



**HIBBING CITY COUNCIL
Workshop
Wednesday, January 22, 2025
6:00 PM**

**Notice* Time is Approximate: Following
the Regular City Council Meeting and at
5:00 p.m.**

Councilor Justin Fosso
Councilor John Schweiberger
Councilor James Bayliss
Councilor Jay Hildenbrand
Councilor Jennifer Hoffman Saccoman
Councilor Chris Whitney
Mayor Pete Hyduke

City Administrator Greg Pruszinske
City Clerk-Dep Admin Candie Seppala
Finance Dir - Treasurer Sheena Mulner
City Attorney Andy Borland
Chief of Police Steve Estey
City Engineer Jesse Story

I. DISCUSSIONS TO INCLUDE

1. Discussion regarding the property at 3215 14TH AVE E HIBBING MN 55746 - Olivanti, Mulner, Arola
2. Tree inventory & tree manual project closeout - Davey Resource Group Presentation
3. Recreation Center Feasibility Study Recap, next steps, discussion - Arola, Olivanti
4. Municipal Golf Course Clubhouse Operator - Arola
5. Budget Software proposal from Questica - Sheena Mulner
6. Round Table Items

II. ADJOURNMENT

2025 Starting**Cash:****\$15,643.53****2025**

		January	February	March	April	May	June	July	August	September	October	November	December
REVENUE	612-36-6221	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	612-36-6227	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,000.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
EXPENSES	612-46-6500-380	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)
	612-46-6500-430	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)	\$ (4,105.00)

CASH BALANCE

Starting: \$15,643.53 \$ 11,538.53 \$ 7,433.53 \$ 3,328.53 \$ (776.47) \$ (4,881.47) \$ (1,986.47) \$ (6,091.47) \$ (10,196.47) \$ (14,301.47) \$ (18,406.47) \$ (22,511.47) \$ (26,616.47)



Local Office
1196 7th Street East
Saint Paul, MN 55106
651.202.3662

December 5, 2024

Nick Arola
City of Hibbing
400 East 23rd Street
Hibbing, MN 55746

RE: Update to city code recommendations regarding trees

Dear Mr. Arola;

Davey Resource Group, Inc. "DRG" is excited to provide you this recommendation for code updates and tree manual for Hibbing.

The enclosed Tree Manual is a technical resource about tree care specifically designed for city staff and the public in Hibbing. The manual is designed to be a companion to your city code which is referenced in several sections of the code. It provides information about tree care practices such as pruning, and recommended tree species. The manual can easily be updated by city staff and used as a resource on the city's website. As new research on trees is available and practices on tree care change it will be easy to update this resource rather than having to formally update city code.

If you have any questions, please feel free to contact me directly at 651.442.7153 or Gail.Nozal@davey.com

Sincerely,

Gail Nozal
Area Manager

CITY OF HIBBING, MN ORDINANCES

Suggested Revisions and Additions

Additions:

DEFINITIONS - to consider adding

BOULEVARD - "Boulevard" in reference to the strip of unpaved ground between the sidewalk and street.

MAINTAIN, TREE - "Maintain" in reference to trees shall refer to but not be limited to pruning, trimming, watering, application of fertilizers, pesticides and other chemicals, installation of cabling and bracing systems, and performing other actions that may impact a tree's growth.

PUBLIC TREES - "Public Trees" are trees, shrubs, bushes, and all other woody vegetation whose trunk is located wholly or partially on Public Property, including but not limited to boulevard strips, public building grounds, and public easements and rights-of-way. Place park and street tree definitions under this heading. Public Trees includes:

- **PARK TREES** – "Park Trees" are trees, shrubs, bushes, and all other woody vegetation in public parks having individual names, and all areas owned by the City or to which the public has free access as a park
- **STREET TREES** – "Street Trees" are trees, shrubs, bushes, and all other woody vegetation which have been or will be planted in a public right-of-way by the City at the direction of the City Forester.

CITY FORESTER – The "Tree Care Manager/City Forester" is a person or persons designated by the City Administrator to oversee work on Public Trees and Park Trees throughout the City.

TREE SIZES – A "Small Tree" is any plant material that will grow to a height and/or spread of thirty (30) feet; a "Medium Tree" is any plant material that will grow to a height and/or spread of thirty-one to and including fifty (50) feet; a "Large Tree" is any plant material that will grow to a height and/or spread of over fifty (50) feet.

Suggested revisions

SEC. 7.05. REGULATION OF GRASS, WEEDS AND TREES IN STREETS.

Subd. 1. City to Control Tree Planting (Standards.) The City shall have control and supervision of planting shrubs and trees upon, or overhanging, all streets or other public property.

The City ~~may establish~~ **establishes** and enforces uniform standards **in accordance with ANSI A300 standards** relating to the species and types of trees to be planted, placement and the maintenance and removal thereof. Such standards **may be found in the City's Tree Manual posted on the City's website** and shall be kept on file in the office of the City Clerk-Treasurer and may be revised from time to time by action of the Council upon the recommendation of the City Clerk ~~Treasurer~~.

Subd. 2. Permit to Plant, Remove or Maintain Trees. It is a misdemeanor for any person to plant-, **trim, maintain, bore into, cut, damage**, or remove any tree upon or overhanging streets, without first procuring from the City a permit in writing to do so.

Subd. 3. Duty of Property Owners to Cut Grass and Weeds and Maintain Trees and Shrubs. Every owner of property abutting on any street shall cause the grass and weeds to be cut from the line of such property nearest to such street to the center of such street. If the grass or weeds in such place attain a height in excess of 6 inches it shall be prima facie evidence of a failure to comply with this Subdivision. Every owner of property abutting on any street shall, subject to the provisions herein requiring a permit therefore, trim, cut, remove, and otherwise maintain all trees and shrubs in **non-hazardous** ~~unhazardous~~ and healthy condition, from the line of such property nearest to such street to the center thereof.

SEC. 11.54. SPECIAL PROVISION: GRADING, FILLING OR EXCAVATION.

Subd. 2. GRADING PERMIT APPLICATIONS.

B. Site Information.

2. A tree preservation plan consistent with the application requirements **as outlined in the Tree Manual**

TREE INVENTORY ANALYSIS & MAINTENANCE STRATEGY

City of Hibbing, Minnesota

Prepared for:

City of Hibbing
401 East 21st Street
Hibbing, MN 55746

Prepared by:

Davey Resource Group, Inc.
1196 7th Street East
St. Paul, MN 55106
651.202.3662



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- A Summary of Recommendations
- B Study Area and Data Collection
- C Risk Assessment
- D Suggested Tree Species

ACKNOWLEDGMENTS



This project supports The City of Hibbing's vision to promote and enhance community well-being through public tree conservation and improved forestry management practices. This *Tree Inventory Analysis & Maintenance Strategy* offers expert recommendations for preserving and expanding urban canopy so the environmental, economic, and social benefits it provides are maximized today and for future generations.

Hibbing is thankful for the grant funding it received from the Minnesota Department of Natural Resources (MNDNR) in cooperation with U.S. Forest Service and the Minnesota Legislature through its ReLeaf Community Forestry Grant Program. The ReLeaf Community Forestry Grant Program aims to enhance community forest health that will encourage and promote the inventory, planting, assessment, maintenance, improvement, protection, and restoration of trees and forest resources. The ReLeaf Grant Program is one step toward achieving climate-resilient communities identified in the Minnesota Climate Action Framework by planting and maintaining a diverse and sustainable community tree canopy. The Framework's goal is to achieve 30% overall tree canopy cover in communities across Minnesota by the year 2030 and 40% by 2050.

Hibbing also recognizes the support of its City Services-Parks & Recreation and public works departments:

Nick Arola – *Director of City Services*

Jesse Story – *City Engineer/Public Works Director*

Notice of Disclaimer: Inventory data provided by Davey Resource Group, Inc. (DRG) are based on visual recording at the time of inspection. Visual records do not include individual testing or analysis, nor do they include aerial or subterranean inspection. DRG is not responsible for the discovery or identification of hidden or otherwise non-observable hazards. Records may not remain accurate after inspection due to the variable deterioration of inventoried material. DRG provides no warranty with respect to the fitness of the urban forest for any use or purpose whatsoever. Clients may choose to accept or disregard DRG's recommendations or to seek additional advice. Important: know and understand that visual inspection is confined to the designated subject tree(s) and that the inspections for this project are performed in the interest of facts of the tree(s) without prejudice to or for any other service or any interested party.

EXECUTIVE SUMMARY

The City of Hibbing *Tree Inventory Analysis & Maintenance Strategy*, prepared by Davey Resource Group, Inc. (DRG), focuses on analyzing inventory data, quantifying the benefits provided by the community's inventoried trees, and identifying their maintenance needs.

DRG completed a tree inventory along city streets and in public parks, cemeteries, and golf courses for Hibbing in April 2024, and analyzed the inventory data to understand the structure of the City's inventoried tree resource and provide recommendations on priority and routine maintenance programs for future tree care. The data was also analyzed using i-Tree Eco to calculate the economic value of the community's inventoried public trees and their environmental benefits (i.e., stormwater, carbon, and air pollution).

The inventoried trees have an estimated replacement value of \$8,554,916 million and provide \$15,693 annually in stormwater, air quality, and carbon benefits each year.

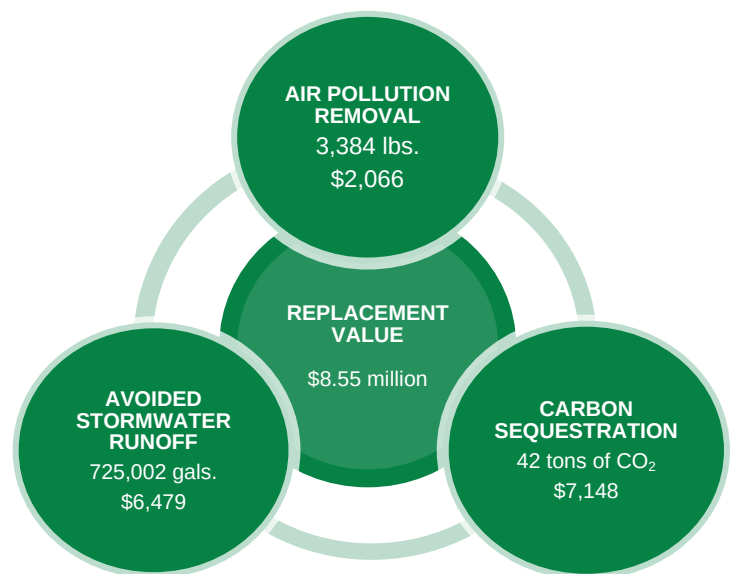
Supporting and funding proactive maintenance of Hibbing's public trees is a sound long-term investment that will maximize tree benefits, reduce tree care costs over time, and increase the value of the urban forest. While other municipal infrastructure loses value over time (depreciates), the value of public trees increases (appreciates).

High priority tree removal and pruning, while initially requiring a significant portion of the Year 1 budget in the five-year maintenance schedule as depicted in Table 7, bring valuable benefits. As this essential work is accomplished, budgets are anticipated to decrease and become more stable. This shift marks the progression of tree management that focuses on a proactive maintenance strategy. Notably, this proactive approach plays a crucial role in increasing tree benefits and diminishing the emergence of new elevated risk trees over time by preventing minor tree defects from deterioration.

Calculating Tree Benefits

The benefits of Hibbing's inventoried trees presented in this Plan are calculated using **i-Tree Eco**. i-Tree is the industry recognized suite of tools used to measure and quantify the ecosystem benefits that trees provide.

i-Tree is a partnership between the USDA Forest Service, The Davey Tree Expert Company, the Arbor Day Foundation, the International Society of Arboriculture, Society of Municipal Arborists, Casey Trees, and SUNY College of Environmental Science and Forestry. It was released in 2006 and its models are updated regularly based on the latest science and research.



INVENTORY ANALYSIS SUMMARY

Inventoried Sites

Trees = 9,344
Planting Sites = 418
Stumps = 534
Total Sites = 9,878

Stocking Level

“Stocking level” refers to the ratio of planting sites in the street right-of-way (ROW) occupied by trees to the total street ROW sites suitable for trees. Hibbing’s current stocking level is 91.6%.

Annual Benefits

Avoided Stormwater Runoff = \$6,479
Air Pollution Removal = \$2,066
Carbon Sequestration = \$7,148

Species Diversity

Top 5 Inventoried Species:

* Exceeds industry guidelines of no more than 10% of one species in tree population.

Top 5 Inventoried Genus:

* Exceeds industry guidelines of no more than 20% of one genus in tree population.

Relative Age Distribution

The approximate age of a tree can be identified by the tree’s diameter size. Of the inventoried trees:

- 35% were young (0-8”), compared to the 40% industry guidelines.
- 37% were established (9-17”), compared to the 30% industry guidelines.
- 19% were maturing (18-24”), compared to the 20% industry guidelines.

Pest Susceptibility

41% of inventoried trees are susceptible to one or more pests common in Hibbing, including:

- Emerald ash borer (EAB)
- Forest tent caterpillar
- Spongy moth

Condition

9,344 inventoried trees, there were:

- 19% in good condition.
- 78% in fair condition.
- 3% in poor condition.
- <1% were dead.

Infrastructure Conflicts

Of the inventoried trees:

- 8% were situated beneath overhead utilities.
- 5% were currently conflicting with overhead utilities.

Defect Observations

Of the inventoried trees:

- 2% had broken and/or hanging branches.
- 1% had cracks.
- 65% had dead or dying parts.
- 2% had cavities or missing or decayed wood.
- 2% had large trunk wounds
- 0.1% had root problems.
- 9% had tree architecture issues.
- 7% had weakly attached branches and codominant stems.
- 11% had no identified defects.

RECOMMENDED MAINTENANCE SUMMARY



Tree Removal

Trees designated for removal have defects that cannot be cost-effectively or practically corrected. Many of the trees in this category have a large percentage of dead crown.

Total = 273 trees Moderate Risk = 61 trees
Extreme Risk = 0 trees Low Risk = 211 trees
High Risk = 1 trees Stumps = 534



Priority Pruning

Priority pruning removes defects such as dead and dying parts or broken and/or hanging branches. Pruning the defective part(s) can lower risk associated with the tree while promoting healthy growth.

Total = 839 trees
High Risk = 0 trees
Moderate Risk = 45 trees
Low Risk = 794 trees



Routine Pruning Cycle

Over time, routine pruning of Low Risk trees can minimize reactive maintenance, limit instances of elevated risk, and provide the basis for a robust risk management program.

Total = 7,759 trees
Number of trees in cycle each year = approximately 1,552 trees per year over the 5-year maintenance cycle



New Tree Planting

Planting new trees in areas that have poor canopy continuity or sparse canopy is important to ensure that tree benefits are distributed evenly across the city.

Planting goal: 1:1 replacement to removal ratio



Young Tree Training Cycle

Younger trees may have branch structure that can lead to potential problems as the tree ages, requiring training to ensure healthy growth. Training is generally completed from the ground with a pole pruner or pruning shear.

Total = 473 trees
Number of trees in cycle each year = approximately 95 trees per year over the 5-year maintenance cycle



Routine Tree Inspection & Inventory Updates

Routine inspections and inventory updates are essential to uncovering potential problems with trees and should be performed by a qualified arborist who is trained in the art and science of planting, caring for, and maintaining individual trees.

Total = 9,071 trees not recommended for removal
Number of trees in cycle each year = approximately 1,814 trees per year over the 5-year maintenance cycle

INTRODUCTION

Hibbing is home to over 16,000 residents benefiting from public trees in their community. The Hibbing Public Works Department manages all trees, stumps, and planting sites along the street right-of-way (ROW) and the City Services – Parks & Recreation Department manages all trees, stumps, and planting sites throughout public parks, cemeteries, and golf course.

In early 2024, February-April, Hibbing worked with DRG to inventory its public trees and develop this *Tree Inventory Analysis & Maintenance Strategy*. Consisting of three sections—structure and composition; functions and benefits; and recommended maintenance—this plan considers the diversity, distribution, and condition of the inventoried tree population and provides a prioritized system for managing Hibbing’s public trees.

The sections of this plan are as follows:

- *Section 1: Structure and Composition* summarizes the inventory data with trends representing the current state of public trees.
- *Section 2: Functions and Benefits* summarizes the estimated value of benefits provided to the community by public trees’ various functions.
- *Section 3: Recommended Maintenance* details a prioritized maintenance schedule and provides an estimated budget for recommended maintenance activities over a five-year period.

This *Tree Inventory Analysis & Maintenance Strategy* is designed to help the community understand the current state of its public trees, set future goals and benchmarks, anticipate future program needs, and focus on proactive maintenance.

The Urban Forest Program Continuum (shown below) outlines the steps to effectively and sustainably manage and care for Hibbing’s urban forest. The continuum includes other plans that can support Hibbing’s urban forest, including:

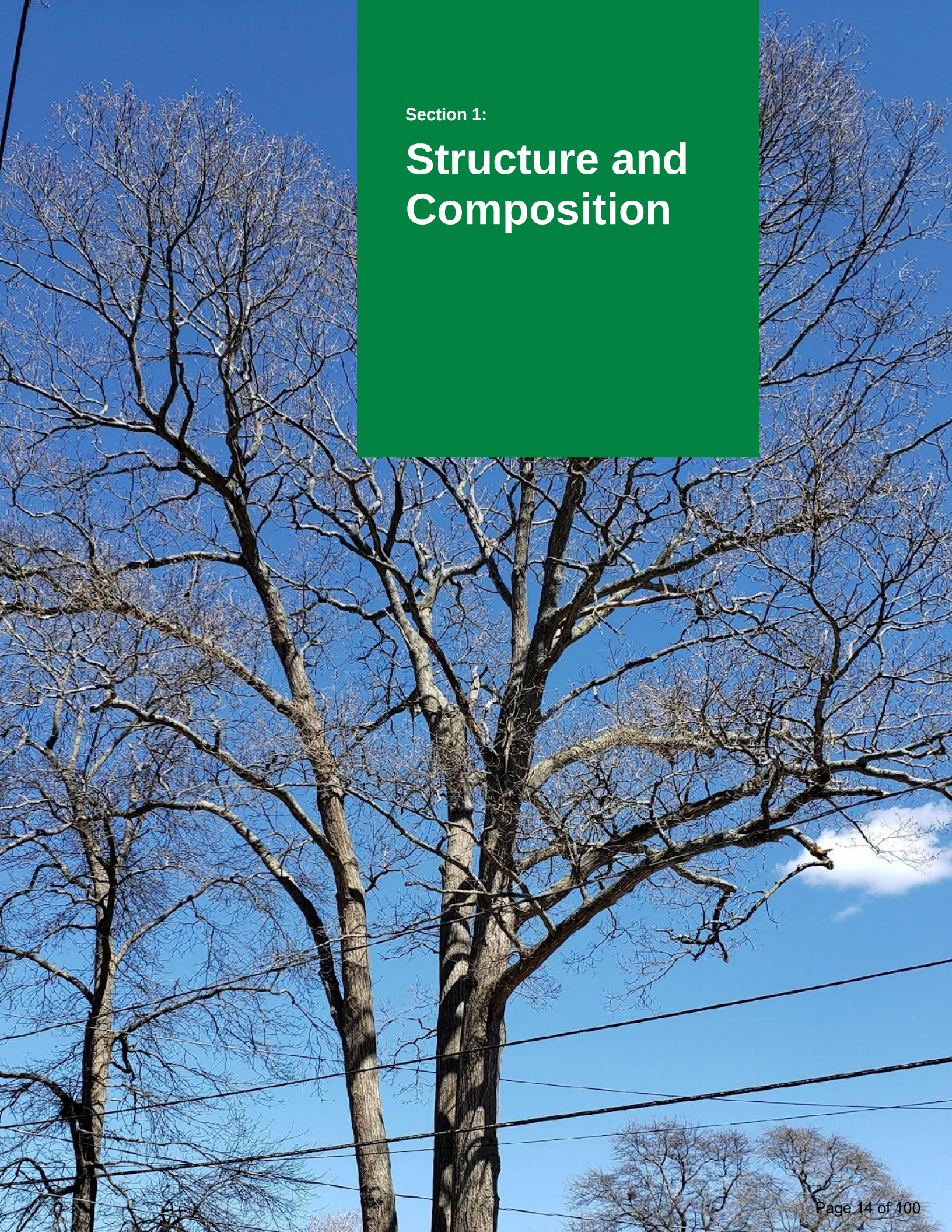
- ***Urban Forest Management Plan*** which establishes a detailed 3- to 5-year work plan to address risk and maintenance needs using current tree inventory data to streamline Hibbing’s urban forest management program.
- An ***Urban Forest Master Plan*** engages stakeholder and community members to provide a comprehensive vision for the future of the City’s urban forest, with recommendations and a road map of action steps to reach Hibbing’s urban forestry goals.

