

ESTABLISHING AN URBAN WOOD UTILIZATION PROGRAM

Photo Credit: Wisconsin DNR

WHAT ARE URBAN WOOD & URBAN WOOD UTILIZATION PROGRAMS?

- Urban wood includes logs and limbs from trees removed in urban areas
- Urban wood can come from public and private spaces including parks, backyards and street trees
- Urban trees are removed for several reasons — death or disease, infrastructure or development projects, homeowner preference or public space management
- Urban wood use programs seek to divert resources from waste streams for beneficial uses

ENVIRONMENTAL BENEFITS

- Diversion relieves stress on landfills and can lower transportation needs, reducing emissions.
- Mulch use enhances plant health and can protect soil during construction or disturbance activities.
- Urban wood products such as lumber or furniture continue to hold carbon that would otherwise be released into the atmosphere.

The majority of solid urban wood is disposed of through firewood (38%) or mulch (33%). Less than 5% of wood volume is processed into lumber, sold as round wood or made into furniture.

WHY ESTABLISH AN URBAN WOOD UTILIZATION PROGRAM?

- Urban wood programs can reduce operating costs and generate revenue
- Repurposing urban wood products has direct environmental benefits
- Your organization's environmental stewardship through urban wood utilization is a marketable trait

ECONOMIC BENEFITS

- Urban wood has traditionally been considered a waste product.
- Disposal is often costly due to transportation costs and landfill tipping fees.
- Cost savings can be redirected toward other urban forestry uses.
- Tree services may be able to increase profit or reduce fees to customers and add value-added services.
- Urban wood and similar products can generate revenue or be repurposed for other uses within your organization (e.g., mulch, park benches, signs, etc.).



Photo Credit: Wisconsin DNR

There are more than

300 tree species

and cultivars in Wisconsin communities, and many of these produce desirable wood for utilization.



Photo Credit: Wisconsin DNR

DEVELOPING AN URBAN WOOD USE PROGRAM

An estimated **\$49.7 million** is spent annually

by Wisconsin communities on the care of urban tree populations. An urban wood utilization program can help reduce tree care costs in communities.



Developing an urban wood use program is a step-by-step process and not everything has to be done at once, and you don't have to do it all in-house. A tiered approach can provide milestone objectives to arrive at a program that matches your resource capacity and market demand. Consider a three-tiered development approach when setting a goal and identify potential partnerships with local urban wood industry professionals (i.e., Urban Wood Network members).

TIER 1

Base Utilization

GOAL - Cost reduction and diversion of urban wood generated from landfill for better use.

Using limited resources, urban wood products are used internally or passed on to vendors or end users for better use.

TIER 2

Developing Utilization

GOAL - Sort, merchandize and identify markets for urban wood products regionally.

Further processing is done either in-house or by industry contractors by sorting and processing urban wood products which are used internally or marketed locally.

TIER 3

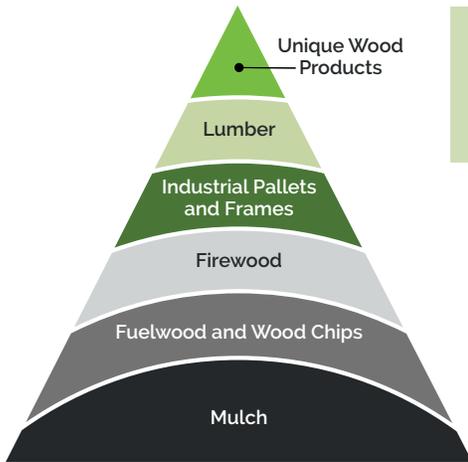
Enterprise Utilization

GOAL - Add value to urban wood by further processing and producing products to generate revenues.

Value is added by merchandizing and manufacturing urban wood products, either by municipal staff or urban wood professionals.

Photo Credit: Wisconsin DNR

URBAN WOOD PROGRAM RESOURCE NEEDS



Roughly 46 million tons of viable wood from urban trees is dumped into landfills each year — about the weight of nine Empire State Buildings.

