

Urban wood

From A1

A network of arborists, municipalities, mills and manufacturers is working to change that by promoting urban wood as a valuable carbon-trapping resource that can be used for pallets, furniture and even commercial construction.

According to a U.S. Forest Service study, the nation's urban trees contain about 919 million tons of carbon dioxide, a heat-trapping gas that is rapidly altering the earth's climate. Those trees suck up another 36.6 million tons of carbon each year, which is equivalent to roughly 2% of U.S. passenger vehicle emissions.

While most valuable as trees, nothing lives forever. Roughly 2.2 billion cubic feet of wood is cut from city streets, parks and backyards each year, about 7% of the volume harvested from forests. Much of that is too small or oddly shaped to be used as lumber, but there's enough good hardwood — worth more than \$750 million — to produce the equivalent of nearly 1.3 billion 12-foot shelves.

"It's a lot of wood," said George Berghorn, an assistant professor of construction management and forestry at Michigan State University. "It's also a lot of carbon."



Berghorn

While the use of urban wood alone will not solve the world's climate crisis, it is one of a handful of strategies for capturing more of Wisconsin's carbon emissions in the trees that cover nearly half the state, according to a recent report by the Wisconsin Academy of Sciences, Arts and Letters.

When wood is burned or decomposes, that carbon is released back into the atmosphere. If used in buildings, furniture or other wood products, the carbon remains trapped for decades. Milling and using the wood locally also means not having to burn diesel fuel to move it long distances.

That all sounds good, but there are challenges.

Urban wood typically isn't graded or standardized like other lumber, so architects are often reluctant to use it. Supplies are unpredictable, since trees aren't cut to order. And unlike trees in a forest, urban trees spread branches far and wide, making it harder to get the long, straight logs that most mills want.

"People are so accustomed to the convenience of going to the store and buying the lumber you need right then and there," said August Hoppe, a Milwaukee arborist who processes about 15% of the trees he cuts down through his Urban Wood Lab. "There's a more thoughtful process to urban wood."

Selling a story

Dwayne Sperber has been working for years to solve that problem, supplying wood from southeastern Wisconsin for commercial building projects through his Delafield company, Wudeward Urban Forest Products.

"If anything, I'm in the recycling business," Sperber said. "It isn't quite the commodity that traditional wood is. It just is."

But the wood comes with a story: Local origin, unique character, environmental benefits.

As a member of the Urban Wood Network, Sperber is working to sell that story and develop industry standards so that architects, designers and contractors can feel more comfortable using it in commercial building projects.

Sperber has supplied wood for the Fiserv Forum in Milwaukee and Madison's Pinney Library. He also helped SSM Health turn a stand of walnut trees cut down to make way for a new South Side clinic into veneer covering for the reception desk.

"There's a lot of opposition because it's a different ordering process," Sperber said. "I can make it easy."

Preserving memories

To Paul Morrison, the irregularities in urban wood aren't flaws, but character.

Growing up in the Fox Valley, Morrison was a kid "who liked tools more than toys." His grandfather was a woodworker, and he remembers the smell of the local sawmill where they brought trees from their farm.

There's a sense of mourning when we lose the trees that shade our yards and hold our swings, clotheslines and memories, Morrison said.

"Literally, the carbon in those trees is what we exhaled as we enjoyed the shade under those trees.



Tim Boettner, left, and Matt McCoy carry a piece of walnut cut from a log at The Wood Cycle of Wisconsin in the town of Oregon. Put to other uses instead of mulching or landfilled, urban wood can lock up millions of tons of heat-trapping carbon dioxide.



Andy Lynch puts pieces of walnut to be used for a cabinet into a sanding machine at The Wood Cycle of Wisconsin in Oregon.



The stairs at Promega's Feynman Center are made from walnut trees harvested on the company's property in Fitchburg, which architect David Rousseau said was an effort to honor the trees.



Wood that has been milled is labeled with the street name of where it came from as it dries in a solar kiln at The Wood Cycle of Wisconsin.

"People have forgotten that things can be made from the resources around us. We don't have to source our wood from the north woods."

Paul Morrison, owner of The Wood Cycle of Wisconsin

The connection is that real," Morrison said. "Those memories can be preserved."