URBAN FOREST PROGRAM CONTINUUM™

STAY ON TRACK FOR SUSTAINABLE GROWTH

Below are the steps that urban forest programs take to create and maintain the healthiest and most resilient urban forest possible. Each component creates a strong foundation of strategic planning, program funding, and community support which results in thriving urban forests.





Section 1:

Structure and Composition

SECTION 1: STRUCTURE AND COMPOSITION

The Importance of Diversity

The Dutch elm disease epidemic of the 1930s provides a key historical lesson on the importance of diversity. The disease killed millions of American elm trees, leaving behind enormous gaps in the urban canopy of many communities. In the aftermath, ash trees became popular replacements and were heavily planted along city streets. History repeated itself in 2002 with the introduction of the emerald ash borer into U.S. This invasive beetle continues to devastate ash tree populations across the country.

Other invasive pests and diseases, severe weather events, and climate change threaten our urban forests today, so it's vital that we learn from history and plant a wider variety of tree species and genera to develop a resistant and resilient public tree resource.

Arborists collected data on trees and stumps along the street ROW and in public parks, cemeteries, and golf course throughout Hibbing. 9,878 sites were inventoried, with 52% collected along the street ROW and 48% collected in parks and public spaces (Figure 1). See Appendix B for inventory data collection methodology.

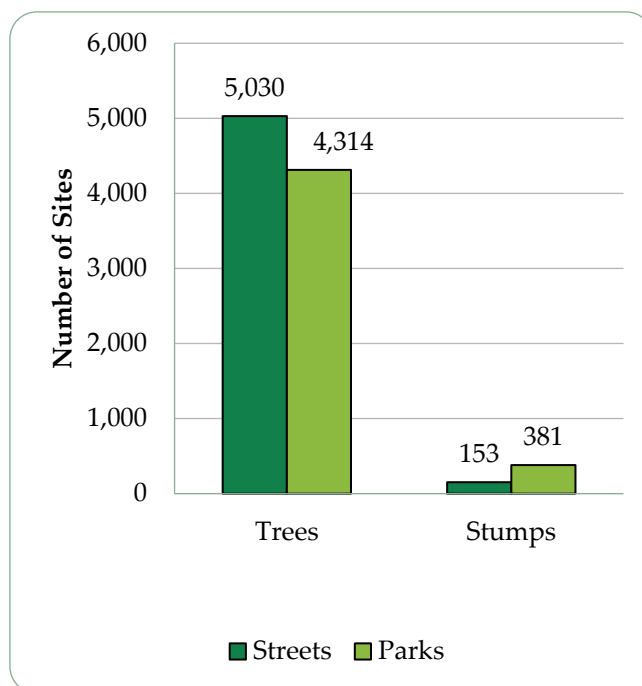


Figure 1. Number of inventoried sites by location and type.

SPECIES & GENERA DIVERSITY

Diversity within plant communities is important for increasing their resistance and resilience to disturbance (see side panel, “The Importance of Species Diversity”). The 10-20-30 rule is a common urban forestry industry metric for tree species diversity in which a single species should compose no more than 10% of the population, a single genus no more than 20%, and a single family no more than 30%. Some communities may be in the position to pursue more aggressive diversity goals, such as a 5-10-15 metric.

THE ROLE OF NON-NATIVE TREE SPECIES IN THE URBAN ENVIRONMENT

Certain non-native tree species that are especially tolerant of harsh urban conditions can be a practical choice to plant, especially when aiming to sustain high levels of species diversity. Non-native species of concern are those that are considered *invasive*, which should not be planted regardless of the site conditions.

There are 77 different species within Hibbing’s ROW and parks. Figure 2 shows the species diversity breakdown for Hibbing’s top 10 most common inventoried trees. Green ash is the most common tree (31%), followed by northern white cedar (19%) and silver maple (10%). The high percentage of northern white cedar is largely due to high density of cedar planted throughout city cemeteries.

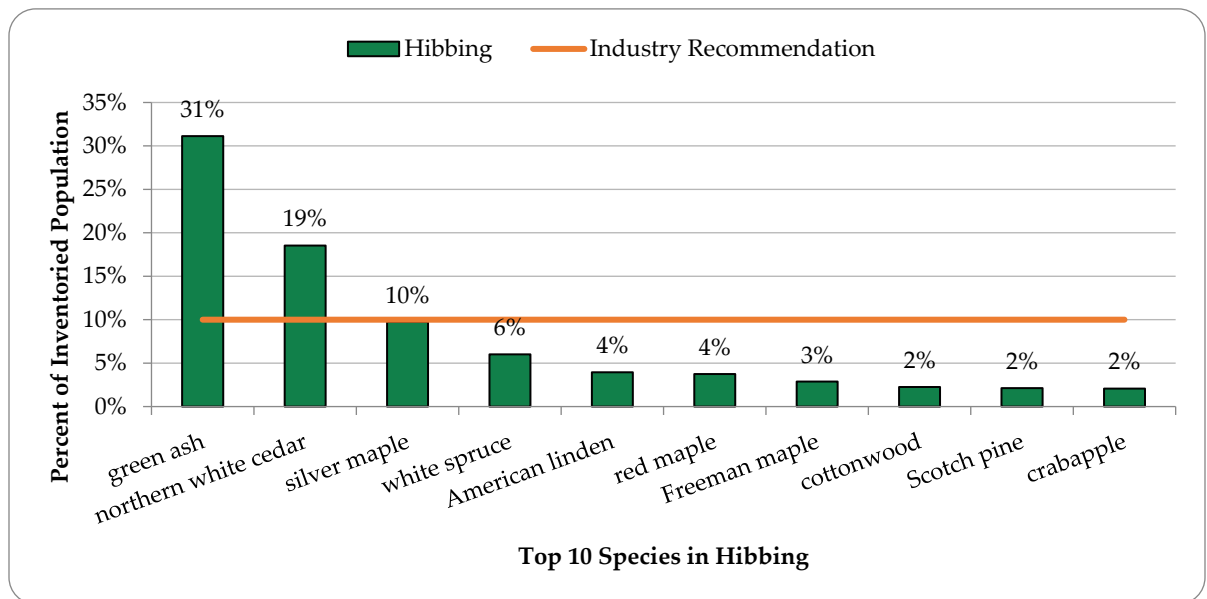


Figure 2. Species diversity of the top 10 species in the inventoried population.

The City’s inventoried trees represent 34 distinct genera. Figure 3 shows the genera diversity breakdown for Hibbing’s inventoried trees. Ash is the most common genus (31%), followed by maple (19%), cedar (19%), and spruce (8%).

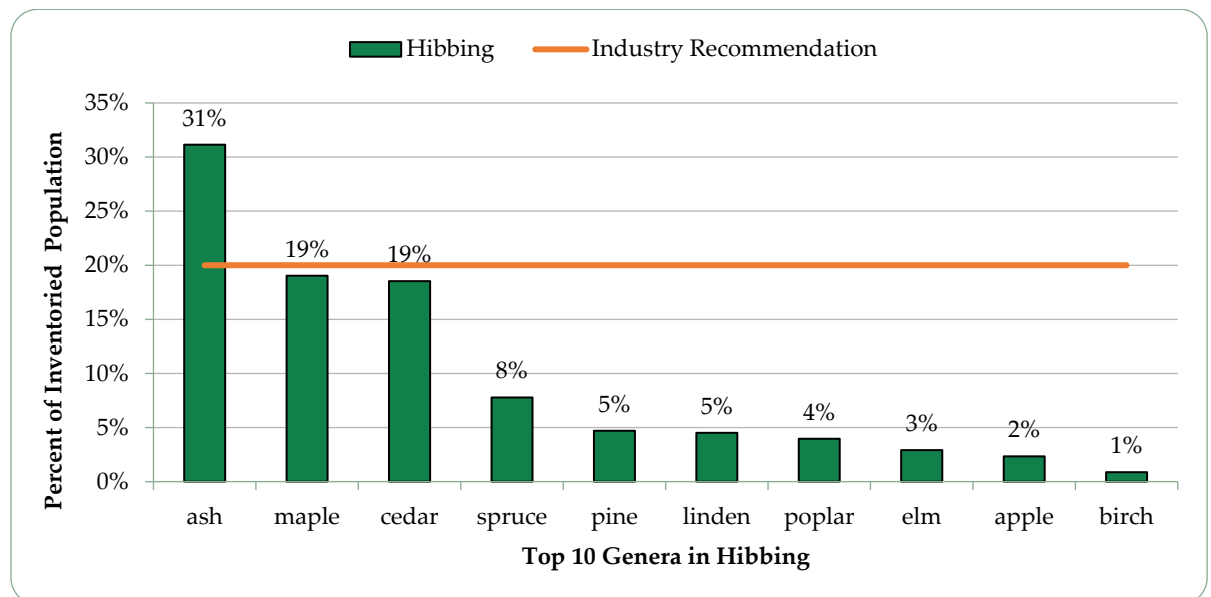


Figure 3. Genera diversity of the top 10 genera in the inventoried population.

Species & Genera Diversity Recommendations

- Avoid or limit planting of green ash, northern white cedar, and silver maple, and increase planting of other species until green ash, northern white cedar, and silver maple make up less than 10% of public trees.
- Avoid or limit planting of ash species and increase planting of other genera until ash make up less than 20% of public trees.
- Remove volunteer trees that have invasive tendencies, such as boxelder, Norway maple, and Siberian elm, from maintained public areas while small.
- Increase planting of uncommon species and genera which are well suited to urban environments.

PEST SUSCEPTIBILITY

Early identification of tree pests and diseases can reduce the impact of infestations on the urban forest. Infestations which are caught while still limited to a small number of trees can be more easily and cost-effectively managed and help prevent the further spread of the pest or disease. Since many pests and diseases have preferred host tree species and genera, the susceptibility of an urban forest to a pest or disease can be predicted based on its species and genus diversity.

Figure 4 presents the percentage of inventoried trees which are susceptible to pests and diseases of concern in Minnesota. It is important to remember that this figure only represents data collected during the inventory, and many more trees throughout Hibbing, such as those on private property, may be susceptible to hosting these invasive pests.

31% of inventoried trees in Hibbing are susceptible to emerald ash borer. Other pests which could affect a large portion of public trees include eastern tent caterpillar (79% of street trees and 34% of park trees), spongy moth (6% of street trees and 11% of park trees), and eastern spruce budworm (6% of street trees and 11% of park trees).

Pest Susceptibility Recommendations

- Monitor trees for signs and symptoms of pests and diseases on a regular basis. This can be done as part of other routine maintenance activities such as pruning.
- When a pest or disease is suspected, act quickly to confirm the identification and begin management.
- Prepare an invasive species management plan to guide the response to future pest or disease infestations.
- Eastern tent caterpillar can host on many tree genera but prefer fruit trees such as apple, crabapple, cherry, and plum. Consider managing fruit tree populations to reduce the suitability of Hibbing's urban forest to host eastern tent caterpillar.
- When planting trees, select pest- or disease-resistant species or cultivars whenever possible.

- Use preventative pesticide treatments on high-value or historic trees that are susceptible to problematic pests and/or diseases in Hibbing.

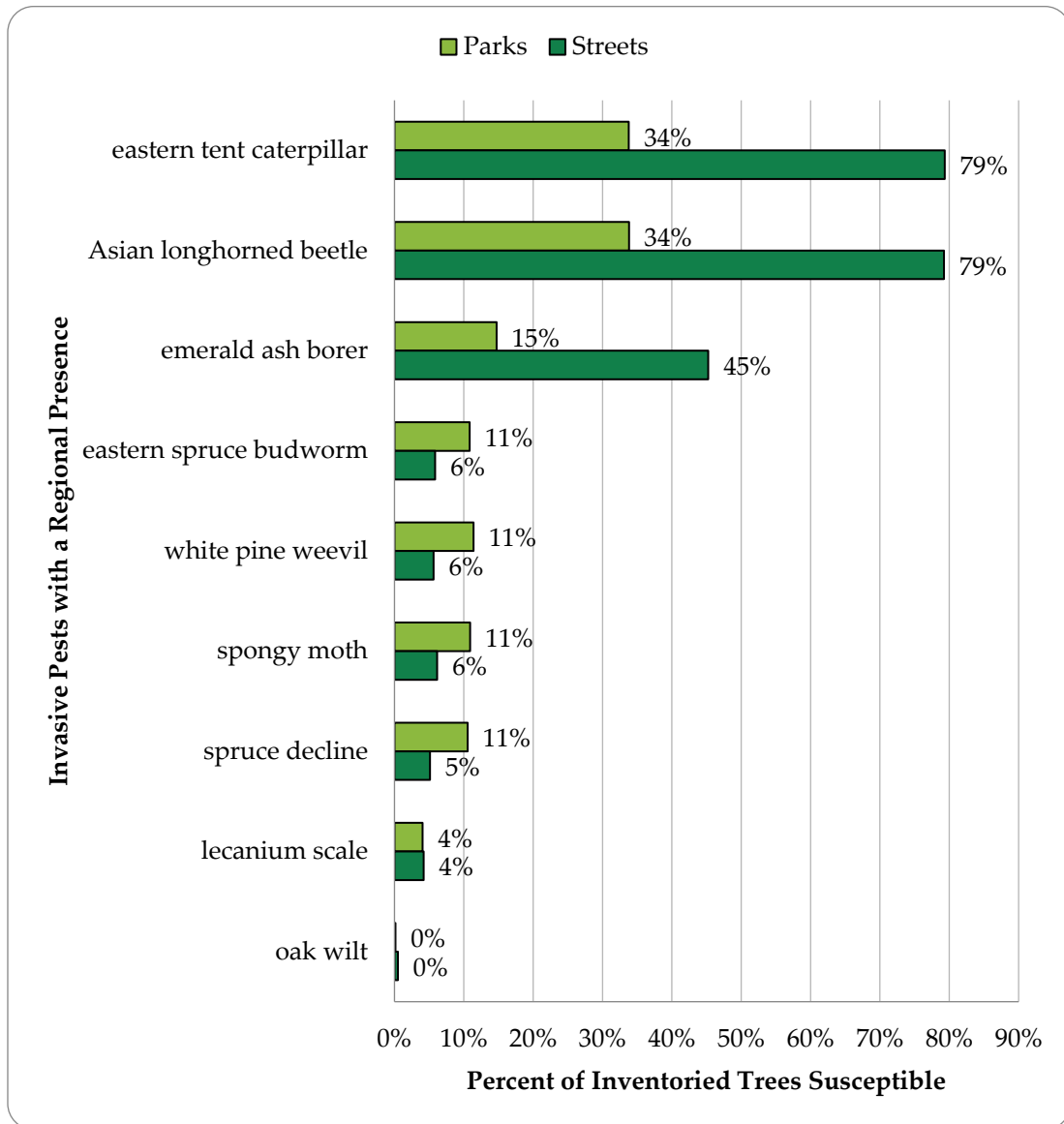


Figure 4. Susceptibility of the tree resource to pests and diseases of concern in Minnesota.

CONDITION

During the inventory, each tree was assigned a condition rating based on several factors, including root characteristics; branch structure, trunk, canopy, and foliage condition; and the presence of pests or disease. Tree condition was rated as Good, Fair, Poor, and Dead.

Figure 5 provides the condition rating breakdown for street and park trees in Hibbing. Most trees were in Fair condition (77% in streets and 79% in parks). 5% of the street trees and 3% of park trees were in poor or dead condition.

Condition Recommendations

- Dead and dying trees should be removed as soon as possible in priority order from highest to lowest risk to reduce public hazards, create space for new planting, and improve the appearance of Hibbing's streets and parks.
- Trees in Poor condition not recommended for removal should be maintained to reduce risk associated with defects and should be routinely monitored for further decline that would necessitate removal.
- Condition ratings can be improved over time by instituting proactive maintenance cycles such as routine pruning and young tree training. All tree pruning should follow *ANSI A300 (Part 1)* guidelines.

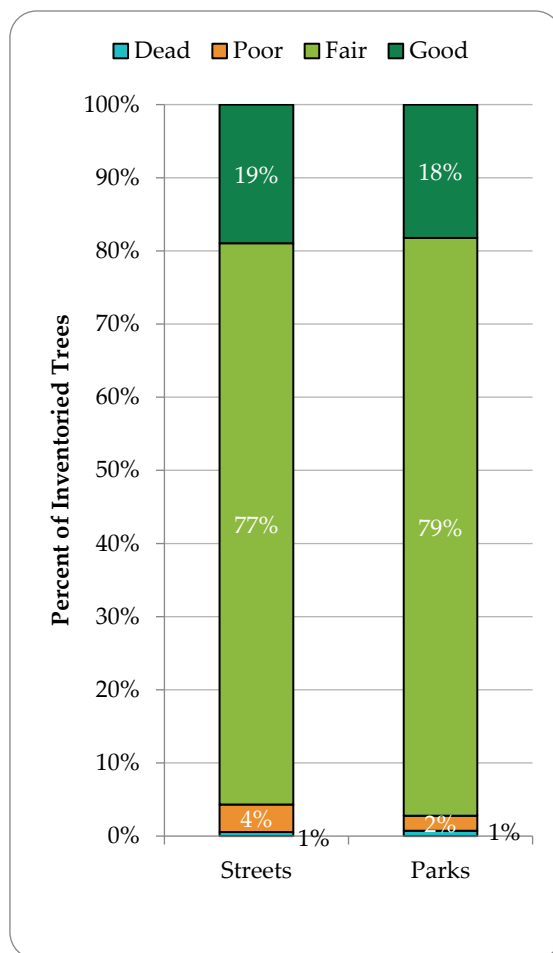


Figure 5. Condition ratings of inventoried trees.