Putting Urban Wood to its Highest and Best Use

TIER 1

Operation Yard(s)

- Storage and sorting only

Procedures & Administration

- Work crew raw product generation reporting
- Raw product inventory
- Limited operating procedures

Equipment & Services

- Front end loader for moving material and organizing the yard(s)

Local Partners, Vendors, Consumers & UWN Members

- Local sawing and lumber utilization for municipal wood projects
- Firewood and mulch vendors or end users

TIER 2

Operation Yard(s)

- Storage and processing

Procedures & Administration

- Managing sale of products (contracts; point-of-sale)
- Contract industry professionals for additional staff

Equipment & Services

- Chipper or tub grinder for grinding wastewood
- Grapple truck for transportation of wood and logs
- Mulch processor for grinding various grades and mulch coloring

Local Partners, Vendors, Consumers & UWN Members

- Local sawing and lumber utilization for municipal wood projects
- Firewood and mulch vendors or end users
- Other producers
- Landscape contractors and nurseries

TIER 3

Operation Yard(s)

- Multiple locations to minimize travel time and handle volume
- Customer access to products

Procedures & Administration

- Operating procedures
- Personnel needs
- Staff training (equipment; identifying quality logs on the stump; cutting wood to retain the highest value; sorting)
- Contract industry professionals for additional staff
- Managing sales of products (point-of-sale)

Equipment & Services

- Portable sawmill
- Dry kiln
- Firewood processor

Local Partners, Vendors, Consumers & UWN Members

- Other producers
- Landscape contractors and nurseries
- Local sawmills
- Industrial applications
- Wood artisans or manufacturers
- Value-added services for tree services (yard tree to product-of-sale)



Photo Credit: Urban Wood Network

Lumber from urban trees can be used

to make park benches, trailer decking, side boards for dump trucks, boardwalks, bird houses ... anything that your community would normally use lumber for.

Local industry and community groups are often looking for ways to give back to their city.

Involving these groups builds community

and can help to grow your Urban Wood Utilization group.

URBAN WOOD MARKETS FROM URBAN AND COMMUNITY TREES

To get the highest value out of your urban wood resources, coordinate with local urban wood industry professionals — UWN members — to process, produce and sell urban wood products. UWN members can make products to be used by the municipalities where the trees were grown including signs, picnic tables, truck/trailer beds and sides, as well as other more valuable products. When thinking of markets for urban wood, think of your own needs first. What products are you buying now and would an urban wood product alternative make good sense?



Photo Credit: Wisconsin DNR

These urban wood pavilion rafters are perfect for keeping visitors dry.



Photo Credit: Urban Wood Network

Urban lumber and live edge slabs are used by hobbyists.

LOW VALUE PRODUCTS

- Higher percent of production volume
- Less processing complexity and equipment
- Lower economic value



HIGH VALUE PRODUCTS

- Lower percent of production volume
- More processing complexity and equipment
- Higher economic value



Photo Credit: Julia Robson

Discovery Trail archway (Retzner Nature Center) made from urban wood.



Photo Credit: Wisconsin DNR

Enjoy taking in the scenery on this bench made from urban wood.

Photo Credit: Wisconsin DNR

LOW TO HIGHEST VALUE PRODUCTS

	Wood Form	Units of Measure	Species	Quantity	End Use	Markets	Processing Equipment
LOW VALUE	Chips and ground material	Cubic yards, weight	All	---	Compost	Compost producers, reclamation yards, landscaping firms	Chipper or grinder, chip truck, dump trailer
					Chips	Fuel-biomass energy companies, agriculture/livestock yards, construction	
					Mulch	Mulch producers; reclamation yards; landscaping firms	
MID-RANGE VALUE	Small diameter or shorter length logs or branches	Cords	Commercial species	---	Firewood	Firewood producers	Chainsaw, trailer or other hauling equipment
	Small diameter logs (100' lengths, min. 4" diameter (confirm with mill))	Cords, weight	Commercial species contact user for specifications	Large quantity	Paper and wood panel products	Paper and engineered wood mills	Chainsaw and other hauling equipment
HIGH VALUE	Unmerchantable sawlogs (oversized logs greater than 24" diameter or short in length less than 8'), burls, branch unions, and other character pieces	Board feet, weight	End user's preference	---	Furniture, slabs, millwork, artisan products	Small local sawmills	Log loader and trailer
	Merchantable saw bolts (at least 100" length, 8-12" diameter (confirm with mill))	Cords	Commercial species	Large quantity	Pallets, crates, packaging, industrial uses	Log buyers, pallet manufacturers, industrial sawmills for truckload quantities	Log loader and log truck
	Merchantable sawlogs (at least 8' length, 10-24" diameter (confirm with mill))	Board feet, weight	Commercial species	Variable	Lumber cabinetry, furniture, millwork, flooring, gifts	Log buyers, local sawmills, industrial sawmills for truckload quantities	Log loader and log truck