An engineer by training, Morrison quit his state job in 2001 and turned his hobby into a business, The Wood Cycle of Wisconsin.

He works with homeowners, arborists and local municipalities who are taking down trees to identify usable lumber, which is stockpiled around his mill in the town of Oregon, where he and his nine employees cut and dry the wood.

Some boards are turned into handcrafted furniture and cabinets, others returned to their owners. Some have turned up in buildings like the new Verona High School and Olbrich Botanical Gardens. Morrison also sells lumber to woodworkers through his store and Habitat for Humanity's ReStores.

"People have forgotten that things can be made from the resources around us," Morrison said. "We don't have to source our wood from the north woods."

Battling beetles

The concept of urban wood isn't new, but the industry got a kickstart in the early 2000s when emerald ash borer beetles were first discovered in Michigan.

As the invasive pests spread to neighboring states, including Wisconsin, cities scrambled to remove millions of ash trees before they became infested and died. The mass removal became a catalyst for efforts to find the best use of the wood.

The city of Eau Claire started an urban wood diversion program in 2016, about a year before the invasive pest arrived.

"Rather than just being put to a landfill or looked at as a waste product, the wood has some value in some form to somebody," said forestry supervisor Matthew Staudenmaier. "It's just a matter of marrying the resource to the need."

When crews take down boulevard trees, they try to preserve marketable cuts whenever possible. Smaller branches are chipped, but logs are stockpiled at the city's yard waste site, where sawmills, firewood dealers and even local artisans can bid on it.

Staudenmaier said some constituents assumed the wood was worth a lot of money, but in reality buyers were not willing to pay top dollar for "run-of-the-mill street trees" like maple, ash and locust full of knots and other irregularities.

But giving wood away costs the city less than the alternative. "We're not spending the money

grinding it," Staudenmaier said. "If people can take it in the round form ... that's a cost avoidance."

To the chipper

With more than a quarter of a million trees in its parks and public right-of-ways, the city of Madison cuts down as many as 3,000 trees a year as they succumb to age, disease and storm damage.

In 2016, when city crews were preemptively removing thousands of ash trees, the parks department made some logs available to local sawyers like Morrison, who returned some to the city in the form of conference tables.

While city leaders praised the project at the time, the additional work wasn't worth the payoff, said streets superintendent Charlie Romines, who has overseen the city's forestry service for most of the past 12 years.



Romines

"We decided we'd give it a try," Romines said. "It didn't go particularly well."

Today the city sends its trees to the chipper, generating mulch that's sold to farmers and landscapers and used as ground cover, including as safety-certified playground chips, which Romines said would otherwise cost up to \$300,000 a year.

"We're getting pretty good value — between selling the mulch ... and displacing the cost that parks would otherwise have to pay."

Beyond aesthetics

Of course, the majority of urban trees aren't on public land.

For private arborists, finding higher uses for the wood can provide additional revenue streams, but it's also more work.

Big mills typically aren't interested in buying small, irregular batches of wood, so many times reuse depends on customers who want their wood back, whether in boards or a finished product.

"A lot of people just want it to go away," Hoppe said.

Brent Valentine, co-owner of Hartwood Tree Co., said he's been working since he started his business in 2010 to find higher uses for the wood, but said there are logistical challenges and typically depends on customers being willing to pay to have their trees processed.

Later this year he plans to use some of his wood as siding on a new building on Madison's South Side that could provide space to sell more lumber.

"It's a fun part of the business that requires a lot more effort than just paying to get rid of it," Valentine said. "But one we're willing to explore."

While it's often used for sentimental and aesthetic reasons, urban wood can also be used as flooring, window and door casings, upholstered furniture and even pallets, said Kari Divine, executive director of the Sustainable Resources Institute, a Michigan nonprofit that promotes sustainable forestry.

Madison arborist John Stephenson is working with the U.S. Forest Service to set up protocols for arborists to make better use of bolt wood, logs that are too short to make boards but can be used to make shipping pallets, which are in high demand.

"Urban wood is much more than live edge slabs," Divine said. "We have to go beyond that market. Urban wood is that and a whole lot more."