RELATIVE AGE DISTRIBUTION

Analysis of a tree population's relative age distribution can be performed by assigning age classes to the diameter of trees. While actual tree age cannot be determined by diameter alone, this industry standard method provides an estimate of the approximate age distribution of the inventoried tree population. Since trees at different stages of development need different types and frequencies of maintenance, age distribution can help inform management needs and decisions.

Age/Size Classes

Young: 0-8 inches diameter at standard height (DSH), as measured 4.5' above the ground

Established: 9-17 inches DSH

Maturing: 18-24 inches DSH

Mature: 25+ inches DSH

The size classes (left) are based on the industry-recognized ideal relative age distribution, which holds that the largest proportion of the inventoried tree population (40%) should be young trees, smaller portions should be established and maturing trees (30% and 20%, respectively), and the smallest proportion (10%) should be mature trees.

Figure 6 compares the age distribution of the tree population to standard industry recommendation. Overall, Hibbing's street trees are more mature than the industry recommended age distribution, with a surplus of established trees (36%), maturing trees (26%), mature trees (13%), and fewer young

trees (25%). However, Hibbing's park trees, compared to the street trees, are trending more towards the industry recommended age distribution. There is a surplus of young and established trees (47% and 38% versus the 40% and 30% recommendations, respectively) and an underrepresentation of maturing and mature trees (10% and 5% versus the 20% and 10% recommendations, respectively).

Figure 7 compares tree condition ratings across the relative age classes for inventoried trees. Trees across all age classes are primarily in Fair condition. In general, trees in the young age class are more likely to be in Good condition, while maturing and mature age classes are more likely to have trees in Poor condition.

Relative Age Recommendations

- Hibbing's street trees are aging (maturing and mature trees both double the industry recommended age percentage). Hibbing should focus on tree preservation and proactive care for these large-stature trees, and a succession plan should be implemented to ensure that as mature street trees decline in health and are removed, young trees are planted to take their place.
- A large proportion of park trees are young or established (47% young trees and 38% established trees). A young tree training cycle should be instituted to structurally prune these younger trees to ensure good form and improve health as they mature.
- Street tree planting should be increased and sustained to maintain the recommended age distribution. However, sustained planting efforts over time will be necessary to retain this age distribution.
- Routine, proactive maintenance, such as young tree training and routine pruning, may help improve tree condition, particularly among maturing and mature trees.

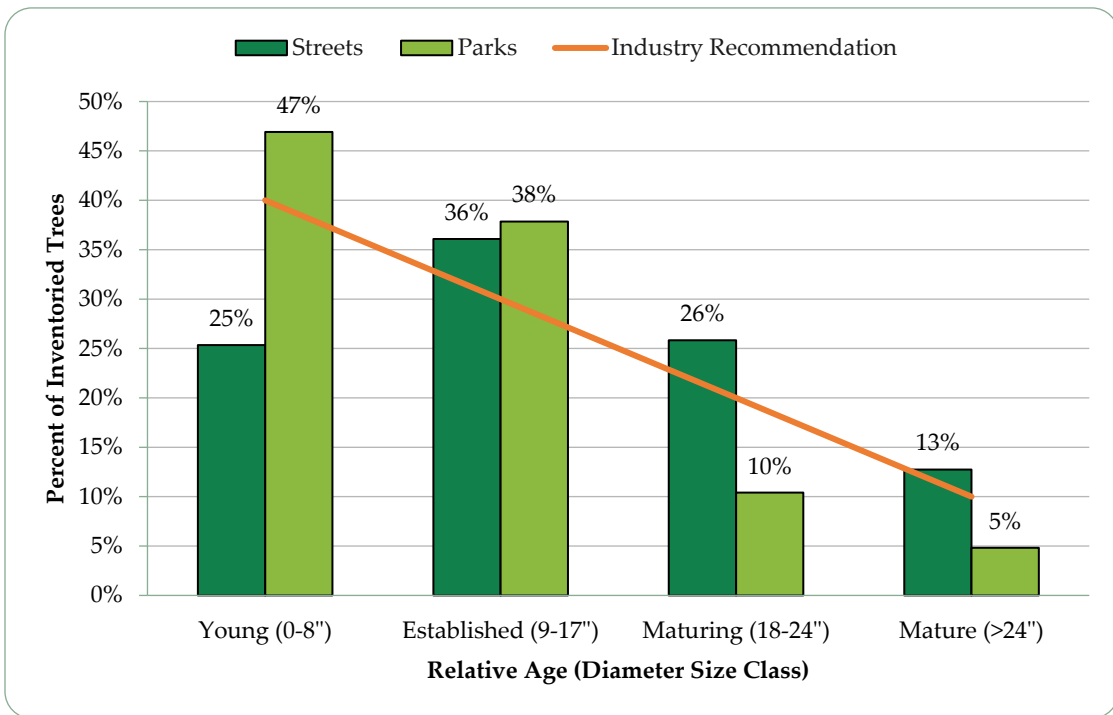


Figure 6. Relative age distribution of the inventoried trees.

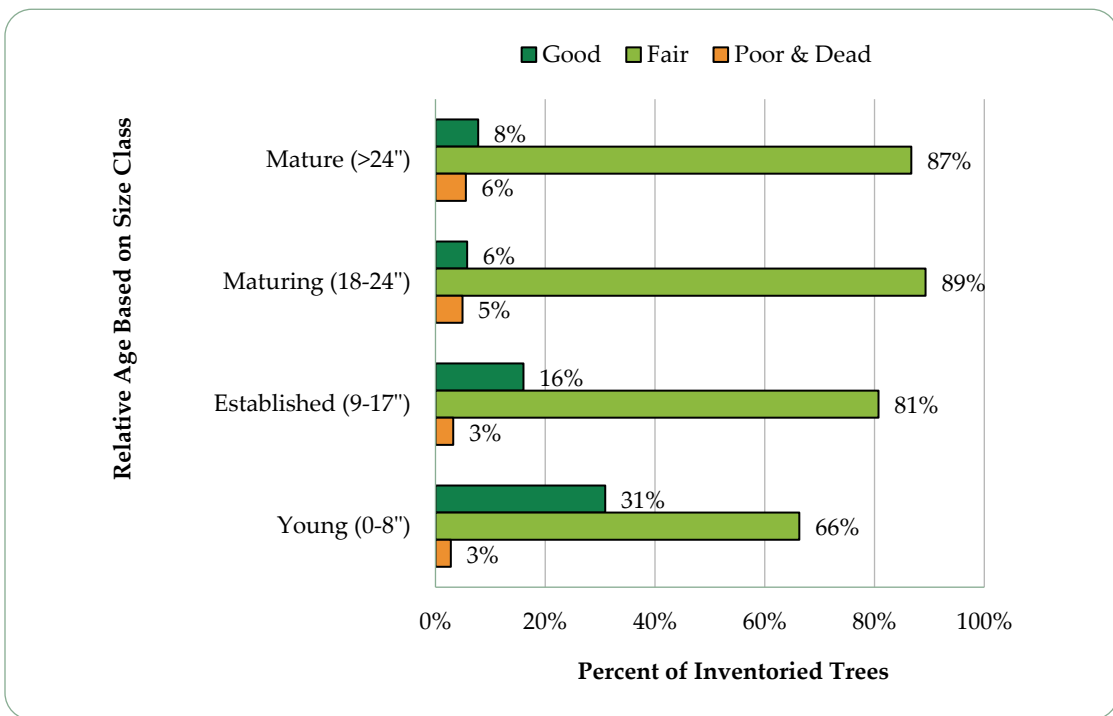


Figure 7. Inventoried tree condition ratings compared to age class.

DEFECT OBSERVATIONS

During the inventory, arborists took note of damage, decay, structural flaws, pests/diseases, or dead portions of inventoried trees and recorded these defect observations for each tree. Where a tree had more than one defect, only the most significant defect (i.e., the defect causing the greatest detriment to the tree and/or most likely to cause whole or partial tree failure within a year) was recorded.

Table 1 shows the percentages of each defect that was observed for street and park trees. Dead and dying branches were the most commonly recorded defect for both street trees (59%) and park trees (72%), followed by branch attachment for street trees (10%) and tree architecture for park trees (11%). For both street trees and park trees, 11% had no significant defect at the time of the inventory.

Defect Observation Recommendations

- Dead and dying branches were the most common defect observation for trees in Hibbing. Regular pruning, as done in a routine pruning cycle, can improve the health of these trees and reduce risk associated with dying tree parts. Removal of dead limbs also improves the visual aesthetics of trees and may help improve public perceptions of the level of tree care in the city.
- A branch attachment or tree architecture defect was recorded for 17% of street trees and 14% of park trees. These types of defects can often be resolved by structural pruning within the first 1 to 10 years of the tree's life. Instituting a young tree training program could reduce instances of these defects as trees grow and mature.

Table 1. Defect observations for inventoried trees

Defect	Street Trees	Percent of Street Trees	Park Trees	Percent of Park Trees	Inventoried Trees	Percent of Inventoried Trees
Broken and/or Hanging Branches	171	3%	14	0%	185	2%
Cracks	107	2%	14	0%	121	1%
Dead and Dying Branches	2,987	59%	3,105	72%	6,092	65%
Decay or Cavity	181	4%	35	1%	216	2%
None	569	11%	486	11%	1,055	11%
Root Problems	9	0%	0	0%	9	0.1%
Tree Architecture	335	7%	465	11%	800	9%
Trunk Condition	161	3%	58	1%	219	2%
Branch Attachment	510	10%	137	3%	647	7%
Total	5,030	100%	4,314	100%	9,344	100%

INFRASTRUCTURE AND GROWING SPACE

In developed settings, like a street, growing space for trees can be limited both above and below ground. To maximize tree growth, health, and benefits, it is important to consider the amount of space available (above and below ground) for a tree to grow. Selecting “the right tree, for the right place” not only positively impacts tree health and vigor, but it can improve public safety, reduce utility outages, increase walkability, reduce sidewalk/hardscape damage, and ensure compliance with the American with Disabilities Act (ADA). During the Hibbing inventory, tree conflicts with overhead utilities (Table 2) were observed and recorded. Tree conflicts with sidewalks, or hardscape damage, were not recorded during the inventory.

Four percent of trees conflicted with overhead utilities at the time of the inventory, and a further 3% of trees had overhead utilities present but were not currently conflicting with them.

Table 2. Overhead utilities conflicts recorded during the inventory.

Overhead Utilities	Street Trees	Percent of Street Trees	Park Trees	Percent of Park Trees	Inventoried Trees	Percent of Inventoried Trees
Present and Conflicting	365	7%	53	1%	418	4%
Present and Not Conflicting	216	4%	69	2%	285	3%
Not Present	4,449	88%	4,192	97%	8,641	92%
Total	5,030	100%	4,314	100%	9,344	100%

Infrastructure Recommendations

- Hibbing should reduce tree conflicts with overhead electric lines by planting only small stature trees beneath or near overhead electric utilities.
- Consider looking for dwarf or small cultivars of typically large-stature trees to diversify small-stature planting lists.
- Tree roots can damage water and sewer pipes, gas lines, and electric conduit. Installation and maintenance of these utilities often results in cut tree roots, which may destabilize trees and cause tree failure, reduce tree vigor, or kill the tree.

- Plant trees at least 5 feet (or at a distance agreed upon with municipal engineer and/or utility company) from any underground utility to allow room for large, structural roots to develop without impacting the utility.
- Conflicts with other infrastructure such as buildings, road signage, streetlights, and driveways should also be considered. Hibbing should develop and document planting guidelines which dictate required clearances for different types of infrastructure.

Growing Space Recommendations

- *Right tree, right place.* Select tree species based on characteristics of their root systems that match the planting site. Develop standards for tree planting which require specific growing space dimensions and/or soil volumes for various sizes of tree. Planting only small trees where the growing space and soil volume is restricted will help reduce hardscape damage issues due to tree root growth.
- Develop standards for sidewalk, road, and other hardscape design and construction that are tree friendly and are able to accommodate tree root growth and reduce future conflict.
- Encourage collaboration between city planning, engineering, and tree management departments. Considering trees early in the planning process when repairing or redesigning streets and sidewalks allows greater flexibility in the strategies used to ensure trees can be a productive part of the new streetscape.
- Consider a variety of strategies for incorporating sufficient growing space into street and sidewalk designs, including enlarging planting wells or citing them on the back edge of the sidewalk adjacent to lawns, installing new tree wells or lawns, creating traffic bumps outs, and incorporating Silva Cell or structural soil technology into designs.

DRG RECOMMENDED MINIMUM SPACING FOR TREE PLANTING

Overhead Utility Clearances:

- **Small trees** (>30 feet tall at maturity) can be within 20 feet.
- **Medium trees** (30-45 feet tall at maturity) should be planted 20 feet or further.
- **Large trees** (>45 feet tall at maturity) should be planted 40 feet or further.

Contact local utility companies for locally specific distance requirements.

Other Infrastructure Clearances:

- 35 feet between large trees
- 35 feet from intersections (approaching traffic)
- 25 feet between medium trees
- 10 feet for small trees, 20 feet for medium trees, 40 feet for large trees from hydrants and utility poles
- 15 feet between small trees
- small trees can be within 20 feet, at least 20 feet for medium trees, at least 40 feet for large trees from streetlights
- 8 feet from driveways, intersections (retreating traffic), crosswalks, important street signage
- 10 feet from underground utilities
- 35 feet from stop signs and 15 feet from other road signs
- 10 feet from storm drains

- Implement a variety of techniques for retaining mature street trees despite conflicts with hardscape. If possible, reroute sidewalks or build temporary ramps of pavement or wood over tree roots rather than remove healthy, mature trees in favor of sidewalks repairs.
- Recognize that many competing needs intersect when trying to site street trees. City streetscapes must balance needs for driving, parking, pedestrian access, overhead and underground utilities, street furniture, signage, lighting, winter snow removal, and many other considerations. Some areas will not be suitable for trees, and alternatives to street planting should be used in these areas instead of planting street trees.

CANOPY COVER & STOCKING LEVEL

“Stocking” is a term for the density and distribution of trees. In an urban forest, stocking level is the ratio of street ROW spaces occupied by trees to the total street ROW spaces suitable for trees, including occupied (tree/stump) and vacant sites. Park trees and other non-ROW public property trees are excluded from this measurement.

The city of Hibbing has a total of 10,192 current and potential tree sites along streets (9,344 trees + 418 planting sites + 430 stumps), and only 9,344 of which are currently occupied by a tree. Therefore, **the City’s current stocking level is 91.6%.**

Stocking level is a valuable way to compare urban forest coverage over time especially when canopy cover data are not available, such as is the case in Hibbing. “Canopy cover” refers to the percentage of an area which is covered by tree canopy when viewed from above. Canopy cover measurements can be derived in several different ways; the i-Tree Canopy tool is able to provide a basic assessment of the City’s total canopy cover, both public and private, as well as estimate the benefits provided by the entire urban canopy. Conducting an Urban Tree Canopy (UTC) assessment, which uses high-resolution aerial imagery, provides detailed analysis of a City’s tree canopy and can incorporate socio-economic analyses to inform the level of fair canopy distribution throughout the city.

Research shows that areas with low canopy cover frequently reflect a correlation with income and race; oftentimes, this stems from decades of redlining and other discriminatory policies. Since these communities tend to have fewer trees, their residents are deprived of the benefits that trees offer and likely experience increased air temperature, greater levels stormwater runoff and flooding, and higher levels of air pollution. The concept of Tree Equity aims to rectify this issue by advocating for equal distribution of trees and their associated benefits across all areas within cities. While a Tree Equity analysis was not conducted as a part of the tree inventory, Hibbing can take steps to analyze and improve the City’s levels of Tree Equity.

Canopy Cover & Stocking Level Recommendations

- Both stocking level and canopy cover can be used to set, measure, and track progress toward canopy cover and tree planting goals.
 - Goals should be achievable and tailored to the specific needs and challenges of Hibbing. Once initial goals are achieved, further goals can be set. This incremental method of progress can help build capacity and public support for tree planting and care over time.
 - The City of Hibbing should consider planting additional trees in areas with low stocking level/ canopy cover. Creativity may be required in heavily built-up areas of the community, and programs that promote planting trees on private property or parks may be viable alternatives, when site constraints limit street tree planting.

The background image shows a large, classical-style building with stone walls and arched windows. A large tree with green and yellowing leaves is on the left. A person with a red backpack is walking up the steps of the building. A black lamppost with a white globe is in the foreground. The text 'Section 2:' is overlaid on a green rectangular background.

Section 2:

Functions and Benefits

SECTION 2: FUNCTIONS AND BENEFITS

Trees play a vital role in the environment by providing a wide array of economic, environmental, and social benefits which far exceed the investments in planting, maintaining, and removing them. Trees reduce air pollution, improve public health outcomes, reduce stormwater runoff, sequester and store carbon, reduce energy use, and increase property value, among other benefits.

ENVIRONMENTAL BENEFITS

- Trees decrease energy consumption and moderate local climates by providing shade, cooling through their transpiration processes, and acting as windbreaks.
- Trees act as mini reservoirs, helping to slow and reduce the amount of stormwater runoff and pollutants that reaches storm drains, rivers, and lakes by 20-60% (Johnson et al., 2017).
- Trees reduce greenhouse gasses that can trap and retain heat in the atmosphere and cause the city to get warmer.
- Trees can reduce street-level air pollution by up to 60% (Coder, 1996).
- Trees stabilize soil and provide a habitat for wildlife.

IMPROVED PUBLIC HEALTH

- Trees have been shown to prevent 1,200 heat-related deaths each year in the U.S (McDonald et al., 2020).
- By intercepting particulate matter, trees save over 850 lives and prevent 670,000 incidents of acute respiratory symptoms in the United States each year (Nowak et al., 2014).
- Hospital patients recovering from surgery who had a view of a grove of trees through their windows required fewer pain relievers, experienced fewer complications, and left the hospital sooner than similar patients who had a view of a brick wall (Ulrich 1984, 1986).
- When surrounded by trees, physical signs of personal stress, such as muscle tension and pulse rate, were measurably reduced within three to four minutes (Ulrich, 1991).