7.2 billion bdf.
could be produced
from trees removed from urban areas each year
equal to the wood needed to build 48,000 houses.



Photo Credit: Wisconsin DNR

This chart was first published in part in Annex E of ANSI A300 (Part 1) - 2017 Pruning Standard and is reproduced with permission from the Tree Care Industry Association (tcia.org). Transport of removed tree debris needs to be in compliance with quarantine zone requirements and other applicable regulations.

An estimated \$753 million

could be generated by the urban wood industry annually.

MERCHANDIZING URBAN WOOD AND IMPROVING LOG VALUE RECOVERY

In order to maximize the value of urban tree logs, it is critical to properly manufacture logs based on specified requirements by individual sawmills. Despite some variability, the following general guidelines can help with manufacturing logs to specifications. **Remember, safety always comes first.**

Understand Markets and Follow the Mill's Specifications

- Ideally, arborists and municipalities should work with local manufacturers before starting to remove trees to gain a better understanding of the mill's needs and volume requirements. **Know your potential consumers and local mills and their standards for species, preferred lengths, and the smallest diameter accepted.** Then cut the logs to the longest length possible based on the structure of the tree and ability based on equipment available.
- Standard sawlog lengths are: 8', 10', 12', 14' or 16' plus trim allowance which may be an additional 6" to 8" depending on the mill. Leave trim allowance on all logs in accordance with the mill's specifications. For example, if the trim allowance is an additional 8", an 8' log must actually be cut to 8'8" in length. Many mills will not accept less than 12" diameter inside the bark on the small end of the log.

Find the Most Value

- Look for the best log that can be cut from the tree and work around that log.
- Often times, this log is NOT the very butt or base of the log.
- After a few logs are cut, have the log buyer from the sawmill come to check your logs and demonstrate the mill's method of determining volume.

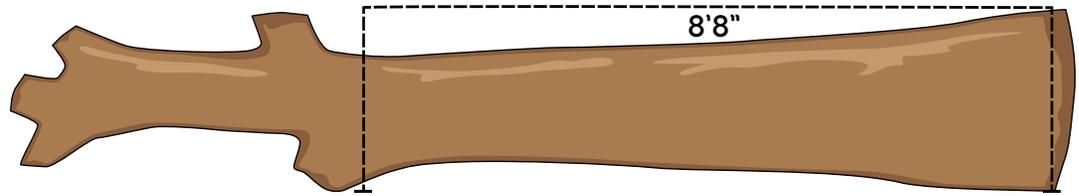


Figure 1: Grouping of Defects off an End - Keep logs as free from defects as possible.

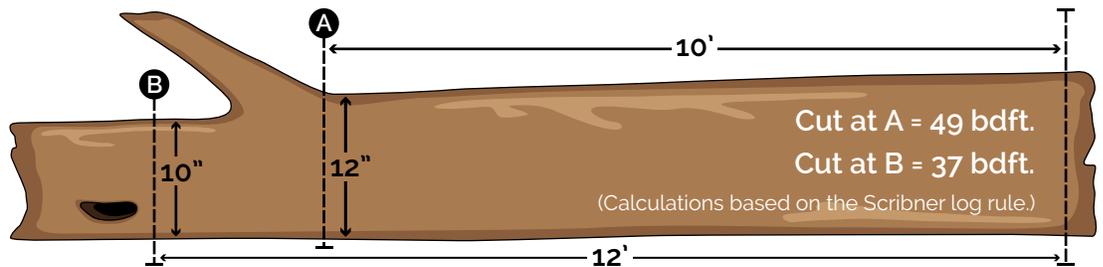


Figure 2: Cutting to Increase Volume - Cutting at A yields more useable wood.

