



Master Plan Advisory Committee's Climate Change Resiliency and Sustainability Work Group Minutes for 6/7/19 meeting

Location: History Room, Lawrence Library

Meeting called to order at 1:45 pm.

Attending: Ken Hartlage, Sherrill Rosoff, Renee D'Argento

Absent: Jack Vizniewski, Rob Rand, Paula Terrasi

Working Session:

Sherrill and Renee reviewed their meeting with Carl Hills, Tony Beattie, and their research regarding farming trends in the US.

The following are Sherrill and Renee's notes from their interview, 6/2/19, with Carl Hills:

Meeting with Carl Hills 6/2/19:

Farmers are being paid for soil conserving carbon sequestration practices - through off-season cover crops. winter rye; no plowing anywhere. UMASS is promoting no till practices.

Farmers have created a "plough pan" from continuous plowing where the soil above and below is loose. He has a special auger machine that punches through the plow pan so that roots from his corn etc. can go below the plow pan. Over time, by punching through the plow pan, the pan will loosen up.

Farmers use different kinds of herbicides; he participates in UNH research projects as well as Mass Dept. of Ag regarding their pesticide research. Contact herbicides are okay - but residual herbicides are bad for soil health.

Latest development are tunnel or hoop farming where farmers are now growing underneath protective coverings. These are different from greenhouses (which have temperature controls

and fans) and hydroponics. Carl Hill does not use chemicals in his hydroponic tunnel but he does regulate the heat and sunlight.

His solar panels (124 panels) provide 80% of his farms energy needs. He will pay the panels off in four years; panels actually move to follow the sun. He wanted a wind tower but solar is faster pay off; he used solar panels made in Vermont - and these panels are 40% more efficient because they can turn so they adjust to the weather. He wrote a grant for the solar panels and received \$200,000 in grant money which amount to 25% of the cost. he also got "amazing" tax benefits from state and feds (another 25% annually) and gets SREC. He received \$12,000 last year; fed credits have gone away. Farmers don't have to worry about net metering and caps and are exempt from the caps.

No setbacks for greenhouses.

He sells retail to restaurants and farm markets in Boston: Rose Kennedy Greenway, Harvard Square; he won't sell wholesale. Small farmers are being pushed out by Hannafords/Shaws/Market Basket/Trader Joe's but now there is no money in wholesaling, just retail. Brookdale Farm does do business with Hannafords. He plans to start a local restaurant route that will cover high end bistros in Boston.

We need to push the message to folks in Pepperell: come to local farms to buy your produce - it's the only way local farmers can survive.

His land is under APR. Land cannot lie fallow under APR; whoever buys his farm will have to be a farmer; has to be able to afford to buy the farm but federal FarmCredit is a source of financing for farmers

Food security to the FDA has o do with food safety such as icily contamination.

Regarding water for his farm: he has a 700' well and dug himself a retention pond. Between these two he has a mile of underground irrigation pipe - this was also largely paid for by state grants.

Teaching young kids about farming is also key. Hollis has put a greenhouse in their high school and give a class in farming. He gives talks to farmers all the time.

Farmers are turning to hemp and marijuana as other cash crops.

Sherrill and Renee's 6/1/19 meeting with Tony Beattie reiterated the presentation he made to the Master Planning Committee: the importance of finding other income streams for local farmers, soil conservation, preservation of farms. Tony did not believe that New England farms can produce sufficient food to make New England resilient and sustainable - in other words, New England farmers cannot provide food security for New Englanders. Farmers do need to invest in hoop tunnels, greenhouses and hydroponics to extend our growing season. He also said that local farmers had very little voice anymore in town affairs; certainly nothing to what they once had. The town's Agricultural Advisory Board is defunct; farmers are getting the distinct impression that they are not considered important to the town's future.

Research on climate change and farming that Renee and Sherrill have accomplished to date:

1. Climatic plant hardiness zones are changing; in New England, seeing creep to zones 5 and 6. Changing hardiness zones will have profound impact on woodlands, open spaces, farmlands and wildlife
2. Crop and animal species have upper and lower temperature boundaries for growth and reproduction along with optimum temperatures for each growth development phase. (USDA 2012). More extreme temperatures will become the new norm; only immediate changes in farming and livestock production to increase resiliency to heat and disease can forestall crop collapse by 2100.
3. Temperature rises in the Mid-West has already increased more than 7 degrees in average winter temperatures over the past 30 years; by end of century temperatures are projected to increase another 4 - 11 degrees F. Under worst case scenario, it is anticipated that extreme heat in the lower Mid-Western states will create an estimated 50-70% annual crop yield failure in major commodity products: corn, soybean, wheat, cotton.
 1. temperature increases will impact livestock health, growth and reproduction
 2. temperature increases will impact feed grain production, increasing prices and reducing availability
 3. temperature increases will impact forage crop production and quality
 4. temperature increases will increase disease and pest distributions for both livestock and crops.
 5. traditional plowing of farm lands has degraded soils, created impenetrable plough pans that will be increases soil erosion with increased flooding conditions.
4. Conclusions:
 - Enact strategies to limit soil erosion throughout Pepperell
 - Build up our farm soils
 - expand forest cover for temperature control and water retention; put more land into forestry
 - help local farmers access funding for hoop tunnels, greenhouses, hydroponic runners to expand their growing season
 - save our farms from development
 - grow local, support local, buy local!

Research on farming trends:

1. In 1849 almost 70% of American labor force worked in agriculture; by 2000 barely 2% of the national labor force worked in agriculture. In 2012 about 4% of US farmers produced 66% of farm products by value.
2. nationally, average farmer is 58 years old; average age in Massachusetts is 59 years old; 38.5% of Massachusetts's farmers are women.
3. average farm in Massachusetts in 2017 produced \$65,000 worth of agricultural products on 68 acres.
4. Food consumers in Massachusetts are increasingly buying local because they want to know where their food comes from. "Direct market sales accounts for 21% of the state's total sales of agricultural products" and "ranks third in the nation for direct market sales per farm of \$55,384. (MDAR) Local farmers are looking to increase their retail (as against wholesale) marketing.

Possible Recommendations:

- A. Design a Get to Know Your Farmers outreach effort that could draw on Pepperell's Farm Fair traditions. See Massachusetts Agricultural Fairs Association (MAFA.org).
- B. Revitalize our Agricultural Advisory Committee. Charge the committee to capture funding streams to benefit our local farmers and the town.
- C. Investigate towns which are recognized as having effective Agricultural Advisory Boards as templates for reviving our town's committee.
- D. Instruct the water department to offer a discounted agricultural water rate to help local farm production, CSA's, etc.
- E. Establish a town "community farm" on town land to encourage residents to garden, and raise awareness of farming issues and practices, and environmental benefits of farms.

Action items:

Ken Hartlage has done considerable research on Food Hubs and will send the committee a number of articles on them. (Action item completed) He has volunteered to take the lead on this, with the aim that the committee will focus on the upcoming Economic Development chapter so we can draft a complete proposal for MPC review and adoption. Some of the above information could be folded into our report, or become a stand alone chapter. To be determined. Sherrill will contact the MDAR for investigate information about climate change and farming; food hubs, and any information about food production in the state, and our area, in particular.

See attachment taken from the MDAR website regarding distribution of farms in the state.