INCREASED SAFETY & COMMUNITY

- Tree-lined streets slow traffic and are safer for drivers, pedestrians, and cyclists (Swift et al., 1997; Ewing & Dumbaugh, 2009).
- A 10% increase in neighborhood tree canopy cover has been associated with a 12-15% reduction in violent and property crimes (Gilstad-Hayden et al., 2015; O'Neil-Dunn, 2012).

ECONOMIC BENEFITS

- Properly placing three trees around a home can reduce energy costs for the average household by \$100 to \$250 per year, while shading air conditioning units can help them run up to 10% more efficiently (U.S. Department of Energy, n.d.).
- Trees in a yard or neighborhood increase residential property values by an average of 10% (USDA Forest Service, 2011), and commercial property rental rates are 7% higher when trees are on the property (Wolf, 2007).
- Shoppers spend more time and money in shopping districts with mature, healthy tree canopies, and are willing to spend 9-12% more at businesses with trees in front of them (Wolf, 2005, Hughes, 2013).

i-TREE RESULTS

DRG used i-Tree Eco, a tool within the i-Tree suite, to model benefits provided by Hibbing's inventoried public trees. i-Tree Eco combines tree inventory data with local air pollution and weather data to quantify the environmental benefits of a community's trees (Table 3). By framing trees and their benefits as dollars saved per year, i-Tree models can help communities understand trees as both a natural resource and an economic investment. Understanding the composition, functions, and economic value of trees is essential for making informed planning and management decisions. This knowledge not only helps to better understand how decisions can affect human health and environmental quality but also empowers communities to advocate for the funding required to effectively manage and care for their valuable public trees.

Table 3. Summary of benefits provided by the most common inventoried trees.

Most Common Trees Inventoried	Count	Percent of Total	Benefits Provided by Street Trees				
			CO ₂ Stored	CO ₂ Sequestered	Avoided Runoff	Air Pollution Removed	Replacement Value
Species		%	Tons	Tons/Year	Gal/Year	Lbs/Year	Dollars
green ash	2,908	31.1%	1,249.4	13.4	310,977	1,460	\$3,182,432
northern white cedar	1,732	18.5%	208.8	2.3	23,089	100	\$483,900
silver maple	910	9.7%	1,497.0	10.6	167,426	780	\$2,356,365
white spruce	574	6.1%	182.7	1.3	41,141	200	\$331,182
American basswood	368	3.9%	89.2	1.1	27,641	120	\$292,704
red maple	349	3.7%	96.0	1.9	14,955	80	\$190,241
Freeman maple	269	2.9%	44.0	1.1	12,773	60	\$111,882
eastern cottonwood	211	2.3%	368.5	2.8	26,204	120	\$469,402
Scots pine	199	2.1%	48.6	0.9	20,900	100	\$117,631
European crabapple	194	2.1%	42.0	0.8	3,482	20	\$94,109
red pine	163	1.7%	66.6	0.9	12,131	60	\$111,339
Elm spp	157	1.7%	20.4	0.4	5,610	20	\$72,525
quaking aspen	148	1.6%	41.3	0.7	3,321	20	\$108,004
blue spruce	129	1.4%	42.0	0.3	7,954	40	\$66,906
sugar maple	108	1.2%	61.2	0.5	8,353	40	\$88,076
All Other Trees Inventoried	924	9.9%	223	2.9	39,045	120	\$478,216
Total	9,343	100%	4,281	41.9	725,002	3,340	\$8,554,916

ANNUAL BENEFITS

The i-Tree Eco model estimates the annual value of three environmental benefits: carbon sequestration, air pollutant removal, and stormwater runoff reduction. The model also calculates the lifetime carbon storage of inventoried trees as well as their replacement value. **The inventoried trees in Hibbing provide \$15,693 of air quality, stormwater management, and carbon sequestration benefits each year** (Figure 9).

Despite park trees making up only 54% of the inventoried tree resource in Hibbing, they provide 65% of these annual benefits, likely due to the overall larger stature and more mature ages of park trees compared to street trees in the city. The amount of benefits provided by a tree is also influenced by species. Table 5 summarizes the key tree species that provide the greatest contribution to Hibbing’s annual benefits based on the results of the i-Tree Eco analysis of the public tree inventory. The silver maple, as well as eastern cottonwood, ponderosa pine, and black walnut, are major contributors to the annual quantifiable benefits within the public tree resource.

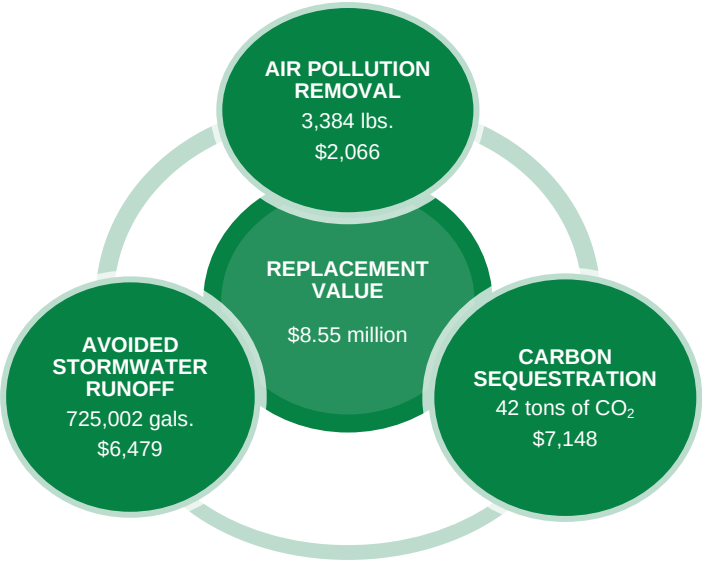


Table 4. The inventoried species which provide the greatest annual benefit per tree.

Species	Annual Benefits per Tree
silver maple	\$4.15
eastern cottonwood	\$3.69
Ponderosa pine	\$2.80
black walnut	\$2.40
black willow	\$2.39
American elm	\$2.22
green ash	\$2.05
Scots pine	\$2.02
eastern white pine	\$1.98
Jack pine	\$1.87

IMPROVING AIR QUALITY

Trees and other vegetation improve air quality by intercepting and filtering particulate matter from the air, including dust, ash, pollen, and smoke. Their leaves also absorb harmful gaseous pollutants like ozone, nitrogen dioxide, and sulfur dioxide; and reduce ozone formation by shading surfaces and reducing air temperatures. Since airborne pollutants can have serious effects on human health, this benefit is extremely important, especially in heavily developed areas. 13% of Hibbing’s annual public tree benefits are associated with air pollution removal.

The inventoried trees in Hibbing remove 3,384 lbs. of airborne pollutants each year; a service valued at \$2,066 annually (Table 3).

SEQUESTERING AND STORING CARBON

Trees are carbon sinks, which means they absorb carbon from the atmosphere – the opposite of carbon sources which produce and emit carbon into the atmosphere. While carbon is released from fossil fuel consuming vehicles and smokestacks, it is absorbed by trees during photosynthesis and stored in their tissue as they grow. Hibbing’s inventoried trees sequester (absorb) an estimated 42 tons of carbon each year, valued at \$7,148 and have stored 4,281 tons of carbon over their lifetime, valued at \$730,091 (Table 3).

MANAGING STORMWATER

Trees play a significant role in local hydrology and water cycling helping to reduce the amount of stormwater runoff generated during rain events (Figure 8). Since stormwater runoff can cause infrastructure damage and flooding, reducing the amount of precipitation that becomes surface runoff can save a community in infrastructure repair and flooding mitigation costs. The inventoried trees in Hibbing divert 725,002 gallons of stormwater each year valued at \$6,479 (Table 3).

REPLACEMENT VALUE

Replacement value is the approximate cost to replace an existing tree with a tree of a similar size and species. While doing this is typically not possible – for example, to replace a 20-inch diameter tree with another tree of similar size would not be feasible – replacement value can provide an idea of the overall value of the inventoried public trees in Hibbing.

In total, Hibbing’s inventoried trees have a replacement value of \$8,554,915. Table 5 compares the per-tree replacement value of the street and park trees with the overall highest replacement values. Silver maple is the most valuable tree in Hibbing among both the park and street tree populations, with eastern cottonwood and black willow also making the top five. Park trees generally have a greater per-tree replacement value than street trees, likely due to the greater age and larger size of park trees versus street trees in Hibbing at the time of the inventory.

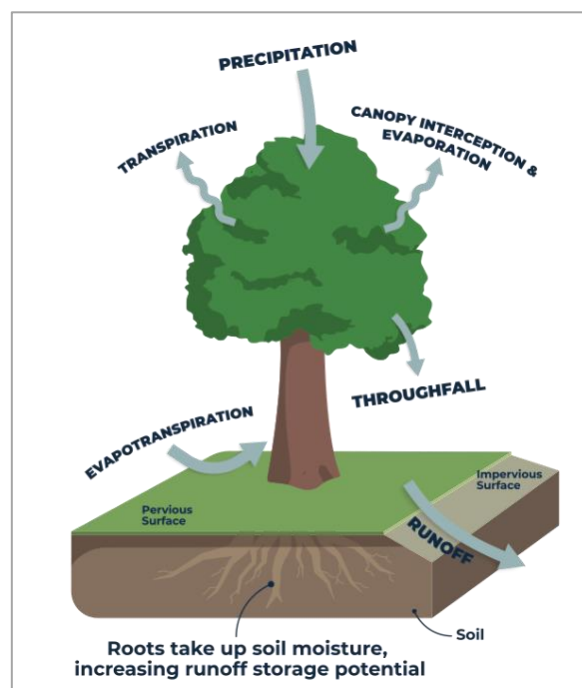


Figure 8. SEQ Figure * ARABIC 10. Hydrological functions of trees. Source: ‘Stormwater to Street Trees: Engineering Urban Forests for Stormwater Management’, EPA publication 841 B 13 001.

Table 5. Inventoried species with the highest per tree replacement value.

Most Common Trees Inventoried	Count	Percent of Total	Replacement Value	
			Per Inventoried Trees	Per Tree
Common Name		%	Dollar	Dollar
silver maple	910	9.7%	\$2,356,365.49	\$2,589.41
eastern cottonwood	211	2.3%	\$469,401.50	\$2,224.65
black willow	8	0.1%	\$14,749.60	\$1,843.70
American elm	73	0.8%	\$87,578.45	\$1,199.70
green ash	2,908	31.1%	\$3,182,432.40	\$1,094.37
Ponderosa pine	2	0.0%	\$2,114.95	\$1,057.48
white oak	6	0.1%	\$6,313.92	\$1,052.32
boxelder	58	0.6%	\$53,591.09	\$923.98
eastern white pine	40	0.4%	\$34,942.34	\$873.56
northern red oak	25	0.3%	\$21,427.62	\$857.10
black walnut	2	0.0%	\$1,674.75	\$837.38
sugar maple	108	1.2%	\$88,075.79	\$815.52
American basswood	368	3.9%	\$292,704.42	\$795.39
quaking aspen	148	1.6%	\$108,004.07	\$729.76
Jack pine	8	0.1%	\$5,623.47	\$702.93
All Other Trees Inventoried	4,468	47.8%	\$ 1,829,915.88	\$ 19,133.51
Total	9,343	100%	\$ 8,554,915.74	Avg. \$ 503.16

Tree Benefit Recommendations

- Large-stature, deciduous trees tend to provide the greatest benefits. Hibbing should plan to plant these types of trees wherever possible to increase the benefits provided by the public trees. This may require enlarging existing tree planting spaces or creating large new tree planting spaces to accommodate large street trees. It also should include preserving existing large-stature trees and providing proactive care to young public trees to ensure they achieve mature status in the future.
- The protection of existing park trees should be a priority, and succession planning to replace park trees and increase tree cover in parks will have a large positive impact on tree benefits in Hibbing in the future.
- The public trees in Hibbing account for only a fraction of the total benefits provided by the City's trees, indicating that many of the trees which provide benefits to Hibbing are located on private property. The city should consider methods to preserve existing trees and promote new tree planting on private property throughout the city to increase tree benefits.

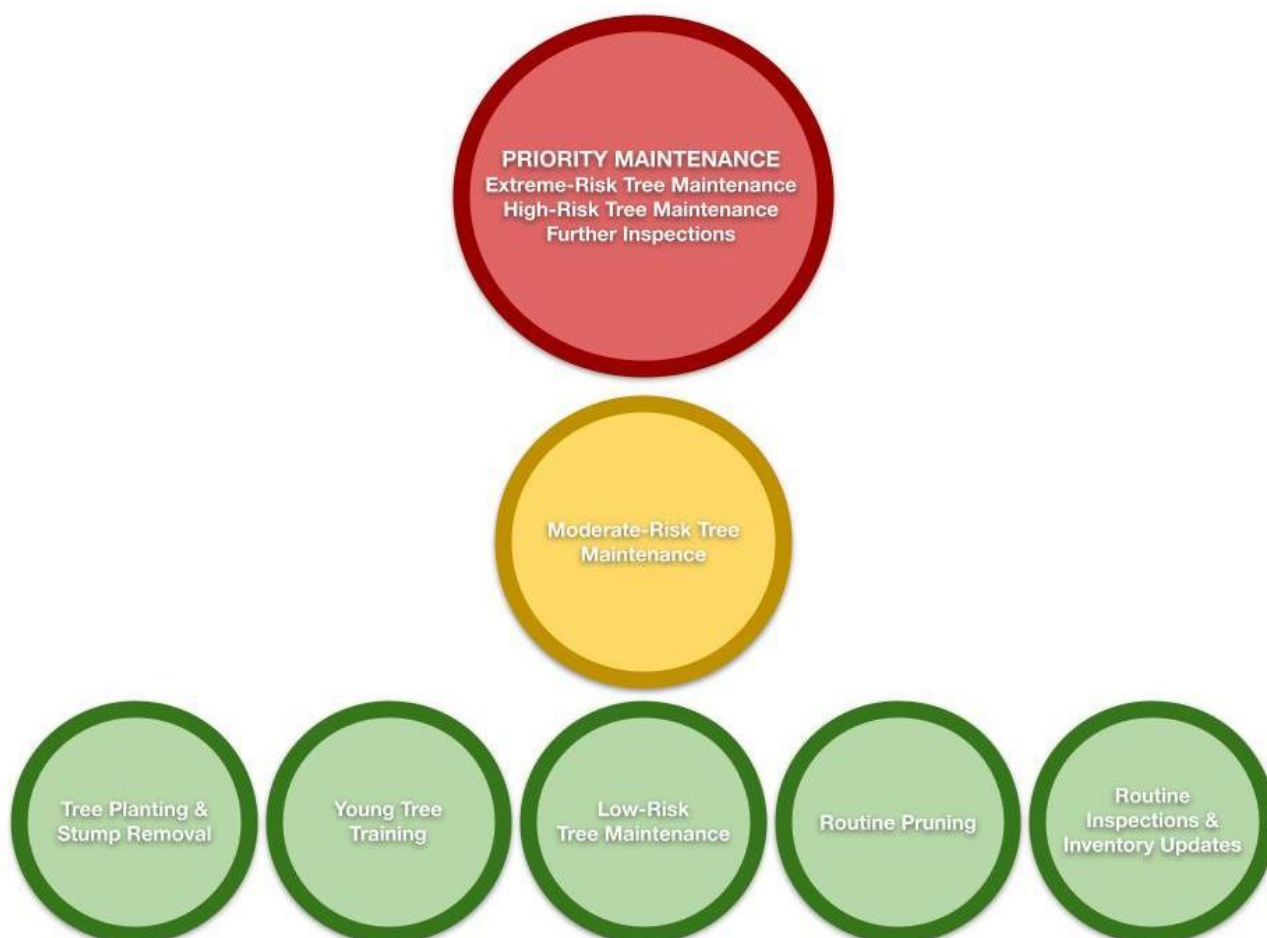
Section 3:

Recommended Maintenance



SECTION 3: RECOMMENDED MAINTENANCE

A risk rating and a maintenance activity were assigned to each inventoried tree. DRG recommends prioritizing and completing recommended maintenance activities based on a tree's assigned risk rating. This five-year tree maintenance schedule takes a multi-faceted and proactive approach to managing Hibbing's public inventoried trees.



RISK MANAGEMENT AND RECOMMENDED MAINTENANCE

Every tree, regardless of condition, has an inherent risk of whole or partial tree failure. As part of the inventory, a modified Level 2 rapid risk assessment of each inventoried tree was conducted and a risk rating was assigned based on the current editions of ANSI A300 (Part 9) and the companion publication *ISA Best Management Practices: Tree Risk Assessment, Second Edition*. Trees can have multiple potential modes of failure, each with its own risk rating. The potential mode of failure with the highest risk rating was recorded for each tree during the inventory. The specified time period for the risk assessment was one year. Appendix B provides additional details on the International Society of Arboriculture's (ISA) risk rating system.

DRG recommends that tree maintenance activities are prioritized and completed based on the risk rating that was assigned to each tree during the inventory. Trees with Extreme or High Risk ratings should be attended to first, followed by trees with a Moderate Risk rating. Trees with a Low Risk rating should be maintained once higher risk trees have been pruned or removed. The following sections describe the recommended maintenance activities for each risk rating category.

PRIORITY MAINTENANCE

Priority Maintenance Needs

Addressing Extreme and High Risk trees identified in the inventory (Figures 9 & 10) in a timely manner will mitigate risk, improve public safety, maximize tree benefits, and reduce long-term costs. In general, Extreme and High Risk maintenance activities should be completed first for larger diameter trees that pose the greatest risk. Once these trees are addressed, recommended tree maintenance activities should be completed for small diameter trees.

The inventory identified:

- No Extreme Risk trees.
- No High Risk trees recommended for pruning (Figure 9).
- 1 High Risk street trees and 0 park trees recommended for removal (Figure 10). The High Risk tree recommended for removal is 23 inches DSH.

Moderate and Low-risk trees identified in the inventory are categorized as a part of routine maintenance and are discussed in the *Routine Maintenance* section below.

Priority Maintenance Recommendations

- Trees with Extreme or High Risk ratings recommended for removal should be removed immediately and prioritized based on their risk rating and size class. Tree removal is recommended when pruning will not correct the tree's defects, will not eliminate the risks caused by defects, or when pruning would be cost-prohibitive.
- Trees with Extreme or High Risk ratings recommended for pruning should be pruned immediately and prioritized based on their risk rating and size class. Priority pruning and removals can be performed at the same time to increase efficiency of maintenance crews.

