

Mohawk Trail Woodlands Partnership (MTWP) Advisory Committee Meeting

July 17, 2018

Berkshire East Ski Lodge, 66 Thunder Mountain Road, Charlemont, MA

Staff: Tom Matuszko, Bob O'Connor, Deirdre Rose, Peggy Sloan, Wendy Ferris

Members Attending: Dicken Crane, Larry Flaccus, Kyle Hanlon, Ed Munch, Joe Nowak, Jim Perry, Mark Phelps, Walt Quist, Keith Ross, Whit Sanford, Art Schwenger, Janet Sinclair, Bill Dornbusch

Others Attending: Dwayne Breger (UMass CEE), Dr. Peggi Clouston (UMass Building and Construction Technology), Jenny Hansell (Berkshire Natural Resources Council)

1. Introductions

T. Matuszko commenced the meeting. A round of introductions followed. P. Sloan noted that the meeting will be recorded in order to prepare Meeting Notes and that J. Sinclair also will be recording the meeting.

2. Review and Approval of March 27, 2018 Meeting Notes

T. Matuszko asked for a motion to approve the Meeting Notes from the March 27, 2018 Advisory Committee meeting. K. Hanlon motioned to approve the Meeting Notes of March 27, 2018. M. Phelps seconded the motion. The motion passed unanimously.

3. Cross Laminated Timber Building Construction – Environmental Considerations and Research on Use of MA Species

T. Matuszko noted that over the course of several meetings there has been discussion of cross laminated timber (CLT) opportunities in the region. This evening, Peggi Clouston from UMass Amherst will present her research on CLT. P. Clouston introduced herself and provided context for her work in heavy timber. In the 1990s, she was a structural engineer in Vancouver and was fortunate to have studied with some of the forefathers of timber engineering. In 2001, UMass hired Clouston to teach architects, engineers, and builders how to design timber structures and to do research in the Department of Building and Construction Technology. The Department's focus is on green building and renewable materials, and has 240 undergraduate students and 10 graduate students.

Clouston provided an overview of the UMass Design Building, the new heavy timber building at UMass. The 3-4 story building is getting a lot of recognition, and has received 11 awards so far. One of the more prestigious awards is the Building of the Year award by World-Architects, and the Wood Design award for wood innovation from WoodWorks. The building is technologically innovative. The building was determined to be a demonstration structure and received funding through the Environmental Bond bill and is named for former Congressman John Olver who advocated for a heavy timber building.

Clouston reviewed the development of mass timber over the past few decades. Twenty years ago building tall timber structures was not considered feasible. Now due to new technology, mass timber can span large distances and support multi-story buildings. Clouston showed examples of buildings and structures from around the world including high rise buildings and a wind turbine tower. Since 2008, high rise buildings have been built out of timber. Current building codes allow for wood structures up to 6 stories. Heavy timber construction technology is different than traditional wood construction. Plates of Cross Laminated Timber in the walls and floors are connected with small steel angle brackets and screws. These are pre-fabricated and can be assembled quickly. The UMass Design Building made the actual elevator and stairwell shafts out of CLT and demonstrated that wood can be used in areas typically not considered for it.

Clouston explained the difference between Glulam and CLT. Glulam are laminated sections of many pieces of wood glued together with the fibers aligned in the same direction. Using many small pieces disperses the defects of the wood which minimizes the weak points and makes it stronger. Glulam is used for beams or columns. CLT is more like plywood and is made of lumber laid in layers. Each layer is oriented 90 degrees to each other. CLT comes in panels and is designed to be a wall or floor. Clouston passed around a sample CLT panel from her lab.

A question was asked if the glue was a weak point. Clouston noted that the glue is strong and is tested to make sure it holds up over time. She noted that glulam structures have existed for over 100 years. While the glue technology has not changed, researchers are now trying to develop bio-based glues. Clouston noted that mass timber works well for indoor construction where there is a controlled environment. The UMass Design Building exterior is aluminum. Clouston explained that the expansion and contraction of wood versus steel and concrete is drastically different. Wood shrinks and swells with the seasons, and engineers must design for that.

A question was asked why this technology has not been used until just recently. Clouston answered that U.S. engineers are beginning to advance the use of this building material, however, Europe has been using it for 20 years to conserve resources. Wood can sequester carbon and displace the use of steel and concrete which utilize more energy to produce. Clouston presented information on the sustainability and environmental benefits of using mass timber. According to the EPA, buildings account for 39% of total energy use and 38% of carbon emissions. Carbon is sequestered by trees and is stored in wood until it burns or rots. Large timber structures can be thought of as carbon storage tanks. Life cycle assessment studies have shown that wood has a smaller environmental footprint than steel and concrete. A life cycle assessment was done for the UMass Design Building. The results show that constructing the building with mass timber is equivalent to taking 500 cars off the road for a year.

