

**Submitted by Jim Stiles on 9/7/17**

**Promote regenerative agriculture practices** || The point of regenerative agricultural practices is to restore soil to much the condition it was in before modern agricultural practices were applied to it. This brings many benefits: it reduces capital requirements and reduces/eliminates the recurring costs of inputs (fertilizer and pesticide), it produces high quality/high value crops and livestock, it sequesters large amounts of carbon in the soil (removing it from the air), and it increases the rate of water uptake and water storage capacity of the soil (the last two being critically important elements of climate adaptation). Some regenerative agricultural practices increase the demand for physical labor with modest training requirements, which increases demand for semi-skilled labor (although it raises the labor costs of those specific practices).

Specific Options:

- support pending legislation in Senate (S.159)
- use the bully pulpit of the governor's office
- others?

**Promote compost-type soil inoculants** || The history of sustainable agricultural and horticultural practices, recently further illuminated by scientific research, makes clear the power of healthy soil to greatly enhance its ability to provide critical environmental services. Healthy soils are extraordinarily effective at increasing nutrient mobility with great specificity – moving specific nutrients to exactly where they are needed by green plants at a given time. This capability provides a viable alternative to soil chemistry and biocide-based agriculture and horticulture – one which does not rely on petrochemicals and expensive products which must be imported into Vermont. Research into high fungal composts (such as conducted by David Johnson to New Mexico State University) strongly suggest the potential for a new range of compost products capable on inoculating soils with the biota required for vibrantly healthy soils: Soils that will support the growth of superior agricultural and horticultural products. In addition to reducing agricultural chemical imports to Vermont and increasing the quality of produce, these new products will also sequester carbon from the atmosphere, helping reduce CO2 levels in the air, and will greatly increase water infiltration and retention in the soil, reducing flooding and mitigating the impacts of drought. Vermont is especially well situated to move quickly to develop and market new soil-enhancing inoculants given a strong composting industry and the presence here of healthy soil advocates (such as Soil4Climate and the Vermont Healthy Soils Coalition), and advanced soil product manufacturers like Vermont Organics Reclamation.

### Specific Options:

- hold competition for schools at all levels for who can create the best inoculant and raise the carbon content of a test plot the most
- based on results apply the winning entrant's compost to a test plot at the state house
- convene a meeting of Vermont composters to promote ramping up production of high fungal composts suitable for use as inoculants
- convene a meeting of Vermont nursery professionals to promote the use of high fungal composts in their products
- work with VECAN to expand its focus to include a strong focus on soil health and soil carbon sequestration
- commit to regular purchases of inoculant by state for use in landscaping of state facilities
- others?

**Promote more resilient agricultural practices: Agroforestry** || Agroforestry and related practices such as silvopasturing and alley cropping are mixtures of agricultural and forestry practices that can produce high economic yield due to efficient use of sunlight and complementary biology while creating very healthy soils that can tolerate weather extremes. Vermont's 'current use' tax laws help protect agricultural and forest lands, but as presently constituted are not applicable to these hybrid land management practices. This regulatory failure should be resolved in order to promote innovative approaches to hybrid agriculture and forestry.

### Specific Options:

- create working group to fix this problem and find other regulatory problems
- others?

**Promote the reintroduction of the American Chestnut** || The American chestnut is one of the world's greatest trees. It is fast growing, its wood is rot resistant and is suitable for use in both construction and fine woodworking. The nuts it produces in abundance are a highly palatable source of food for humans, livestock, and wildlife. Through the 1800's American Chestnuts constituted approximately a quarter of all the

trees in eastern forests from Georgia to Maine. However early in the 20<sup>th</sup> century a blight from China was introduced and rapidly spread, killing virtually all American chestnuts. However a few have survived and have been interbred with resistant varieties of Chinese chestnuts. Seed stock from these trees is now becoming available. Vermont should embrace the reintroduction of this tree since it has the potential to become a major part of a vibrant forest economy in the future and is exceptionally well suited to tolerating shifts in climate. (NOTE: it is quite possible that native American agroforestry practices contributed substantially to the prevalence of the American chestnut prior to its disastrous decline, which some economists speculate may have contributed to or even been a major cause of the Great Depression.)

Specific Options:

- become a member of the American Chestnut Foundation
- promote the work on the American chestnut at the UVM horticultural farm and elsewhere (West Hill Nursery, etc).
- Create memorial for John Wires (a Vermonter who was a lifelong advocate of the American Chestnut)
- others?