Further Inspection

The Further Inspection data field indicates whether a tree requires additional and/or future inspections to assess and/or monitor conditions that may cause it to become a risk to people, property, or other trees. The inventory identified 1 tree recommended for an advanced Level 3 risk assessment, 3 for recent damage inspection, and 18 trees for insect and disease monitoring. 17 (94%) of these trees recommended for insect and disease monitoring were green ash, which showed symptoms or signs of emerald ash borer (EAB). The other remaining tree is a plum cherry with black knot fungus.

Further Inspection Recommendations

- Trees recommended for advanced risk assessment should be assessed by an International Society of Arboriculture (ISA) Tree Risk Assessment Qualified (TRAQ) certified arborist as soon as possible to determine whether they require removal, pruning, or other corrective action to reduce risk.
- Trees recommended for insect/disease monitoring should be inspected to confirm the presence of damaging insects or diseases and determine the best course of action.
- Trees recommended for recent damage inspection should be assessed annually to monitor their condition and look for signs of worsening defects that may merit intervention.

ROUTINE MAINTENANCE

Moderate and Low Risk Priority Pruning & Removals

Pruning or removing Moderate and Low Risk trees are generally the next priorities for maintenance activities. For efficiency, Moderate and Low Risk removals may also be addressed when removing adjacent higher risk trees. Most trees recommended for pruning with a Low Risk rating can be maintained during proactive, routine pruning cycles. DRG recommends implementing proactive maintenance programs incrementally over time as the backlog of elevated risk trees is reduced.

The inventory identified:

- 41 Moderate Risk street trees and 4 Moderate Risk park trees recommended for pruning (Figure 11).
- 55 Moderate Risk street trees and 6 Moderate Risk park trees recommended for removal (Figure 12).
- 718 Low Risk street trees and 75 Low Risk park trees recommended for pruning (Figure 9).
- 129 Low Risk street trees and 82 Low Risk park trees recommended for removal (Figure 10).

Low Risk removals pose little threat; these trees are generally small, dead, invasive, or poorly formed trees. Healthy trees growing in poor locations or undesirable species are also included in this category. Eliminating these trees will reduce breeding site locations for insects and diseases and will increase the aesthetic value of the area.

Moderate and Low Risk Pruning and Removal Recommendations

- Moderate Risk pruning and removals should be performed after all Extreme and High Risk recommended maintenance is complete.
- Low Risk trees should be pruned and removed after all higher risk pruning and removals have been completed and may be performed concurrently with routine pruning.
- Moderate and Low Risk tree pruning and removals can take place at the same time, and can also be combined with higher risk removals and pruning when located near these trees to increase maintenance crew efficiency.

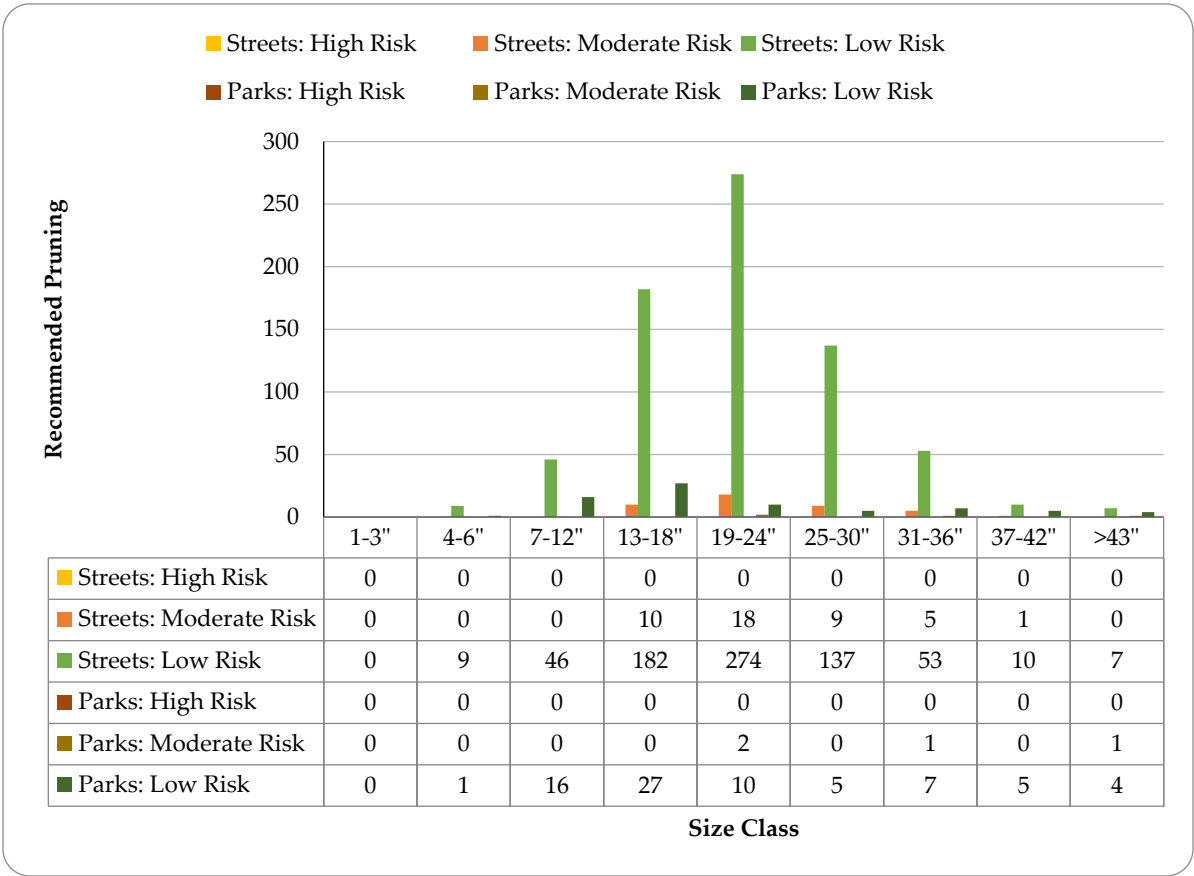


Figure 9. Priority pruning recommendations for street and park trees.

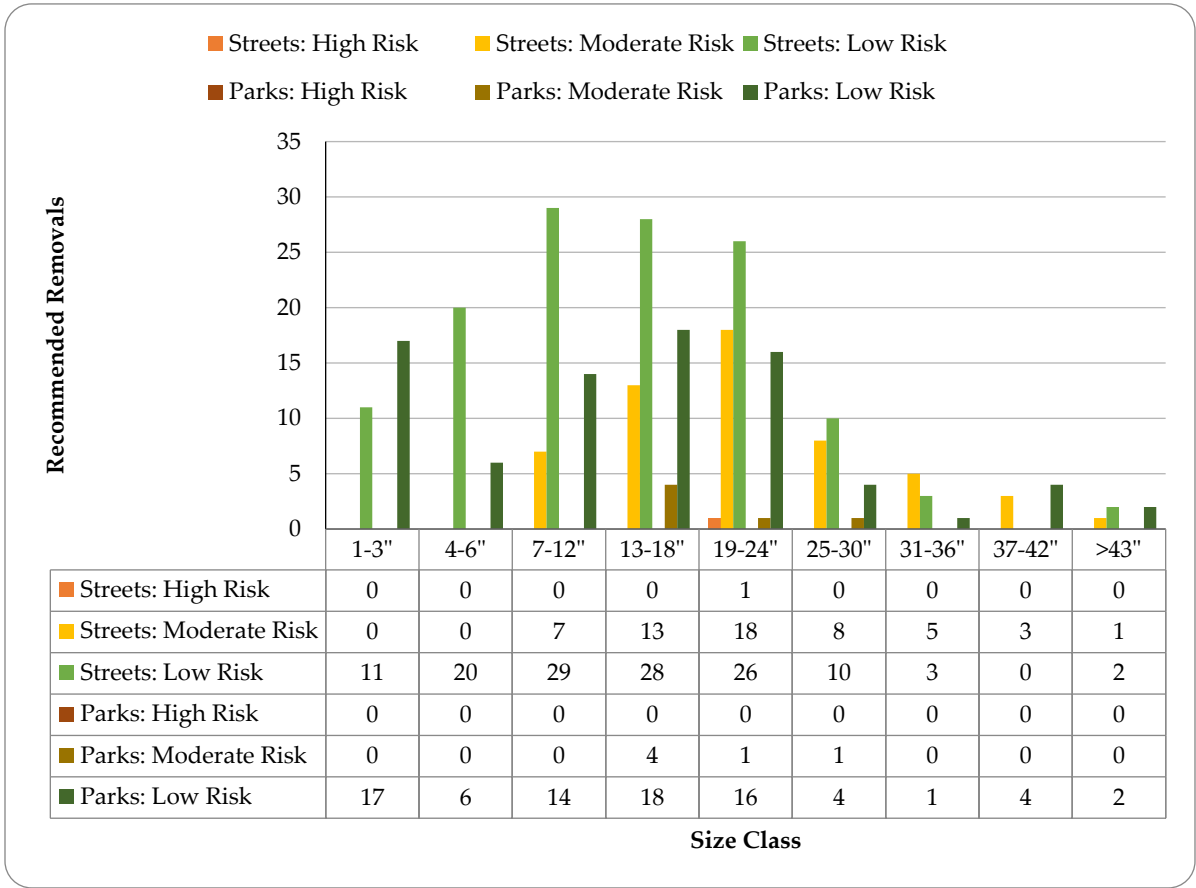


Figure 10. Priority removal recommendations for street and park trees.

Routine Pruning Cycle

The routine pruning cycle includes all Low to Moderate Risk trees with a primary maintenance need of 'none'. These trees pose some risk but have a smaller defect size and/or a lower probability of impacting a target and therefore do not require priority maintenance. Over time, **routine pruning can minimize reactive maintenance, limit instances of elevated risk, and provide the basis for a robust risk management program.**

DRG recommends a five-year routine pruning cycle (see side panel, "Proactive Pruning") to maintain the condition of the inventoried trees. However, this is not always possible based on budgetary constraints, the size of the inventoried tree population, or both. In these cases, extending the length of the routine pruning cycle is an option; however, the best practice is to not exceed a 10-year pruning cycle. Tree condition has been shown to deteriorate significantly after 10 years without regular pruning as once-minor defects worsen, reducing tree health and potentially increasing risk.

A total of 7,754 trees were rated Low Risk, and 3 trees were rated Moderate Risk, with a maintenance recommendation of "none" and should be included in a routine pruning cycle (Figure 11).

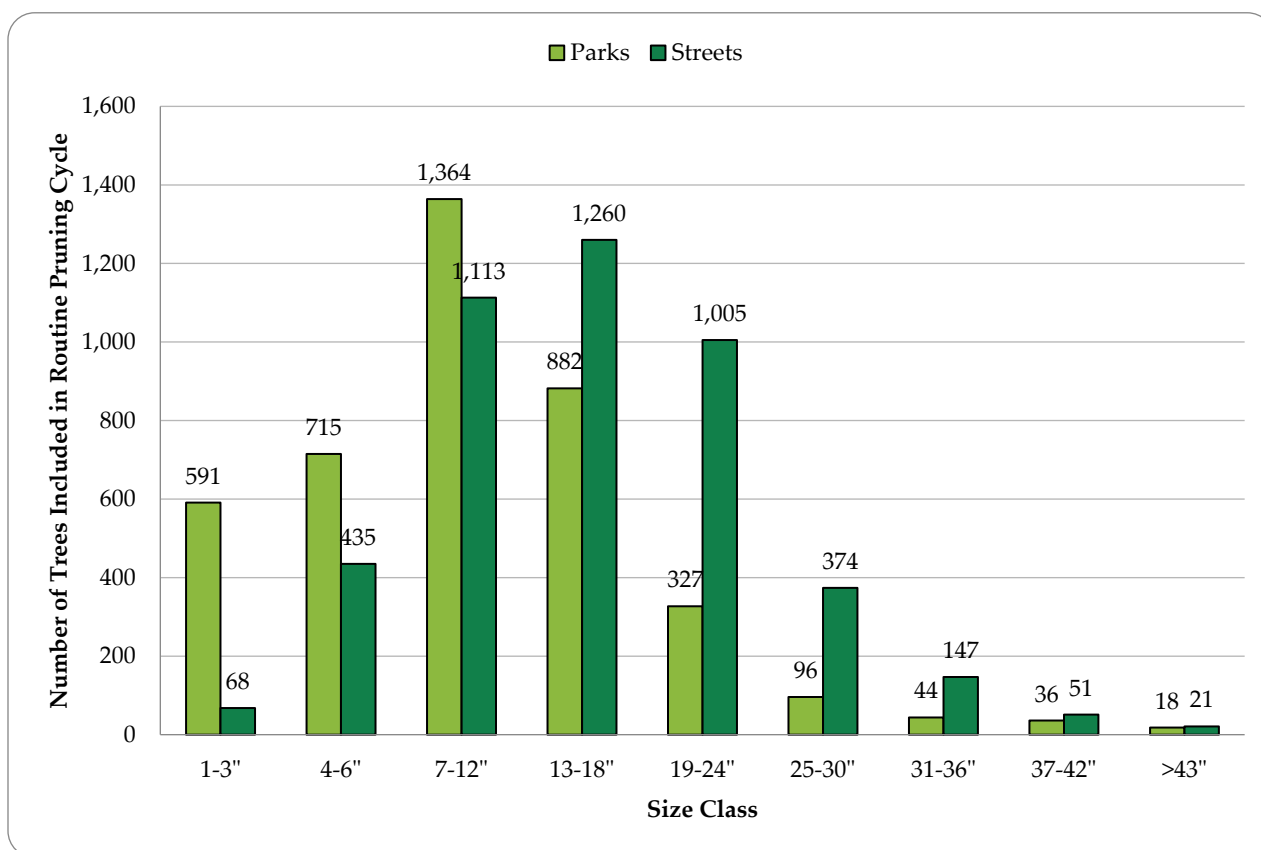


Figure 11. Trees included in the routine pruning cycle as of the completion of the inventory.

Routine Pruning Cycle Recommendations

- Hibbing should aim to prune 1/5 of its public trees each year during a five-year routine pruning cycle. A five-year cycle would see around 895 street trees and around 815 park trees assessed and pruned, if needed, each year.
- Trees which are currently recommended for priority pruning (Extreme, High, and Moderate Risk trees with a maintenance recommendation of “prune”) should be added to the routine pruning cycle once their immediate defects and elevated risk are mitigated.
- Young trees which grow out of the young tree training cycle (see next section) should also be included in the routine pruning cycle.
- The number of trees to be assessed and routinely pruned each year will vary depending on the number of trees which are planted and the number of trees which are removed in future years.
- Not every tree in the routine pruning cycle will need to be pruned each cycle – thus, the actual cost to maintain a routine pruning cycle will likely be lower than projected in the budget table at the end of this section (Table 6).

Young Tree Training Cycle

Young tree training cycles are recommended to improve the form and structure of young, newly planted trees that are less than 6 inches in diameter. Young tree pruning addresses structural problems such as codominant leaders, multiple limbs attaching at the same point on the trunk, and crossing or interfering limbs that if not corrected can lead to problems as the tree ages.

PROACTIVE PRUNING

Relationship between tree condition and years since previous pruning.

Adapted from Miller and Sylvester 1981

Miller and Sylvester studied the pruning frequency of 40,000 street trees in Milwaukee, Wisconsin. Trees that had not been pruned for more than 10 years had an average condition rating 10% lower than trees that had been pruned in the previous several years. Their research suggests that a five-year pruning cycle is optimal for urban trees.

Routine pruning cycles help detect and correct most defects before they reach higher risk levels. DRG recommends that pruning cycles begin after all Extreme and High risk tree maintenance has been completed.

DRG recommends two pruning cycles: a young tree training cycle and a routine pruning cycle. Newly planted trees will enter the young tree training cycle once they become established and will move into the routine pruning cycle when they reach maturity. A tree should be removed and eliminated from the routine pruning cycle when it outlives its usefulness.

A three-year cycle is recommended due to the rapid rate that young trees grow and the importance of correcting structural issues while the tree is young to reduce future risks and costly pruning when the tree is larger. The inventory identified 474 small, young trees which should be included in a young tree training cycle.

Young Tree Training Cycle Recommendations

- Hibbing should institute a three-year young tree training cycle beginning after the completion of all recommended higher priority work. With 474 young trees recommended for training at the time of the inventory, approximately 158 need to be assessed and pruned each year during the three-year cycle. In future years, the number of trees in the young tree training cycle will depend on the growth rates of young trees in the city and the number of new plantings.
- Young tree training is recommended to begin one to two years after planting and continue every three years until the tree can no longer be safely pruned from the ground with a pole pruner and pruning shears.
- At the time of planting, new trees should be minimally pruned to remove broken or crossing branches.
- Not every tree in the young tree training cycle will need to be pruned each cycle – thus, the actual cost to maintain a young tree pruning cycle will likely be lower than projected in the budget table provided at the end of this section (Table 7).

Routine Inspections and Inventory Updates

Inspections are essential to uncovering potential problems with trees. They should be performed by a qualified arborist who is trained in the art and science of planting, caring for, and maintaining individual trees. Ideally, the arborist will be ISA Certified and hold the ISA Tree Risk Assessment Qualification (TRAQ) credential. Level 1 and 2 assessments can be completed during regular tree maintenance activities, such as routine pruning, to streamline the process and reduce workloads and cost. When trees need additional maintenance, they should be added to the work schedule immediately. Use asset management software such as TreeKeeper® to update inventory data and schedule work records.

Routine Inspections and Inventory Update Recommendations

- All public trees should be regularly inspected and attended to as needed. Inspections can be particularly effective and necessary after major storms which may cause damage to trees or increase the risk posed by trees.
 - Level 1 walk-by or drive-by assessments can be a cost-effective method of inspection for public trees after storm events and can help identify trees which need further, detailed inspection.
- When trees require additional or new work, they should be added to the maintenance schedule. The budget should also be updated to reflect the additional work. Utilize asset management software such as TreeKeeper® to make updates, edits, and keep a log of work records.

- Level 2 risk assessments and inventory updates should also be completed on a routine basis, ideally every 5 to 10 years, to identify defects that are not easily observed during Level 1 assessments and to update tree inventory information.
 - To keep costs regular, 1/5 of public trees should be re-inventoried each year. With a total of around 9,071 public trees in the current inventory not recommended for removal, approximately 1,814 would need to be updated each year during a five-year inventory update cycle.

Tree Planting and Stump Removal

Routinely planting trees is an important part of maintaining and growing Hibbing's tree canopy and maximizing the tree benefits provided to the community. Opportunity exists in suitable vacant street sites and sites with stumps, as well as in parks and private property. During the inventory, **418 potential planting sites and 430 stumps were identified throughout Hibbing.** Most of the stump sites were located within the parks. Park planting sites were not fully inventoried as part of this inventory project and there are likely more than the inventoried number of vacant planting sites in Hibbing's parks.

