

HVA Sustainable Energy Background Questions

Hawthorne Valley Land Use Committee, April 2015.

In considering on-site solar power, the Committee came up with a series of questions. As potential background for potential future consideration of HVA sustainable energy use, these are being shared here.

These came up when the Land Use Committee was asked to consider the location of a Solar Orchard on HVA property. In keeping with this charge, there are two main groups of questions below – those relating directly to a Solar Orchard, and those that come from stepping back and considering the issue more broadly. There are several subgroups of questions in the latter category.

IMMEDIATE QUESTIONS ABOUT LOCATING A SOLAR ORCHARD

What are our current/projected energy needs? How much of this do we want to meet with solar? Given current panel efficiencies, what acreage would we need in order to meet this?[some 3-4 year old estimates in Master Plan]

What are the ideal site characteristics for a 'solar orchard'?

What other forms of infrastructure (underground cabling, conversion stations, safety fences, etc) will be required and what will be the impacts on the land of this infrastructure?

What are the associated sensory and cultural impacts on life in Harlemlville with the solar orchard or other systems? (e.g. noise, visual glare, blocked trails, etc.)

What do we lose agriculturally and ecologically? What sort of other uses would be compatible with a solar orchard? Is pasture space lost or can cows graze under them? Could cows graze under them if certain modifications were made to standard design (e.g., if mounted higher than 1m off ground)? What about nature space, do we need short lawn or could we at least have some of the native grasses currently on that hill and manage them in a way that provided habitat?

If we do go with a local solar orchard, then where is the best site on current HVA property?

BROADER QUESTIONS

Regarding HVA Energy 'Policy':

How much energy could we save by investing a like amount of money in increasing conservation efficiency of existing and future structures, as the Master Plan says, "conservation first"?

What does it really mean to buy solar or wind electricity credits from the grid (does this really help promote solar or wind power)? What about newer options that apparently involve direct investment in a specific solar array elsewhere?

Do we know that solar power generation is even the best choice for our location/needs/aspirations?

What other energy-generating technologies might be applicable (e.g., <http://www.altaaerosenergies.com/about.html>)?

Given the range of other things we're trying to do here, some of which even involve using solar power in a different way (e.g., farming), what is the place of land use for energy production in 'our story'?

Regarding PV Technology:

What are the possibilities of 'stacking use' (e.g., panels atop parking lot or atop houses). What are costs and objections?

Which types of solar panels are best suited to our level of sunshine?

What is the lost efficiency over time, and how is this different in different options?

Which panels are best suited to our size and energy needs?

Is there a micro-grid option? Is there a partial micro-grid (or battery connection for a small part) option that could serve in a back-up generator capacity for key parts of the organization (e.g. cooler)?

Are there any anticipated breakthrough technologies or outside-the-box possibilities in solar just around the bend? (giving the cows solar panel jackets to wear? A solar capture paint that could be the new harlemville norm?)

How green are PV panels? Once manufacturing, packaging, construction, maintenance and recycling/disposal are factored in, what's the net benefit?

Regarding Panel Longevity/Disposal:

What does the end look like? What is the lifetime of the solar orchard or other systems and what factors affect it?

What is the lifetime of integral parts to the system – is this different than the panel itself?

What would be left on the ground? (e.g. concrete footings, etc.)

Institutional/Economic – Business Plan:

What is the most advisable investment structure for funding solar-panel installation?

Who would own and be responsible for a solar orchard or other system during its lifetime? What would the implications of this ownership be? (e.g. would there be levels of fencing, etc. that would be required if it was owned by an outside company vs. Hawthorne Valley?)

How long before the Solar Orchard pays for itself?

What is the situation of warranties, clean-up responsibilities etc. if the company/companies supplying the solar go out of business before the end of its lifetime?

What happens when that lifetime is reached – are they removed? Replaced? Who is then responsible for disposing of the many tons of waste (is any of it hazardous?) and at what generally estimated cost?

What sort of maintenance would be required and who would be responsible for it, physically and fiscally?

Regarding Social and Cultural Aspects:

Visual cost? They will significantly change the landscape, are we ok with that?

No matter what approach we take, how do we maximize the educational value of whatever we do?

Regarding Agricultural/Environmental/Other Uses:

Is there any inexpensive, partially-developed property which could be purchased elsewhere in the County for such an orchard? What would it take to put solar panels in an abandoned parking lot or other unused industrial space in Columbia County? Could this be part of the Hudson store project? Could it be in collaboration with some other organization?