Mass timber is distinguished from lumber by its larger size for fire safety code purposes. Wood can be left exposed if at least 6" x 8", which qualifies as heavy timber. Heavy timber does not burn easily and once the beams do catch fire, the char around the outside protects the inside core and structural integrity. A question was asked about the toxicity level of the glue in the laminated boards in the event of fire. Clouston answered that each time a new large structure is built, fire testing is required and the

tests incorporate those concerns. In the first 10 minutes of a fire, wood loses capacity to about 80%. Steel will melt, so it has to have active fire suppression, like gypsum, wall board etc.

A question was asked about the economic implications of producing mass timber. Clouston answered that the New England Forestry Foundation received a USFS grant to do the economic analysis for New England which found it to be economically viable. A question was asked about what wood species can be used. Clouston answered Douglas Fir, Black Spruce and Southern Yellow Pine are common. Part of her research is to look at Eastern Hemlock and Eastern White Pine.

Clouston reviewed the work she is doing in her lab at UMass with testing local species for use as CLT. Her lab is working with MA EOEEA to proof test and design CLT with eastern Hemlock and eastern White Pine. She explained the types of tests they do on the manufactured pieces. More testing needs to be done, but so far it is promising that they will be able to come out with a local species CLT that can compete with other CLT products.

Comments and questions followed. Clouston noted that Wood Works is a good website and resource for educating architects and builders. A question was asked about using mass timber for small scale residential development. Clouston answered that 4-6 story buildings are most appropriate, but for smaller scale building it is still hard to compete with stick frame construction on cost. However, once it takes hold in the region and becomes more available, there will be an opportunity to build affordable homes with pre-fabricated timber. A comment was made that there is eastern White Pine in the Mohawk Trail State Forest that is being impacted by a needle disease, weakening their crowns. Clouston noted that the impetus for looking at Hemlock was because of the wooly adelgid.

A question was asked whether there are any fabricators in the region. Clouston answered there are 5 mass timber mills in north America, located in Canada, the west coast, and Montana. Two companies are looking at locations in Maine. A few are looking in Massachusetts. A comment was made that it would be helpful to have a symposium or other way to educate Select Boards and others about this opportunity. P. Sloan noted that the regional planning agencies could organize a meeting. A question was asked about the manufacturing process. Clouston stated that the process can be fully automated. The lumber grading is still done visually, but the production process is computerized. A comment was made about use of hardwood species. Clouston noted that there could be more research into the use of hardwood species.

T. Matuszko thanked P. Clouston for her presentation.

4. Presentation on the High Road Trail Project of the Berkshire Natural Resources Council

T. Matuszko stated that one of the priorities we have looked at is the economic benefits of natural resource based tourism including the recreational and open space benefits of forests. The Berkshire Natural Resource Council (BNRC) focuses its activities in Berkshire County. It is a region-wide land trust and Jenny Hansell is BNRC's new President.

J. Hansell thanked the Advisory Committee for inviting her to speak. BNRC works exclusively in Berkshire County on land protection but also collaborate with partners outside of Berkshire County. BNRC has been in existence for over 50 years, preserving and creating access to the land. BNRC works with landowners to protect land in fee simple, via conservation restrictions, and through trail easements where landowners give permission for the public to walk across the land. Hansell showed a map of conserved land in Berkshire County. BNRC maintains over 50 miles of trails, leads guided hikes and also provides education programs in schools and libraries. A lot of work the BNRC does is physical building of trails. People are welcome onto BNRC's land for a variety of activities but they try to create trails to protect valuable habitats. A new program is called libraries in the wilderness, where families can "check-out" a backpack with maps, binoculars, trail maps etc. and can take it out for a week.

The High Road is a county-wide conservation and trail network. The goal is to connect people to nature, allow hiking from town to town, and create an engine for economic development. It is not intended to be the same as the Appalachian Trail. Instead someone might hike for a morning and go to a coffee shop, restaurant, B&B etc. Over time they hope to see tourism growing up around the trail, with companies that create tours and small businesses that provide visitor services. There are many benefits to individuals being out in the woods from improving health to fostering a love of nature. Information collected by the Berkshire Visitors Bureau shows that almost all visitors come to the region for the scenic beauty and many who visit come to hike. There is also a trend in younger visitors wanting an outdoor experience. Hansell presented examples of trail tourism from all over the world. She noted that the Inn to Inn experience in Vermont has a company that does nothing but organize it, from hiring the vans to working with the B&Bs, etc.

Hansell noted that there is over 240,000 acres of conserved land in Berkshire County, amounting to nearly 40% of the total area, but it is fragmented and lacks connectivity. She showed a conceptual map of the High Road that connects preserved areas throughout the County. Hansell outlined that Trail easements are an important part of the High Road project. Hansell noted that in other countries there is a culture of welcoming people onto your land but it is different in the U.S. and requires building relationships with landowners over many years. She noted that BNRC needs help from groups who know the areas in order to connect existing trails. A question was asked whether power line corridors have been considered for part of the network. Hansell said they will take that into consideration. She said that BNRC will be meeting with towns to explore possibilities. Building trails is time consuming and very expensive. Woods roads, logging roads, decommissioned roads, could be opportunities.