**Promote species diversity in Vermont's forests with emphasis on increasing the presence of native American tree species from the south** || As temperatures rise from global climate change, stresses on native Vermont tree species will increase. In order to maintain a diverse, healthy mix of species in the forest, species should be actively introduced with emphasis on species from further south in the US.

Specific Options:

- create a working group in the appropriate agency
- reach out to the UVM Horticultural Farm to take up this issue for street trees
- others?

**Prepare to receive domestic (and international?) climate refugees** || As climate change progresses extensive areas in America's south and midwest will become hotter and drier. The same is true across the world (and is likely one of the root causes of the Syrian civil war). These changes will decrease the productivity of agriculture and

forestry in those areas. Since agriculture and forestry are important and even foundational parts of many local and regional economies, the potential for economic migration is large, possibly on a very large scale over the course of many years. If this does happen, Vermont will very likely be a significant destination and so will need more housing, more employment opportunities, more food production: more of everything. The way these needs are met – the efficiency of the solutions that are adopted – will affect their costs and impacts. Vermont should embrace radically efficient solutions whenever possible so we do not increase the need for road infrastructure (and therefore the importation of petroleum products to build and maintain them), and should therefore embrace very high levels of walkability in evolving and new communities. As we plan for these needs, we should seek to integrate best practices from around the world throughout history in order to maintain prosperity through efficiency instead of increasing exploitation of natural resources.

Specific Options:

- take up item in discussion with other New England governors who are also likely to receive large numbers of climate migrants
- seek funding for study group
- seek funding for new program at UVM to pursue cross disciplinary studies to address issues of accommodating climate refugees
- others?

**Prepare for in-state climate refugees** || Although Vermont is unlikely to be hit as hard as most other places around the US by climate change, there will be direct impacts of climate change on Vermonters. Our historical pattern of community development in river valleys (and the associated history of damage from floods) calls for redirecting development to other areas and not rebuilding in flood-prone areas and actively discouraging new development in those areas. Instead Vermont should embrace the same radically efficient community development for displaced Vermonters as will be needed for other displaced people from around the country and potentially from around the world.

Specific Options:

- Work with VECAN to add this to their priorities
- Work with Regional Planning Commissions to add this to their priorities

- Create working group to study impact of increased flooding on state facilities and task it with creating a specific plan

- others?

**Change Vermont's transportation paradigm: Neighborhubs** || Walkable communities with abundant local amenities and services are emerging as high priorities in Vermont's planning efforts. These efforts can be enhanced by promoting a modification of a powerful recent trend in our current automobile dominated transportation infrastructure – convenience store gas stations. The growth of this combined business type has been dramatic. By adapting this same model (substituting shared transportation services for automobile-oriented services) to walkable communities – intentionally combining as many non-car services as possible into one facility (or cluster of facilities) – communities will naturally nucleate around those services. If those services include more efficient transportation services, Vermont can make important progress in reducing the drag on our economy from importing automobiles, gasoline and diesel fuels, tar for roads and everything associated with our reliance on automobiles while at the same time creating communities that are better in almost every way. The services that could be included in such neighborhood hubs could include shared transportation options, groceries, cafe, library branch and many more. By providing good transportation services and a rich selection of other services (including, for example, senior housing in or adjacent to such hubs) more efficient lifestyles and therefore more efficient communities should emerge.

Specific Options:

- Work with VECAN to add this to their priorities

- Work with Regional Planning Commissions to add this to their priorities

- Convene a meeting with convenience store chain reps to ask their help in figuring out what a neighborhub facility might look like

- Issue an appeal to Vermont cities and towns to move toward nucleating their communities around a place where an abundant set of services and amenities can be found

- others?

**Insurance for car sharing** || Car sharing services have done well in large cities around the world and have made some inroads in Vermont in larger communities.

However the adoption of car sharing services in Vermont have been impeded by two things – small numbers of adopters in small communities and unavailability of insurance. Vermont is already working to increase the centralization of residents into appealing, walkable communities which will help on the one hand and can take more initiatives to promote this more traditional style of community. The state may also be in a position to work with insurers to create a product suitable for use in car sharing. The cost of the insurance products should be borne by the car sharing operation, but working to insure the availability of such products is something where the state is in a good position to help.

Specific Options:

- instruct appropriate agency to come up with option for permitting car sharing options to join state car insurance program (they pay for the cost of their membership)
- instruct appropriate agency to work with insurers to create insurance product
- others?