Assessing a tree species growth characteristics, environmental preferences, and tolerance to urban conditions against a planting site's condition is essential when selecting a species for planting. Planting the "right tree in the right place" will ensure the tree thrives, increasing its benefits, improving tree survival and condition, reducing future tree care costs, and minimizing conflicts with other infrastructure. Along the streets, **63% of the vacant sites were suitable for a small tree, 34% were suitable for a medium tree, and 3% were suitable for a large tree.** A complete list of recommended tree species can be found in Appendix D.

Tree Planting and Stump Removal Recommendations

- Stump removal should be included in tree removal contracts. Quality assurance and control checks of the contractor's work should be conducted to ensure that stumps are being removed fully and efficiently as part of the tree removal work.
- Stump removal should be done prior to targeted planting of any area to open locations for new tree planting. Planting in a location where a stump was recently removed should be avoided, if possible. Decomposing roots can cause air pockets, nutrient depletion, and space constraints that can impact the establishment of newly planted trees.
- Hibbing should strive to plant the largest possible tree in each vacant planting site. Large-stature, deciduous trees provide the greatest benefits to the community. See the strategies for providing sufficient growing space outlined in the Growing Space Recommendations section.
- To avoid loss of public trees, Hibbing should aim for, at minimum, a 1-for-1 replacement rate of planted trees to removed trees. Ideally, the community will surpass this and establish a 2-for-1 or even a 3-for-1 replacement rate, which will ultimately help to increase the community's public trees. The budget table (Table 7) assumes a 1-for-1 replacement strategy to show the costs of maintaining such a planting program.

- Tree species selection for planting should assess their tolerance to heat, drought, salt, and climate change, among other factors, and appropriate trees should be selected for each individual planting location.
- Where planting space along streets is limited and traditional street tree planting is not possible, the community should consider alternate options for installing and increasing public tree canopy, including:
 - Creation of pocket parks.
 - Improvement and maintenance of existing nearby parks and public grounds.
 - Setback planting programs designed to install public street trees behind the right-of-way but within 20 feet of the public way.
 - Encouraging planting of trees on private property via education, tree giveaways, and other methods.
- Where possible, Hibbing should enlarge and improve tree planting areas along streets by:
 - Enlarging the dimensions and soil volume of planting strips and planting wells.
 - Considering use of structural soils or Silva Cells to improve root movement through soils and reduce infrastructure conflicts.
 - Working with other city departments, such as engineering, to ensure that plans for new development or street improvement consider trees during the design process.
- Continue to seek out and apply for grant funding to support tree planting projects. Significant funding is available at the state and federal levels, particularly for planting projects within Environmental Justice areas.
- Continue to develop and foster partnerships with groups such as Tree Trust® who can help promote and support tree planting goals in the community.

MAINTENANCE STRATEGY AND EXAMPLE BUDGET

Using the City of Hibbing's tree inventory data, an example 5-year annual maintenance schedule and budget is provided that details the recommended tasks to complete each year over (Table 6). Budget projections are based on industry knowledge and public bid tabulations. Following this schedule, or a similar schedule, can help shift the City's tree care program from reactive toward a more proactive model.

To implement the maintenance schedule, Hibbing's tree maintenance budget should be:

- No less than \$314,707 for the first year of implementation.
- No less than \$296,499 for the second year.
- No less than \$295,440 for the third year.
- No less than \$290,124 for the fourth year.
- No less than \$274,740 for the fifth year.

These annual budget funds are needed to ensure that elevated risk trees are addressed as soon as possible, and that the vital young tree training and routine pruning cycles can be established. If routing efficiencies and/or contract specifications allow more tree work to be completed each year, or if this maintenance schedule requires adjustment to meet budgetary or other needs, then it should be modified accordingly. Unforeseen situations such as severe weather events may arise and change the maintenance needs of trees. If maintenance needs change, then budgets, staffing, and equipment should be adjusted to meet the new demand.

Table 6. Example maintenance schedule and budget for a five-year tree management program.

Activity Cost			Year 1		Year 2		Year 3		Year 4		Year 5		Five-Year Cost
Activity	Diameter	Cost/Tree	Count	Cost	Count	Cost	Count	Cost	Count	Cost	Count	Cost	
High Priority Removals	1-3"	\$28		\$0		\$0		\$0		\$0		\$0	\$0
	4-6"	\$58		\$0		\$0		\$0		\$0		\$0	\$0
	7-12"	\$138		\$0		\$0		\$0		\$0		\$0	\$0
	13-18"	\$314		\$0		\$0		\$0		\$0		\$0	\$0
	19-24"	\$605	1	\$605		\$0		\$0		\$0		\$0	\$605
	25-30"	\$825		\$0		\$0		\$0		\$0		\$0	\$0
	31-36"	\$1,045		\$0		\$0		\$0		\$0		\$0	\$0
	37-42"	\$1,485		\$0		\$0		\$0		\$0		\$0	\$0
	>43"	\$2,035		\$0		\$0		\$0		\$0		\$0	\$0
Activity Total(s)			1	\$605	0	\$0	0	\$0	0	\$0	0	\$0	\$605
Moderate Priority Removals	1-3"	\$28		\$0		\$0		\$0		\$0		\$0	\$0
	4-6"	\$58		\$0		\$0		\$0		\$0		\$0	\$0
	7-12"	\$138		\$0		\$0		\$0		\$0	7	\$966	\$966
	13-18"	\$314		\$0	5	\$1,570	4	\$1,256	4	\$1,256	4	\$1,256	\$5,338
	19-24"	\$605	2	\$1,210	4	\$2,420	5	\$3,025	4	\$2,420	4	\$2,420	\$11,495
	25-30"	\$825	3	\$2,475	2	\$1,650	2	\$1,650	2	\$1,650	2	\$1,650	\$9,075
	31-36"	\$1,045	2	\$2,090	3	\$3,135		\$0		\$0		\$0	\$5,225
	37-42"	\$1,485	1	\$1,485	2	\$2,970		\$0		\$0		\$0	\$4,455
	>43"	\$2,035	1	\$2,035		\$0		\$0		\$0		\$0	\$2,035
Activity Total(s)			9	\$9,295	16	\$11,745	11	\$5,931	10	\$5,326	17	\$6,292	\$38,589
Low Priority Removals	1-3"	\$150		\$0		\$0	9	\$1,350	9	\$1,350	10	\$1,500	\$4,200
	4-6"	\$200		\$0		\$0	8	\$1,600	9	\$1,800	9	\$1,800	\$5,200
	7-12"	\$350		\$0	11	\$3,850	10	\$3,500	11	\$3,850	11	\$3,850	\$15,050
	13-18"	\$1,100	10	\$11,000	9	\$9,900	9	\$9,900	9	\$9,900	9	\$9,900	\$50,600
	19-24"	\$1,400	10	\$14,000	11	\$15,400	10	\$14,000	11	\$15,400		\$0	\$58,800
	25-30"	\$1,600	5	\$8,000	6	\$9,600	3	\$4,800		\$0		\$0	\$22,400
	31-36"	\$2,000	4	\$8,000		\$0		\$0		\$0		\$0	\$8,000
	37-42"	\$2,200	4	\$8,800		\$0		\$0		\$0		\$0	\$8,800
	>43"	\$2,500	4	\$10,000		\$0		\$0		\$0		\$0	\$10,000
Activity Total(s)			37	\$59,800	37	\$38,750	49	\$35,150	49	\$32,300	39	\$17,050	\$183,050
Stump Removals	1-3"	\$18	1	\$18	1	\$18	10	\$180	10	\$180	11	\$198	\$594
	4-6"	\$28	7	\$196	7	\$196	15	\$420	16	\$448	16	\$448	\$1,708
	7-12"	\$44	27	\$1,188	38	\$1,672	37	\$1,628	38	\$1,672	45	\$1,980	\$8,140
	13-18"	\$72	39	\$2,808	43	\$3,096	43	\$3,096	43	\$3,096	43	\$3,096	\$15,192
	19-24"	\$94	34	\$3,196	38	\$3,572	37	\$3,478	38	\$3,572	27	\$2,538	\$16,356
	25-30"	\$110	20	\$2,200	20	\$2,200	17	\$1,870	14	\$1,540	14	\$1,540	\$9,350
	31-36"	\$138	9	\$1,242	7	\$966	3	\$414	4	\$552	4	\$552	\$3,726
	37-42"	\$160	7	\$1,120	4	\$640	3	\$480	3	\$480	3	\$480	\$3,200
	>43"	\$182	6	\$1,092	1	\$182	1	\$182	2	\$364	2	\$364	\$2,184
Activity Total(s)			150	\$13,060	159	\$12,542	166	\$11,748	168	\$11,904	165	\$11,196	\$60,450
High Priority Pruning	1-3"	\$50		\$0		\$0		\$0		\$0		\$0	\$0
	4-6"	\$75		\$0		\$0		\$0		\$0		\$0	\$0
	7-12"	\$125		\$0		\$0		\$0		\$0		\$0	\$0
	13-18"	\$150		\$0		\$0		\$0		\$0		\$0	\$0
	19-24"	\$175		\$0		\$0		\$0		\$0		\$0	\$0
	25-30"	\$225		\$0		\$0		\$0		\$0		\$0	\$0
	31-36"	\$350		\$0		\$0		\$0		\$0		\$0	\$0
	37-42"	\$400		\$0		\$0		\$0		\$0		\$0	\$0
	>43"	\$450		\$0		\$0		\$0		\$0		\$0	\$0
Activity Total(s)			0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	\$0

Activity Cost			Year 1		Year 2		Year 3		Year 4		Year 5		Five-Year Cost
Activity	Diameter	Cost/Tree	Count	Cost	Count	Cost	Count	Cost	Count	Cost	Count	Cost	
Moderate Priority Pruning	1-3"	\$20		\$0		\$0		\$0		\$0		\$0	\$0
	4-6"	\$30		\$0		\$0		\$0		\$0		\$0	\$0
	7-12"	\$75		\$0		\$0		\$0		\$0		\$0	\$0
	13-18"	\$120		\$0	3	\$360	3	\$360	2	\$240	2	\$240	\$1,200
	19-24"	\$170		\$0	5	\$850	5	\$850	5	\$850	5	\$850	\$3,400
	25-30"	\$225		\$0	3	\$675	2	\$450	2	\$450	2	\$450	\$2,025
	31-36"	\$305	2	\$610	1	\$305	1	\$305	1	\$305	1	\$305	\$1,830
	37-42"	\$380	1	\$380		\$0		\$0		\$0		\$0	\$380
	>43"	\$590	1	\$590		\$0		\$0		\$0		\$0	\$590
Activity Total(s)			4	\$1,580	12	\$2,190	11	\$1,965	10	\$1,845	10	\$1,845	\$9,425
Routine Inspection	Drive-by Assessment	\$1	18	\$18	18	\$18	18	\$18	18	\$18	18	\$18	\$90
	Walk-by Assessment	\$5	15	\$75	15	\$75	15	\$75	15	\$75	15	\$75	\$375
Activity Total(s)			15	\$75	15	\$75	15	\$75	15	\$75	15	\$75	\$375
Young Tree Training (3-year Cycle)	1-3"	\$20	113	\$2,260	114	\$2,280	114	\$2,280	113	\$2,260	114	\$2,280	\$11,360
	4-6"	\$30	44	\$1,320	44	\$1,320	45	\$1,350	44	\$1,320	44	\$1,320	\$6,630
	6"<	\$40		\$0		\$0		\$0		\$0		\$0	\$0
Activity Total(s)			157	\$3,580	158	\$3,600	159	\$3,630	157	\$3,580	158	\$3,600	\$17,990
Routine Pruning (5-year Cycle)	1-3"	\$20	131	\$2,620	132	\$2,640	132	\$2,640	132	\$2,640	132	\$2,640	\$13,180
	4-6"	\$30	230	\$6,900	230	\$6,900	230	\$6,900	230	\$6,900	230	\$6,900	\$34,500
	7-12"	\$75	495	\$37,125	495	\$37,125	495	\$37,125	496	\$37,200	496	\$37,200	\$185,775
	13-18"	\$120	428	\$51,360	428	\$51,360	428	\$51,360	429	\$51,480	429	\$51,480	\$257,040
	19-24"	\$170	266	\$45,220	266	\$45,220	266	\$45,220	267	\$45,390	267	\$45,390	\$226,440
	25-30"	\$225	94	\$21,150	94	\$21,150	94	\$21,150	94	\$21,150	94	\$21,150	\$105,750
	31-36"	\$305	38	\$11,590	38	\$11,590	38	\$11,590	38	\$11,590	39	\$11,895	\$58,255
	37-42"	\$380	17	\$6,460	17	\$6,460	17	\$6,460	18	\$6,840	18	\$6,840	\$33,060
	>43"	\$590	7	\$4,130	8	\$4,720	8	\$4,720	8	\$4,720	8	\$4,720	\$23,010
Activity Total(s)			1,706	\$186,555	1,708	\$187,165	1,708	\$187,165	1,712	\$187,910	1,713	\$188,215	\$937,010
Replacement Tree Planting and Maintenance	Purchasing	\$250	48	\$12,000	47	\$11,750	65	\$16,250	59	\$14,750	56	\$14,000	\$68,750
	Planting & Watering	\$200	48	\$9,600	47	\$9,400	65	\$13,000	59	\$11,800	56	\$11,200	\$55,000
	Mulching	\$25	48	\$1,200	47	\$1,175	65	\$1,625	59	\$1,475	56	\$1,400	\$6,875
Activity Total(s)			144	\$22,800	141	\$22,325	195	\$30,875	177	\$28,025	168	\$26,600	\$130,625
New Tree Planting and Maintenance	Purchasing	\$250	15	\$3,750	15	\$3,750	15	\$3,750	15	\$3,750	15	\$3,750	\$18,750
	Planting & Watering	\$200	15	\$3,000	15	\$3,000	15	\$3,000	15	\$3,000	15	\$3,000	\$15,000
	Mulching	\$25	15	\$375	15	\$375	15	\$375	15	\$375	15	\$375	\$1,875
Activity Total(s)			45	\$7,125	45	\$7,125	45	\$7,125	45	\$7,125	45	\$7,125	\$35,625
Natural Mortality (1%)	Tree Removal	\$314	18	\$5,652	18	\$5,652	18	\$5,652	18	\$5,652	18	\$5,652	\$28,260
	Stump Removal	\$72	18	\$1,296	18	\$1,296	18	\$1,296	18	\$1,296	18	\$1,296	\$6,480
	Replacement Tree	\$475	18	\$8,550	18	\$8,550	18	\$8,550	18	\$8,550	18	\$8,550	\$42,750
Activity Total(s)			54	\$15,498	54	\$15,498	54	\$15,498	54	\$15,498	54	\$15,498	\$77,490
Activity Grand Total			2,322		2,345		2,413		2,397		2,384		11,861
Cost Grand Total				\$319,973		\$301,015		\$299,162		\$293,588		\$277,496	\$1,491,234

CONCLUSION

When properly cared for, public trees offer valuable, enduring benefits that can significantly surpass the investments of time and resources put into their planting, maintenance, and eventual removal. The 9,344 inventoried public trees generate at least \$15,693 annually in estimated benefits, including stormwater reduction, carbon sequestration, and air pollutant removal. It is important to note that these are just the quantifiable benefits provided by trees in the community. The complete array of benefits from Hibbing's public trees extends far beyond what can be calculated through inventory data and i-Tree Eco modeling alone. The successful execution of the five-year maintenance program is expected to amplify the benefits that the community's public trees provide.

This five-year maintenance initiative, with a focus on proactive tree care, necessitates a substantial upfront investment. While addressing Extreme, High, and Moderate Risk trees through removal or pruning can be costly, it is a vital step to enhance public safety and reduce long-term tree maintenance expenses. Once this priority work is accomplished, the remaining tasks can be spaced out over a more extended period, as dictated by budget, staffing, or equipment availability. This Tree Inventory Analysis & Maintenance Strategy can assist the community's tree care staff in advocating for increases in the urban forestry budget to support the recommended maintenance efforts.

The community's forestry program is making commendable progress toward cultivating a sustainable and resilient urban forest. To stay on course, it is crucial to establish clear goals, take action to achieve those goals, regularly update inventory data to assess progress, and be prepared to revise objectives as needed in an iterative manner. The Urban Forest Program Continuum, as designed by DRG and illustrated on page 2, can serve as a valuable roadmap for Hibbing as it continues its ongoing mission to elevate the care of the community's public trees. This mission will enrich the lives of all residents, workers, and recreational enthusiasts within the city of Hibbing.

EVALUATING AND UPDATING THIS PLAN

This *Public Tree Inventory Analysis & Maintenance Strategy* provides management priorities for the next five years. To ensure the maintenance schedule and budget remain accurate, it is important to update the tree inventory using TreeKeeper® or other asset management software as work is completed, so the software can provide updated species distribution, maintenance needs, and benefit estimates. Keeping the inventory up to date empowers the community to assess its progress over time and set goals to strive toward by following the adaptive management cycle (flow chart). Below are some examples of implementing the steps of this cycle:



- Preparing planting plans in advance to schedule and complete stump removal in the designated area, and to select species best suited to the available sites.
- Annually comparing the number of trees planted to the number of trees removed and the number of vacant planting sites remaining, and adjusting future planting plans accordingly.
- Annually comparing the species distribution of the inventoried trees with the previous year after completing planting plans to monitor recommended changes in species and genera abundance.
- Scheduling and assigning high-priority tree work so it can be completed as soon as possible and not reactively addressing new lower priority work requests as they are received.
- Including data collection such as measuring DSH and assessing condition into standard procedure for tree work and routine inspections, so changes over time can be monitored.

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APPENDIX A: SUMMARY OF RECOMMENDATIONS

SECTION	RECOMMENDATION
Species & Genera Diversity	• Avoid or limit planting of green ash, northern white cedar, and silver maple and increase planting of other species until green ash, northern white cedar, and silver maple make up less than 10% of public trees. • Avoid or limit planting of ash species and increase planting of other genera until ash make up less than 20% of public trees. • Remove volunteer trees that have invasive tendencies, such as boxelder, Norway maple, and Siberian elm, from maintained public areas while small. • Increase planting of uncommon species and genera which are well suited to urban environments.
Pest Susceptibility	• Monitor trees for signs and symptoms of pests and diseases on a regular basis. This can be done as part of other routine maintenance activities such as pruning. • When a pest or disease is suspected, act quickly to confirm the identification and begin management. • Prepare an invasive species management plan to guide the response to future pest or disease infestations. • Eastern tent caterpillar can host on many tree genera but prefer fruit trees such as apple, crabapple, cherry, and plum. Consider removing or otherwise managing fruit tree populations to reduce the suitability of Hibbing's urban forest to host eastern tent caterpillar. • When planting trees, select pest- or disease-resistant species or cultivars whenever possible. • Use preventative pesticide treatments on high-value or historic trees that are susceptible to problematic pests and/or diseases in Hibbing.
Condition	• Dead and dying trees should be removed as soon as possible in priority order from highest to lowest risk to reduce public hazards, create space for new planting, and improve the appearance of Hibbing's streets and parks. • Trees in Poor condition not recommended for removal should be maintained to reduce risk associated with defects and should be routinely monitored for further decline that would necessitate removal. • Condition ratings can be improved over time by instituting proactive maintenance cycles such as routine pruning and young tree training. All tree pruning should follow <i>ANSI A300 (Part 1)</i> guidelines.