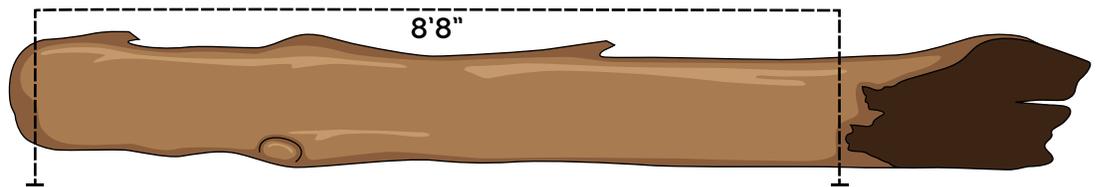


Figure 3: Bucking at a Hollow End - Trim off rot or hollow on the log.

Adapted from Cesa, E. T., E. A. Lempicki, and J. H. Knotts. 2003. Recycling Municipal Trees. A Guide for Marketing Sawlogs from Street Tree Removals in Municipalities. USDA Forest Service. NA-TP-02-04.

Manufacture Logs to Minimize Defects as Much as Possible

- Cut logs to proper lengths without forks or crotches, except where artisan markets place a high value on lengths with forks.
- Trim limbs close to the log.
- Cut logs to maximize the highest quality. Group defects when possible, preferably near the ends of the logs manufactured.
- Place bucking cuts to minimize sweep and crook.

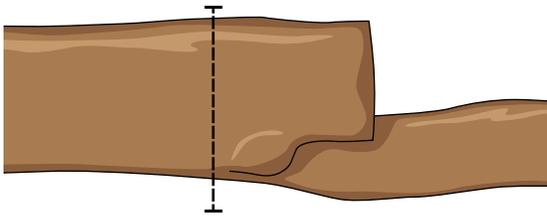


Figure 4: Bucking to Remove Forks and Crotches - Logs should normally be cut behind the crotch (except where a market exists for crotch wood).

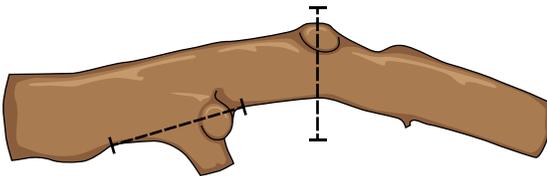


Figure 5: Bucking Sweezy Logs - Cut to reduce/eliminate sweep in the log.

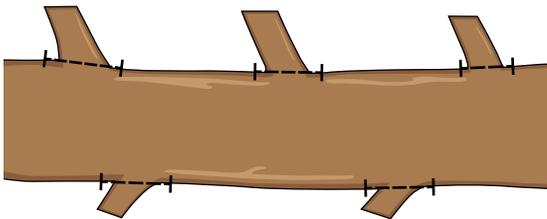


Figure 6: Removing Knots - Trim off log limbs for easier handling/rolling.