Hansell presented some of the projects BNRC is currently working on related to the High Road network. In Lenox, the Yokun Ridge project will connect Pittsfield to West Stockbridge. The Parsons Marsh project in Lenox will create an accessible trail with boardwalks through the marsh. In West Stockbridge and Alford, the Tom Ball Mountain project will pull together several parcels for protection to create access to a mountain that was not accessible before. BNRC just applied to a National Park Service program for technical assistance to help bring northern Berkshire towns together to think about where the High Road should go. They hope to know more about the program by the end of the summer.

A comment was made that early on in BNRC's history, the term "working landscape" was used a lot, and the goal of BNRC back in those days was to protect the working landscape. The terms tourism and recreation are used without acknowledging the working part of the landscape, leaving out a critical piece of what land protection is all about. It is important to include working landscapes and the people who work the landscapes as benefactors of land protection. Another comment was made that the network of trails is likely to encounter farms and forestry operations. Hansell noted that she will include working lands in the next iteration of the slide show.

Hansell passed around trail maps. A question was asked whether Franklin Land Trust is doing anything similar in Franklin County. W. Ferris answered that FLT has the public access program for funding easements for trails. Currently, FLT does not have a vision for a connected trail across the county but would like to consider it for Franklin County.

5. Discussion of Legislation for the Mohawk Trail Woodlands Partnership and Next Steps

T. Matuszko said that legislation has been passed by the House, but not the Senate. The legislative session ends July 31, so we should know by then. We are still working with our legislators to move it forward. Staff will let MTWP Advisory Committee members know if it passes. Matuszko clarified that the MTWP is included in the Environmental Bond Bill, which is a separate piece of legislation than the State budget. A comment was made that once the conference brings it forward it should move quickly. Matuszko confirmed that staff will e-mail MTWP Advisory Committee members with an update on the legislation.

6. Updates on the UMASS CEE Heat Demand & Air Quality and Public Health Study

D. Breger provided updates on two projects. First, he provided information on an analysis completed of the total heating load across all sectors in the MTWP region. The total heating load comes to about 2.5 million MMBTUs per year. About 70% of this is for residential buildings. Commercial and industrial buildings account for 15% of the heating load. Tax exempt buildings, including State, municipal, and schools, accounts for 10% and various other buildings make up the last 5%. UMass CEE will make this information available online. It will be helpful for moving forward with opportunities for renewable thermal application like heat pumps, geothermal and modern wood heating.

Next Breger updated the Committee on the air emission testing conducted by Professor Rick Peltier. Dr. Peltier is still analyzing the data from the testing completed this past winter. Breger and Peltier will be meeting in August, and he expects to provide preliminary results in the Fall. Breger noted they have made proposals to the State to get additional funding to deploy the truck next winter to do more testing that has been recommended by the MTWP Advisory Committee, including ambient wood smoke monitoring and wood chip heating systems and fossil fuel oil heat systems. He is hoping the State will provide support for this.

Breger reviewed the sites that were monitored last winter. They were all pellet systems and included Mt. Wachusett Community College, the DCR Visitor Center, Sanderson Academy in Ashfield, the DFW fish hatchery in Belchertown, and a school in Westminster. They were not able to find a similarly sized oil heating system to test, but there is ample science and analysis for oil systems to make a comparison. However, CEE would like to test a few oil systems next winter to make a direct comparison.

7. Other Topics not reasonably anticipated 48 hours in advance of the meeting/ Committee Member or Public Comment/ Adjourn

T. Matuszko asked for public comments.

W. Ferris announced that Franklin Land Trust's affiliate, the Massachusetts Woodlands Institute (MWI), has a new website called Western Mass Wood. It includes a directory of local sawmills, loggers, and places to buy local wood in Western Massachusetts. She asked Committee members to take a look at the website and provide feedback. MWI is also building a bulletin board for people to post specific species of wood they are looking for or have available. The website is www.WesternMassWood.org

B. O'Connor stated that FLT is launching a new tree planting grant with North Adams, Greenfield, and Montague. FLT noted that it will start in the next couple of months.

W. Sanford from the GSFABA stated that they are going through their strategic planning process and are discussing their future role with respect to rural conservation and development. T. Matuszko said that this could be a topic for a future meeting once they have completed their planning process.

B. O'Connor recommended that people visit the UMass Design Building. P. Sloan offered to set up a tour of the building.

The next MTWP Advisory Committee meeting is tentatively scheduled for October 16, 2018.

At 8:05 p.m. the meeting was adjourned.