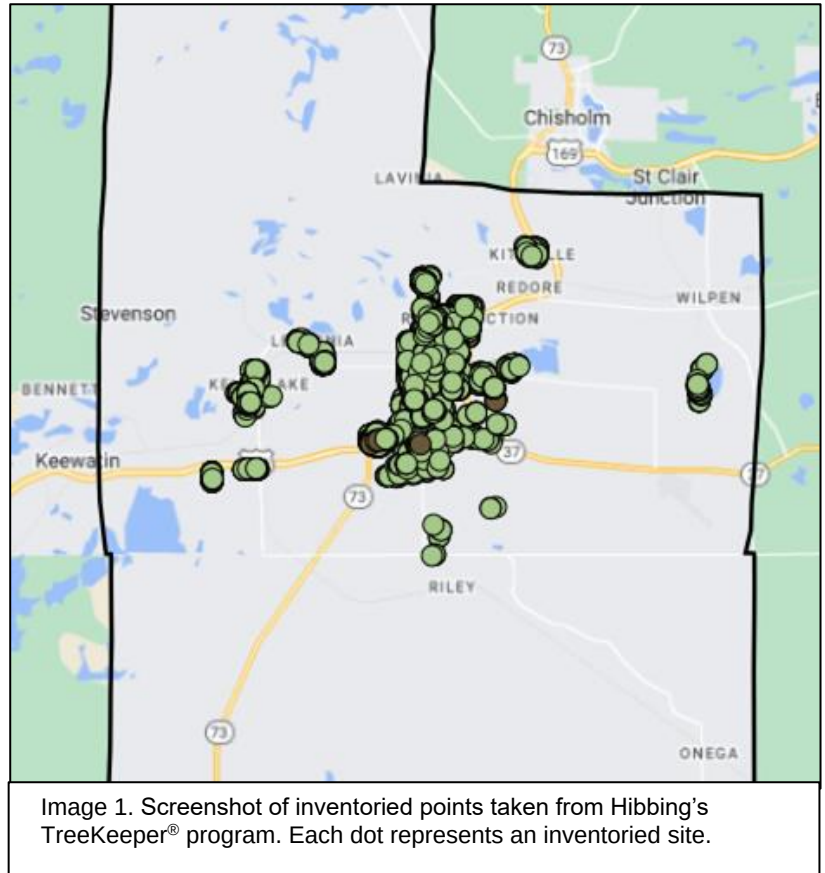
SECTION	RECOMMENDATION
Relative Age Distribution	- Hibbing’s street trees are aging (maturing and mature trees both double the industry recommended age percentage). Hibbing should focus on tree preservation and proactive care for these large-stature trees, and a succession plan should be implemented to ensure that as mature street trees decline in health and are removed, young trees are planted to take their place. - A large proportion of park trees are young or established (47% young trees and 38% established trees). A young tree training cycle should be instituted to structurally prune these younger trees to ensure good form and improve health as they mature. - Street tree planting should be increased and sustained to maintain the recommended age distribution. However, sustained planting efforts over time will be necessary to retain this age distribution. - Routine, proactive maintenance, such as young tree training and routine pruning, may help improve tree condition, particularly among maturing and mature trees.
Defect Observations	- Dead and dying branches were the most common defect observation for trees in Hibbing. Regular pruning, as done in a routine pruning cycle, can improve the health of these trees and reduce risk associated with dying tree parts. Removal of dead limbs also improves the visual aesthetics of trees and may help improve public perceptions of the level of tree care in the city. - A branch attachment or tree architecture defect was recorded for 17% of street trees and 14% of park trees. These types of defects can often be resolved by structural pruning within the first 1 to 10 years of the tree’s life. Instituting a young tree training program could reduce instances of these defects as trees grow and mature.
Infrastructure Conflicts	- Hibbing should reduce tree conflicts with overhead electric lines by planting only small stature trees beneath or near overhead electric utilities. - Consider looking for dwarf or small cultivars of typically large-stature trees to diversify small-stature planting lists. - Tree roots can damage water and sewer pipes, gas lines, and electric conduit. Installation and maintenance of these utilities often results in cut tree roots, which may destabilize trees and cause tree failure, reduce tree vigor, or kill the tree.

SECTION	SECTION	RECOMMEND
Canopy Cover & Stocking Level	- Goals should be achievable and tailored to the specific needs and challenges of Hibbing. Once initial goals are achieved, further goals can be set. This incremental method of progress can help build capacity and public support for tree planting and care over time. - The City of Hibbing should consider planting additional trees in areas with low stocking level/ canopy cover. Creativity may be required in heavily built-up areas of the community, and programs that promote planting trees on private property or parks may be viable alternatives, when site constraints limit street tree planting.	
Tree Benefits	- Large-stature, deciduous trees tend to provide the greatest benefits. Hibbing should plan to plant these types of trees wherever possible to increase the benefits provided by the public trees. This may require enlarging existing tree planting spaces or creating large new tree planting spaces to accommodate large street trees. It also should include preserving existing large-stature trees and providing proactive care to young public trees to ensure they achieve mature status in the future. - The protection of existing park trees should be a priority, and succession planning to replace park trees and increase tree cover in parks will have a large positive impact on tree benefits in Hibbing in the future. - The public trees in Hibbing account for only a fraction of the total benefits provided by the City's trees, indicating that many of the trees which provide benefits to Hibbing are located on private property. The city should consider methods to preserve existing trees and promote new tree planting on private property throughout the city to increase tree benefits.	
Priority Maintenance	- Trees with Extreme or High-risk ratings recommended for removal should be removed immediately and prioritized based on their risk rating and size class. Tree removal is recommended when pruning will not correct the tree's defects, will not eliminate the risks caused by defects, or when pruning would be cost-prohibitive. - Trees with Extreme or High-risk ratings recommended for pruning should be pruned immediately and prioritized based on their risk rating and size class. Priority pruning and removals can be performed at the same time to increase efficiency of maintenance crews.	

APPENDIX B: STUDY AREA AND DATA COLLECTION

STUDY AREA

Hibbing covers an area of 186.46 square miles, of which around 2% is bodies of water and the remaining 98% is land. The city is mainly located in the center with a few townships located north (Kitzville) and west (Leetonia and Kelly Lake). The 2024 Hibbing inventory focused data collection within the city center on maintained areas of turf and within the neighboring townships of Kitzville, Leetonia, and Kelly Lake. Rural areas were excluded from the inventory, which includes many rural roads that extend in all directions around the city. All other spatial analyses (i.e., i-Tree Canopy) were restricted to the same area as inventory data collection.



DATA COLLECTION

DRG collects tree inventory data using a customized ArcPad program, called Rover, loaded onto pen-based field computers. At each site, the following data fields were collected:

- Address
- Comments
- Condition
- Defect
- Further Inspection Required
- Multi-Stem
- Inventory Date
- Overhead Utilities
- Park Name
- Primary Maintenance Need
- Residual Risk
- Risk Rating
- Size*
- Species

* measured in inches in diameter at 4.5 feet above ground or diameter at standard height (DSH)).

Maintenance needs are based on *Best Management Practices: Tree Risk Assessment* (International Society of Arboriculture 2011). The knowledge, experience, and professional judgment of DRG's arborists ensure the high quality of inventory data.

Equipment and Base Maps

Inventory arborists use FZ-G1 Panasonic Toughbook® units with internal GPS receivers. Geographic information system (GIS) map layers are loaded onto these units to help locate sites during the inventory. Arborists use a combination of GPS location data and aerial background imagery to locate and place each site.

Addressing

In addition to XY geographic coordinates for each inventoried site, addressing information was also collected during the inventory. While geographic coordinates allow spatial representation of the data within a geographic information system, such as TreeKeeper® or ArcMap, addressing information allows each site to be located in the field without use of a GPS. The following fields were collected as part of the addressing of each site:

- **Address:** The numeric address of the parcel nearest to the site. This field is automatically filled by the data collection program where parcel addressing is available. When parcel addressing was not available, the arborist used their best judgement to assign a logical address number to the site.
- **Suffix:** Indicates whether the arborist needed to manually assign an address number to the site. If the arborist added the address number manually, this field reads "X". If the data collection program assigned an address number, this field is left blank.
- **Street:** The street which the assigned parcel is addressed to. The Address and Street fields, together, provide the street address of the site (e.g., 111 Example Rd.). The street is usually assigned by the data collection program based on parcel data included in the program.
- **On Street:** The street on which the site is physically located. Assigned by the data collection program.
- **Side:** Indicates what side of the parcel a site is physically located on. Assigned by the arborist, this field can read front, side, rear, median, or N/A.
 - **Front** – The site is located on the front side of the parcel. The Street and On Street names should match.
 - **Side** – The site is located on the side of the parcel. The Street and On Street names will likely not match.
 - **Rear** – The site is located on the rear side of the parcel, which only happens when a parcel occupies the full space between two roads. The Street and On Street names will not match.

- **Median** – The site is located in a median. Technically, sites located in medians do not have addresses but are assigned to the closest parcel address to aid in finding them in the field. All median sites will have Suffix = X.
- **N/A** – The site is located in a park or other public grounds rather than along the street ROW. Since these sites may be anywhere within a public grounds parcel, a side designation is not necessarily useful and is omitted.

APPENDIX C: RISK ASSESSMENT

Every tree, regardless of defects, condition, location, and other factors, has an inherent risk of whole or partial tree failure. Risk assessment seeks to provide a metric of the level of risk associated with any given tree to allow for risk management to be undertaken by a tree manager. The current editions of *ANSI A300 (Part 9)* standards and the ISA's associated publication *Best Management Practices: Tree Risk Assessment* were used to guide an organized, systematic, and reproducible method for assessing tree risk.

Trees can have multiple modes of potential failure with varying levels of risk associated with each. During the inventory, the mode of failure with the greatest associated risk was recorded as the overall risk rating for the tree. The specified time frame for the risk assessment was one year.

Risk ratings can help tree managers set priorities and organize tree work. Generally, trees with higher risk ratings should be maintained or removed first, to lower the risk and liability associated with these trees. It is up to the tree manager to decide what level of risk is acceptable and under what circumstances.

LEVELS OF RISK ASSESSMENT

Arborists assess tree risk using different tools and at different levels of detail. ISA best management practices suggest three levels of risk assessment, from least to most intensive.

Level 1: Limited Visual Assessment

A walk-by or drive-by assessment designed to quickly scan a large population of trees and identify those which need a more advanced assessment due to defects with an imminent or probable likelihood of failure. Level 1 assessments do not typically result in risk ratings, but rather provide a list of tree locations with any recommended remedial action. A recommendation for which trees should be assessed at the next level of assessment may be recommended. This method may be a good option when funding for a full inventory and risk assessment is not available or after major storms when a rapid survey of damage is needed.

Level 2: Basic Assessment

A detailed, 360-degree visual inspection of individual trees assessing the site, roots, trunk, and branches resulting in an assessment of the tree's health and a risk rating that can be used to prioritize tree work within a large population of trees. DRG applies level two guidelines during most inventories and rapid tree assessments.



DRG arborists conducting a Level 2 risk assessment.

Level 3: Advanced Assessment

Additional inspection following a Basic Assessment that uses specialized equipment to provide more detailed information about an individual tree, typically to help make management decisions about that specific tree. Advanced assessments may require use of a bucket truck to reach defects in the crown of the tree, equipment, and experience to perform sonic tomography to map decay pockets, or sampling of diseased plant tissue for identification in a lab, to name a few examples.

PROCESS OF RISK ASSESSMENT

The primary components of a risk assessment in line with the current editions of *ANSI A300 (Part 9)* standards and the ISA's *Best Management Practices: Tree Risk Assessment* are as follows.

Time Frame

Tree risk should be assessed within a specified time frame. Since all trees are likely to experience whole or partial tree failure at some point during their existence, and since conditions of a tree and site can change dramatically over time, setting a specific time frame for risk assessment is essential to conveying risk accurately and determining appropriate management practices. Most risk assessments will have a specific time frame of one to three years. Predictive power decreases as time increases, so assessments are not typically done for more than a five-year period.

Likelihood of Failure

The first step in assessing tree risk involves determining the likelihood that the tree or tree part will fail within the specified time frame. Site factors, such as slope, soil texture and saturation, and recent grading or tree removals, are considered in tandem with tree factors such as health, species-specific failure profile, damage, and structural defects. The likelihood of failure is then characterized as either:

- *Improbable* – The tree or tree part is not likely to fail during normal weather conditions and may not fail in extreme weather conditions within the specified time frame.
- *Possible* – Failure may be expected in extreme weather conditions, but it is unlikely during normal weather conditions within the specified time frame.
- *Probable* – Failure may be expected under normal weather conditions within the specified time frame.
- *Imminent* – Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load. This is a rare occurrence for a risk assessor to encounter and may require immediate action to protect people from harm. This category overrides the stated time frame.

Likelihood of Target Impact

The next step is to determine how likely it is that the tree or tree part in question would impact a target if it fails. This involves consideration of the potential targets located around a tree, which may include fixed structures such as houses or playground equipment with a constant occupancy rate and mobile targets such as people or vehicles with lower occupancy rates, as well as an assessment of where a tree or tree part will land if it fails. The likelihood of target impact is then characterized as either:

- *Very Low* – The chance of the failed tree or tree part impacting the specified target is remote.
- *Low* – There is a slight chance that the failed tree or tree part will impact the target.
- *Medium* – The failed tree or tree part could impact the target, but it is not expected to do so.
- *High* – The failed tree or tree part is likely to impact the target.

Combined Likelihood of Failure & Target Impact

The likelihood of failure and the likelihood of impacting a target are combined using the matrix below to determine the likelihood of failure impacting a target.

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Consequence of Failure & Target Impact

The consequences of a tree failing and striking a target are a function of the value of the target and the amount of injury, damage, or disruption that could be caused by the failure and impact. Considerations when determining potential consequences include the size of the part which may fail, the fall distance, characteristics of the target, and whether there are any structures which may protect the target. Consequences of failure and target impact are characterized as either:

- *Negligible* – Does not result in personal injury, involves low-value property damage, or disruptions that can be replaced or repaired.
- *Minor* – Involves minor personal injury, low- to moderate-value property damage, or small disruption of activities.
- *Significant* – Involves substantial personal injury, property damage of moderate- to high-value, or considerable disruption of activities.
- *Severe* – Involves serious personal injury, high-value property damage, or major disruption of important activities.

Risk Rating

The combined likelihood of failure & target impact is then combined with the consequence of failure & target impact in the matrix, below, to produce a risk rating. There may be multiple modes of potential tree failure and multiple targets to consider, and each combination of failure and target will result in a different risk rating. The overall highest risk rating is usually used as the risk rating for the tree.

Likelihood of Failure & Target Impact	Consequences			
	Negligible	Minor	Significant	Severe
Imminent	Low	Moderate	High	Extreme
Probable	Low	Moderate	High	High
Possible	Low	Low	Moderate	Moderate
Improbable	Low	Low	Low	Low

Risk Mitigation, Prioritization, and Residual Risk

Once a risk rating is assigned, the final step is to determine whether risk mitigation is necessary and prioritize risk mitigation work. Extreme and High Risk trees should be managed first, followed by Moderate Risk trees as time and budgets allow, or as deemed necessary by the tree manager. Low Risk trees can typically be maintained during routine maintenance cycles or when time and budgets allow.

Risk mitigation can take many forms. Common methods of mitigation include tree removal or pruning to remove parts that may fail. Other forms of mitigation may include cabling and/or bracing weak branch unions, moving targets such as sheds or play equipment outside the anticipated impact zone, excluding targets from the impact zone using fencing or other barriers, and/or monitoring the tree. Ultimately, it is up to the tree manager to decide what mitigation techniques are appropriate for each tree and what level of risk is acceptable.

Residual risk is the risk remaining after mitigation, and considering the residual risk after a mitigation action may help tree managers determine the best actions to take. For example, a tree with a large dead limb over a busy intersection might have a High Risk rating, but removal of that limb would sufficiently mitigate the risk such that the residual risk is low. In this case, it may be best to remove the dead limb but retain the tree. In other cases, there may not be any mitigation option short of tree removal which will reduce risk to an acceptable level, in which case the tree should be removed.

APPENDIX D: SUGGESTED TREE SPECIES

Proper landscaping and urban tree planting are critical components of the atmosphere, livability, and ecological quality of communities. The tree species listed below have been evaluated for such factors as: size, disease and pest resistance, seed or fruit set, and availability. The following list is offered to assist tree commissions and forestry staff in selecting appropriate urban tree species. These recommended trees have been selected because of their aesthetic and functional characteristics and their ability to thrive in soil and climate conditions throughout Zone 3 on the USDA Plant Hardiness Zone Map.