**Scheduling services for shared transportation** || Vermont already has what is likely the best program of any small state for scheduling transportation access as part of increasing the occupancy of existing vehicles in it's Go! Vermont effort. Continued development of Go! Vermont's services should continue to improve vehicle occupancy and create new and enhanced transportation services, such as wider adoption of car sharing and more innovative options such as smart jitney services as promoted in a recent Montpelier master plan.

Specific Options:

Seek locations to roll out smart jitney services

Add capability to schedule pick up and delivery services, potentially as part of multi-purpose passenger/cargo vans (see Freightliner vans for examples)

- others?

**Regional agricultural promotion (tastings, etc)** || Vermont is home to a strong locavore movement and an abundance of small-scale food product manufacturing endeavors. These efforts are promoted in a wide variety of ways already, and the state should endeavor to support existing efforts and expand them. One idea is to promote regional tasting and sampling events such as St. Alban's Fine Wine, Food and Beer

Festival and many others around the state. Such events have the potential to become wider tourist destinations. These and variations on these themes should help promote Vermont's food product exports.

Specific Options:

It is probably better to look to others for help here – I am not much of a marketer, but Vermont should make it easy for a wide range of people to encounter Vermont products and to purchase them in any quantity they need. This would certainly include training for producers and probably should include regional facilities for product development and marketing assistance.

**Natur hus-style construction** || Although Vermont is notable for its efforts in promoting alternative energy and sustainable lifestyle options, these efforts have met with mixed success. Alternative energy production in Vermont is strong, but in-state use of wind and solar-generated electricity is not. The availability of energy efficiency design and construction services is excellent, but they are still not broadly used. Vermont is not highly successful in promoting energy efficiency. This is unlikely to change dramatically until the cost of energy rises. In the meanwhile Vermont should continue to seek out and gain expertise in promising energy alternatives. One such option has been developed in Sweden over the past 40 plus years – natur hus (nature house) construction. This construction technique involves wrapping a weather-proof, impervious shell (typically a greenhouse) around largely conventional construction. This style of construction has many benefits, cutting heating energy demand roughly in half and sharply reducing maintenance costs – paint that is not exposed to direct sun and rain lasts a very long time, and wood that stays dry doesn't rot. Furthermore the unheated space between the shell and the inner building can be very inviting on cold but sunny days. Experience in this construction technique could serve Vermont well as highly efficient lifestyles grow in importance.

Specific Options:

- employ this technique in a new state building or in retrofitting an existing building
- promote the idea to/through VECAN
- convene meeting of interested contractors and developers to explore the potential
- others?

### **Promote new business development in the Climate Adaptation sector ||**

Developing new businesses is hard work and requires finding just the right combination of technical, artistic or other inspiration, operational business acumen, and availability of resources, especially (but not solely) capital. Significant efforts have been made for many years in this area. However fostering a strong culture of a lively mixture of these and other contributors to the creation of new businesses and health of existing businesses must be an ongoing effort. Special emphasis should be placed on skill building in these areas among young people so that more of them can develop the skills and confidence needed for success. The ability of the state to convene such events and efforts is an important part of the mix.

Specific Options:

Convene tech/business ops/money events

Add courses and programs through Vermont Community College and high school-based programs

- others?

### **Create statewide awards for leadership in climate action/adaptation ||**

Recognition for efforts, especially by volunteers can help motivate them and promote the initiatives they have undertaken.

Specific Options:

Some of this is already being done, but there is room for more and for more participation from senior state officials

- others?

### **Volunteer leader meetings with government officials and other important entities engaged at the state level ||**

Creating more regular contact between volunteers and people involved in professional capacities in climate action can provide benefits to both. Contact with professionals working in the field can help educate volunteers about the realities involved in the various domains where professionals lead: government (both elected officials and agency staff), business, and non-profits all are potential sources of support, inspiration and leadership. Volunteers can likewise be sources of inspiration and insight to professionals, and if the volunteers are well informed and connected their effectiveness is increased.

### Specific Options:

Promote an open door policy with emerging leaders in climate adaptation field and promote it through multiple channels (VECAN and private sector non-profits, elected state and local officials, etc)

- others?

These ideas and the details around them are just a start. Some are strong as presented here. Others less so and at the very least in need of development. No doubt ALL of them can be improved.

### Additional Ideas Under Development

- Develop Regenerative Agriculture as a Vermont Brand (based on Vermont Bill S.159)
- Promote establishment of regenerative ag-related products and services
- Review Paul Hawken's new book [Drawdown](#) for ideas applicable here