

# Low Energy Sustainable Farming

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## Abstract

This summer as part of the Mountaintop program, we attempted to create a fully energy-independent food-growing enterprise at the Lehigh Community Garden on the Goodman Campus as a way of researching solutions to food security issues in urban areas. The Garden's vision is as a site for contributing to budding efforts to localize the food economy here in Bethlehem and as a research space for new projects. Furthermore the Garden serves as an opportunity to promote Lehigh's sustainability goal to "Increase amount of local, organic, fair trade food options" by making our produce available in University dining halls. Our efforts are ongoing and we hope to see the garden evolve as not only a food producer, but also a living learning lab that could be applied to many areas of student and curricular life. Some examples may include academic space for departmental use in EES or Global Studies, as well as space for a potential Living Learning Community for Sustainability.

## Results

### Organic produce garden

- Approx. 1 acre, with 88 left for expansion
- 38 community plots in use
- Student Farm 1/6 acre
- Growing 95 types of vegetables; e.g. potatoes, cucumbers, carrots, tomatoes, broccoli, kale, and squash

Expected yield: 2500 pounds of food per year from student farm vs. community plots

Most food is donated to New Bethany Food Ministries

Largely volunteer supported

### Solar Power:

3.06 kW system

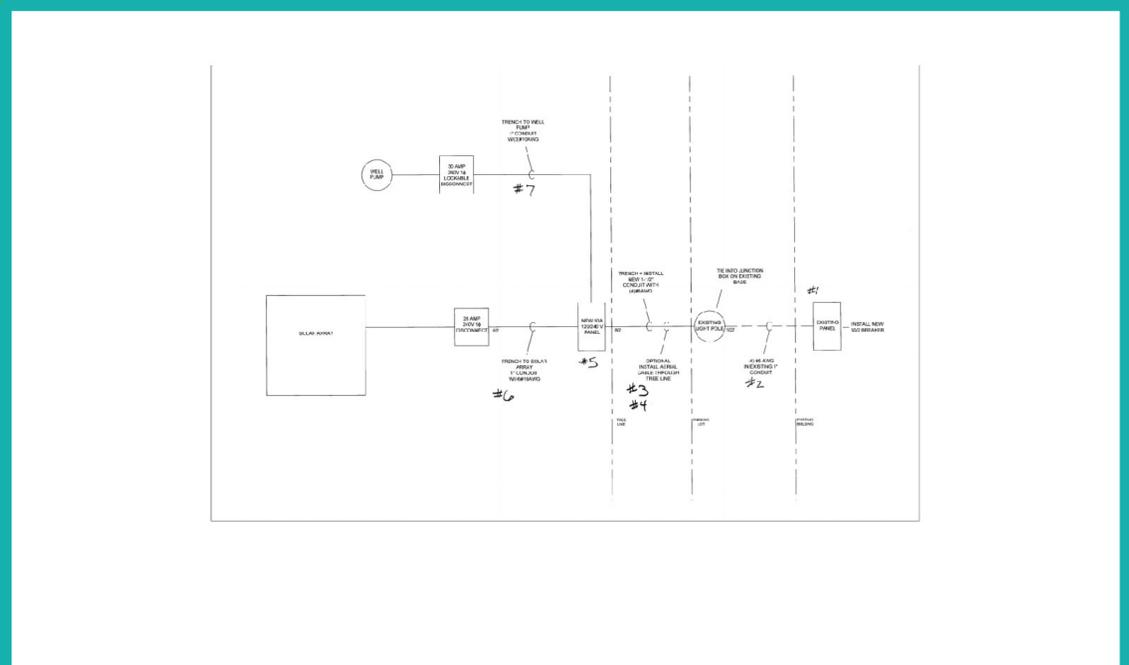
Would generate about 3,900 kWh of energy a year

### Greenhouse:

- ~35 ft. x 36 ft.
- polycarbonate side and end walls (stronger than glass)
- galvanized steel frame material
- dripper irrigation system
- ground-to-air heat transfer system
- heating water drums as supplementary heating
- possible trombe wall
- fan and irrigation system to be powered by solar panels



The Community Garden in its current state. The numbers represent individual community plots and the Student Farm is the space currently dedicated to intensive food production.



Explanation of how the solar array would be wired and connected to the transportation building.

## Project Objectives

- 1) The installation of a solar panel array to offset energy cost of the pre-existing water pump used for irrigation as well as helping offset some of the energy from the transportation building that will also be easily expandable for future use.
- 2) The designing of an energy efficient greenhouse for seedlings. The potential application of hydroponic technology for the greenhouse would also be studied.
- 3) The potential creation of an organic living learning community.
- 4) Assembling a hoop house to extend the growing season
- 5) Developing a sustainable institutional infrastructure to ensure the preservation and growth of the garden via further integration with Lehigh University



Volunteers working at the garden

## Future Work

### Short Term (1-2 Years):

- Secure an endowment to support a full time paid and insured farmer
- Sell produce to Sodexo for use in Lehigh dining services
- Form a faculty advisory committee to help guide garden operations and facilitate cooperation with the administration
- Foster cooperation with eco-reps, the office of sustainability, Greek life, and the Gardening Club
- Build an eco friendly on-campus greenhouse and season extending hoop house

### Long term (3-5 years):

- Start work study positions in the garden
- Integrate the garden into the curriculum as a living learning lab
- The garden will become a place to conduct further research and expand knowledge on sustainable agriculture
- Expand our growing area for an increase in production and diversity of crops

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