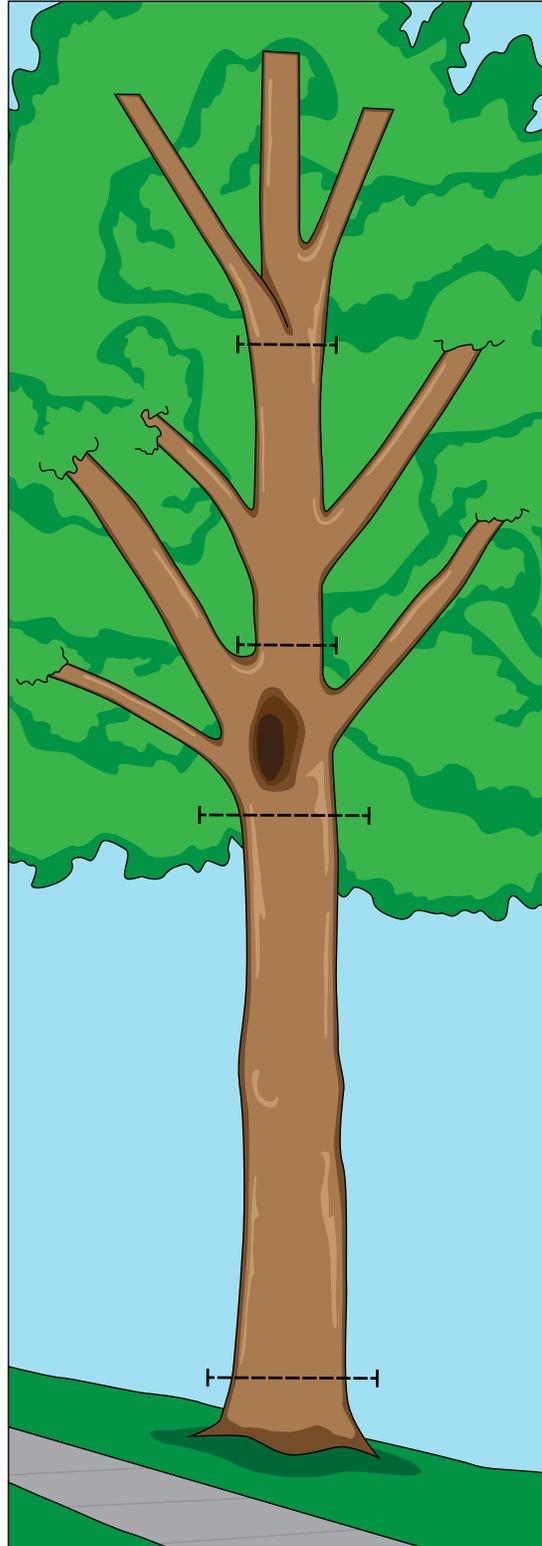


Figure 7: Putting Into Practice - Start merchandizing logs while the tree is still standing to get an idea on how it can be bucked to specified lengths.

Adapted from Cesa, E. T., E. A. Lempicki, and J. H. Knotts. 2003. Recycling Municipal Trees. A Guide for Marketing Sawlogs from Street Tree Removals in Municipalities. USDA Forest Service. NA-TP-02-04.

Utilizing urban wood as products such as lumber and furniture

captures carbon long-term

and prevents it from returning to the atmosphere via decomposition.

Nowak et al., 2019



Photo Credit: Wisconsin DNR

What is UWN's mission?

Urban Wood Network's (UWN) mission is to inform, collaborate and connect to build business and consumer confidence in the urban wood industry.



WEBSITE dnr.wi.gov

**FOREST PRODUCTS
INDUSTRY LISTINGS** [dnr.wisconsin.gov/
topic/forestbusinesses/industries](http://dnr.wisconsin.gov/topic/forestbusinesses/industries)



**SUSTAINABLE
FORESTRY
INITIATIVE**

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WOOD
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NATIONAL SOURCES

Check out these resources for additional information and more detailed instruction for urban wood program implementation.

- **Urban Wood Toolkit** and **Urban Wood Webinar Series** - The Urban Wood Network is a collaborative, national urban wood organization providing these resources to help lead production firms in best practices.
- **Wood Utilization Options for Urban Trees Infested by Invasive Species** - This guide was published by the U.S. Forest Service in 2012 as a how-to guide for urban wood utilization programs.
- **The Urban Wood Use Action Guide** - Visit the Vibrant Cities Lab website at vibrantcitieslab.com/guides/urban-wood-use-action-guide for more information using recovered and fresh-cut urban wood to build and sustain vibrant communities. This information is provided by the U.S. Forest Service, American Forests, and the National Association of Regional Councils.



Photo Credit: Wisconsin DNR

This publication was adapted from the North Carolina Forest Service's 2020 publication **Establishing an Urban Wood Use Program: An Introduction**