectiveness.

Utility Rebate

Based on the difference in energy consumption between the HPS and TotalGrow lights, Miller Farm earned utility rebates totaling \$6,600.

NEW TECHNOLOGY TOTALGROW

- Custom-tailored full spectrum light ideal for plant growth and development
- Low energy consumption and reduced maintenance costs
- Heat dissipated away from plants



OLD TECHNOLOGY HPS

- Generally less efficient light spectrum for growing plants
- High power bulbs waste light and cause high-intensity hot spots
- Radiant heat requires extra watering, nutrients and airflow



COST COMPARISONS – 20 YEAR PERIOD



*Based on listed data.