DECIDUOUS TREES

Large Trees (greater than 50 feet in height when mature)

Scientific Name	Common Name	Cultivar
<i>Acer rubrum</i>	red maple	
<i>Acer saccharinum</i>	silver maple	'Silver Queen'
<i>Acer saccharum</i>	sugar maple	
<i>Betula alleghaniensis</i>	yellow birch	
<i>Betula nigra</i>	river birch	'Dura Heat' 'Heritage'
<i>Betula papyrifera</i>	paper birch	
<i>Celtis occidentalis</i>	common hackberry	'Prairie Pride'
<i>Juglans cinerea</i>	butternut	
<i>Juglans nigra</i>	black walnut	
<i>Quercus alba</i>	white oak	
<i>Quercus elipsoidalis</i>	northern pin oak	'Bailskies'
<i>Quercus macrocarpa</i>	bur oak	
<i>Quercus rubra</i>	Northern red oak	
<i>Tilia americana</i>	American linden	'Redmond'
<i>Ulmus americana</i>	American elm	'Princeton' 'Valley Forge'

Medium Trees (26 to 50 feet in height when mature)

Scientific Name	Common Name	Cultivar
<i>Gleditsia triacanthos var. inermis</i>	thornless honeylocust	'Halka' 'Harve'
<i>Ostrya virginiana</i>	Ironwood	
<i>Populus grandidentatum</i>	bigtooth aspen	
<i>Populus tremuloides</i>	quaking aspen	
<i>Prunus maackii</i>	Amur chokecherry	
<i>Sorbus decora</i>	showy mountainash	

Small Trees (10 to 25 feet in height when mature)

Scientific Name	Common Name	Cultivar
<i>Amelanchier spp.</i>	Serviceberry	
<i>Carpinus caroliniana</i>	Blue Beech	
<i>Malus spp.</i>	crabapple spp.	'Coralburst' 'Jackii' 'Prairifire' 'Royalty' 'Selkirk' 'Spring Snow'
<i>Prunus nigra</i>	Canada plum	'Princess Kay'
<i>Prunus virginiana</i>	common chokecherry	'Canada Red'

CONIFEROUS TREES

Large Trees (greater than 50 feet in height when mature)

Scientific Name	Common Name	Cultivar
<i>Abies balsamea</i>	balsam fir	
<i>Larix laricina</i>	tamarack	
<i>Picea glauca</i>	white spruce	
<i>Picea mariana</i>	black spruce	
<i>Pinus banksiana</i>	jack pine	
<i>Pinus resinosa</i>	red pine	
<i>Pinus strobus</i>	white pine	
<i>Thuja occidentalis</i>	Northern white cedar	
<i>Tsuga canadensis</i>	Canadian hemlock	

Medium Trees (26 to 50 feet in height when mature)

Scientific Name	Common Name	Cultivar
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	'Blue Heaven' 'Skyrocket'
<i>Juniperus virginiana</i>	eastern redcedar	
<i>Picea mariana</i>	black spruce	

CITY OF HIBBING, MN **TREE MANUAL**

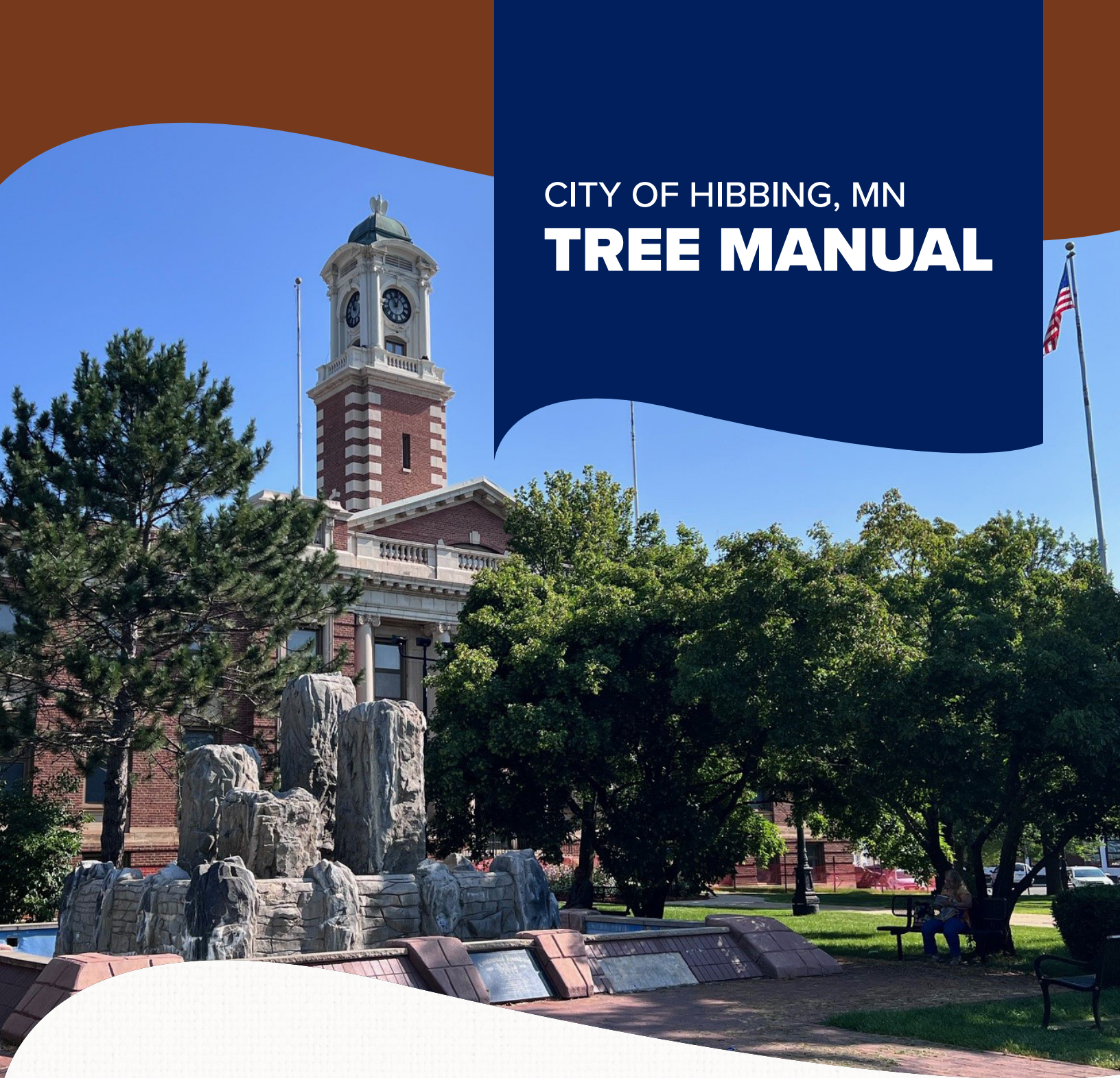


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1. TREE PRESERVATION STANDARDS

Tree Preservation Plans are referenced in the Hibbing code of ordinances. The updated ordinance directs developers to the Tree Manual for guidance on Tree Preservation:

SEC. 11.54. SPECIAL PROVISION: GRADING, FILLING OR EXCAVATION

Subd. 2. GRADING PERMIT APPLICATIONS.

B. Site Information.

2. A tree preservation plan consistent with the application requirements, as outlined in the Tree Manual

Developers planning to preserve trees on project sites should take the proper steps to ensure that the trees' health, root system and structural stability are not adversely impacted by work. The following Tree Preservation Plan standards are recommended:

TREE PRESERVATION PLANS

Tree preservation plans (TPP) are important to ensure the ongoing health and survival of trees in construction areas and new developments. A TPP should include at minimum the following information:

1. A map of the site plan showing

- a. All grading and excavation to be performed
- b. All trees to be preserved, with each tree assigned a unique number
- c. The Critical Root Zone (CRZ) of each tree to be preserved
 - i. *The CRZ is a circle around the tree with a radius equal to 1 foot per inch of DBH (diameter at breast height) diameter*
- a. A depiction of tree preservation areas where work is not to take place

2. A tree chart showing

- a. The number of each tree, keyed to the map as described in section (1b) above
- b. The species, DBH, condition and CRZ of each tree to be preserved
- c. Special preservation measures to be taken, in needed

3. A description of tree preservation areas, fences or boundaries to be erected, and any other notes relevant to tree preservation

Construction near woodlands and forests:

Trees growing along the edge of recently cut clearings in wooded areas are at elevated risk for failure due to increased wind exposure. Woodland and forest trees can also be more sensitive to root disturbance. Care should be taken when developing in such areas as buildings, structures, or areas within fall distance of trees that may be at elevated risk.



2. BOULEVARD TREES

The City of Hibbing has identified specific boulevard strip types in which to focus tree planting efforts to maximize the ecological, economic and aesthetic benefits of street trees.

Boulevard strips utilized for tree planting shall be greater than 6' in width and at least 6' in length. Soil shall be of a type and composition conducive to the growth of trees and their root systems; soils next to sidewalks and roadways are often compacted, polluted and rocky. Soil shall be inspected by the City Forester prior to planting. Unsuitable soils shall be amended or replaced prior to planting.

BOULEVARD TREE PERMITS

Permits to plant, remove or maintain boulevard trees must be obtained prior to planting, removing or performing maintenance work of any kind. All tree work must adhere to the standards described in the Tree Manual. Permits can be obtained at the office of the City Clerk.

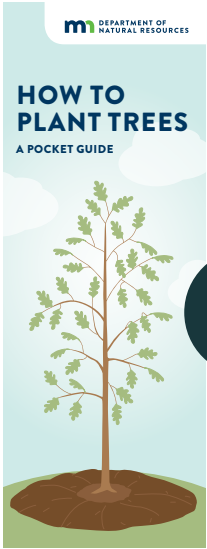
Pruning: Prune limbs to allow 10' overhead clearance and one (1) foot side clearance from the nearest edge of the sidewalk. Prune limbs to allow at least 14' overhead clearance from streets. Prune dead limbs that could pose danger to people or property.





3. TREE PLANTING GUIDELINES

Boulevard tree permit planting locations are subject to approval by the City Forester. **Property owners must submit an application on a form provided by the City prior to planting a tree in the boulevard.** Planting of trees as regulated by the City Code shall be performed following the standards and applications as outlined in this section. These practices will not be enforced upon those performing work on private property outside of the regulations set-forth by the City Code, but they may serve as an approved reference.



How to Plant Trees
a Pocket Guide,
State of Minnesota,
Department of
Natural Resources

A. PLANTING SPECIFICATIONS

Outlined in this section are specific standards of practice that must be adhered to when planting trees as regulated by the City Code. Watering and trimming are the homeowners’ responsibility.

All planting shall adhere as a minimum practice to ANSI A300 Part 6: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Transplanting) as distributed by the American National Standards Institute and highlighted as Best Management Practices by the International Society of Arboriculture.

The following specifications shall be followed by all individuals, groups, contractors, and agencies performing the actions of planting trees within the City of Hibbing Street Right of Way. Planting within the Right of Way shall be determined by the City Forester as detailed in the City Code.

1. Tree Grow Space:

- ii. *Boulevard Size <6ft – No trees will be planted*
- iii. *Boulevard Size 6ft – Small Growth trees only*
- iv. *Boulevard Size 7-12ft – Small or Medium Growth trees*
- v. *Boulevard Size >12ft – Small, Medium or Large Growth Trees*
 - Trees shall be planted in the middle of the boulevard

2. Overhead Utility Lines:

- Only small trees with a maximum height of 30 feet will be allowed within 20 feet of overhead utilities.
- Medium trees should be 20 feet or further.
- Large trees should be planted 40 feet or further.

3. Buried Utilities:

Plant trees at least ten (10) feet from any buried utility (gas at 30 inches, water at 7.5 feet). Property owners should call 811 for utility locates. The most common utilities of concern are the water line and sanitary sewer lines that run to the house from the main line beneath the street. The shutoff valve (also called a curb stop or standpipe) is often recognizable and can give a rough idea of where the utility lines are located. **Trees should be kept 15 feet away from shutoff valves.**

4. Signs:

- i. *Stop signs – Trees will be planted no less than 35 from the rear of a stop sign*
- ii. *Miscellaneous Signs – Trees will be planted a minimum of 15 feet from the rear of these signs*

5. Driveways/Hardscape:

Trees will be planted a minimum of 8 feet from driveways and other sidewalk approaches outside of intersections.

6. Intersections without stop signs:

Trees will be planted a minimum of 35 feet from the corner of an intersection

7. Storm Drains:

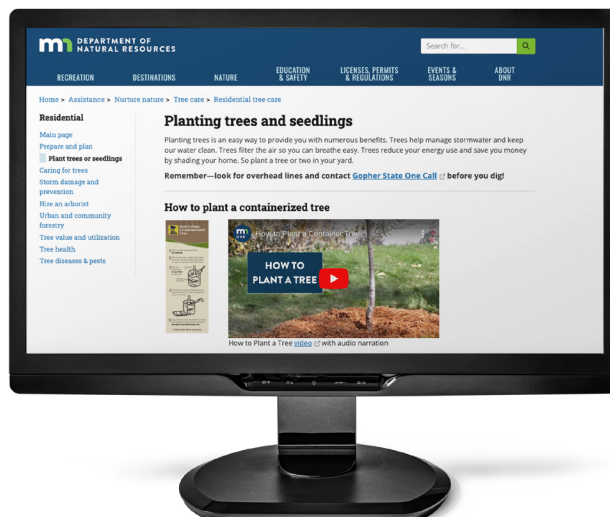
Plant trees at least 10 feet from any storm drains.

8. Fire hydrants/utility poles:

Plant small trees at least 10 feet from fire hydrants and utility boxes; medium trees should be 20 feet or further. Large trees should be planted 40 feet or further.

9. Street Lights

- Only small trees with a maximum height of 30 feet will be allowed within 20 feet of street lights.
- Medium trees should be 20 feet or further.
- Large trees should be planted 40 feet or further.



Residential Tree Care, State of Minnesota, Department of Natural Resources

TREE PLANTING GUIDELINES

In addition to the Specifications listed above the following general guidelines shall be followed when installing trees as regulated by the City Code.

1. **Prior to digging, all utilities shall be located and marked in accordance with all Federal, State, and local law.**
2. **All newly installed public trees must meet the American Standard for Nursery Stock. The trees must be free from disease, insects, and any other disfigurements.**
3. **It is suggested that trees be planted following the International Society of Arboriculture's Best Management Practices – Tree Planting.**
4. **Any planting holes drilled with an auger must have the sides of the holes “roughened” with a shovel to reduce compaction and the effects of “glazed wall”**
5. **When planting trees, all non-biodegradable material shall be removed from the tree. This includes but is not limited to:**
 - i. *All rope and twine wrapped around the ball and/or trunk*
 - ii. *The top 1/3 of burlap shall be cut and removed from the root ball*
 - iii. *The top 1/3 of any wire baskets shall be cut and removed from the root ball*

Trees will be planted a minimum of 10 feet from these hardscapes

10. Tree Spacing for Mature Tree Size

- i. *Large growth trees shall have a minimum spacing of 35 feet from center*
- ii. *Medium growth trees shall have a minimum spacing of 25 feet from center*
- iii. *Small growth trees shall have a minimum spacing of 15 feet from center*

Small Trees

Grow up to 30 feet tall
Planted in boulevards 6' in width
Planted at least 15 feet away from other trees

Medium Trees

Grow up to 40 feet tall
Planted in boulevards ranging from 7' to 12' in width
Planted at least 25 feet away from other trees

Large Trees

Grow taller than 40 feet
Planted in boulevards wider than 12' in width
Planted more than 35 feet away from other trees





4. RECOMMENDED TREES FOR PLANTING

SUGGESTED TREE SPECIES FOR HIBBING, MINNESOTA

Proper landscaping and urban tree planting are critical components of the atmosphere, livability, and ecological quality of communities. The tree species listed below have been evaluated for such factors as: size, disease and pest resistance, seed or fruit set, and availability. The following list is offered to assist tree commissions and forestry staff in selecting appropriate urban tree species. These recommended trees have been selected because of their aesthetic and functional characteristics and their ability to thrive in soil and climate conditions throughout Zone 3 on the USDA Plant Hardiness Zone Map.



Choosing the right tree or shrub for your area, State of Minnesota, Department of Natural Resources

DECIDUOUS STREET AND PARK TREES

LARGE TREES (GREATER THAN 50 FEET IN HEIGHT WHEN MATURE)

Scientific Name	Common Name	Cultivar
<i>Acer rubrum</i>	red maple	
<i>Acer saccharinum</i>	silver maple	'Silver Queen'
<i>Acer saccharum</i>	sugar maple	
<i>Betula alleghaniensis</i>	yellow birch	
<i>Betula nigra</i>	river birch	'Dura Heat' 'Heritage'
<i>Betula papyrifera</i>	paper birch	
<i>Celtis occidentalis</i>	common hackberry	'Prairie Pride'
<i>Juglans cinerea</i>	butternut	
<i>Juglans nigra</i>	black walnut	
<i>Quercus alba</i>	white oak	
<i>Quercus elipsoidalis</i>	northern pin oak	'Bailskies'
<i>Quercus macrocarpa</i>	bur oak	
<i>Quercus rubra</i>	Northern red oak	
<i>Tilia americana</i>	American linden	'Redmond'
<i>Ulmus americana</i>	American elm	'Princeton' 'Valley Forge'

MEDIUM TREES (26 TO 50 FEET IN HEIGHT WHEN MATURE)

Scientific Name	Common Name	Cultivar
<i>Gleditsia triacanthos var. inermis</i>	thornless honeylocust	'Halka' 'Harve'
<i>Ostrya virginiana</i>	Ironwood	
<i>Populus grandidentatum</i>	bigtooth aspen	
<i>Populus tremuloides</i>	quaking aspen	
<i>Prunus maackii</i>	Amur chokecherry	
<i>Sorbus decora</i>	showy mountainash	

RECOMMENDED TREES FOR PLANTING

SMALL TREES (10 TO 25 FEET IN HEIGHT WHEN MATURE)

Scientific Name	Common Name	Cultivar
<i>Amelanchier spp.</i>	Serviceberry	
<i>Carpinus caroliniana</i>	Blue Beech	
<i>Malus spp.</i>	crabapple spp.	'Coralburst' 'Jackii' 'Prairifire' 'Royalty' 'Selkirk' 'Spring Snow'
<i>Prunus nigra</i>	Canada plum	'Princess Kay'
<i>Prunus virginiana</i>	common chokecherry	'Canada Red'

CONIFEROUS PARK TREES

LARGE TREES (GREATER THAN 50 FEET IN HEIGHT WHEN MATURE)

Scientific Name	Common Name	Cultivar
<i>Abies balsamea</i>	balsam fir	
<i>Larix laricina</i>	tamarack	
<i>Picea glauca</i>	white spruce	
<i>Picea mariana</i>	black spruce	
<i>Pinus banksiana</i>	jack pine	
<i>Pinus resinosa</i>	red pine	
<i>Pinus strobus</i>	white pine	
<i>Thuja occidentalis</i>	Northern white cedar	
<i>Tsuga canadensis</i>	Canadian hemlock	

MEDIUM TREES (26 TO 50 FEET IN HEIGHT WHEN MATURE)

Scientific Name	Common Name	Cultivar
<i>Juniperus scopulorum</i>	Rocky Mountain juniper	'Blue Heaven' 'Skyrocket'
<i>Juniperus virginiana</i>	eastern redcedar	
<i>Picea mariana</i>	black spruce	

5. PROHIBITED TREES FOR PLANTING

Trees within the public right of way are an asset to the City of Hibbing and must be maintained as healthy non-hazardous trees. To promote the overall health and well-being of the urban forest, the species listed in this section are prohibited to be planted within the City maintained rights of ways and may be removed at any time by the discretion of the City. These species are recognized as noxious weeds by the Minnesota Department of Natural Resources.

1. **Tree of Heaven** (*Ailanthus altissima*)
2. **Callery Pear** (*Pyrus calleryana*) and all varieties including Bradford pear
3. **Ash species (Fraxinus)** to include all native ash species to North America
4. **Black locust** (*Robinia pseudoacacia*)
5. **European Alder** (*Alnus glutinosa*)
6. **Amur corktree** (*Phellodendron amurense*)
7. **Amur maple** (*Acer ginnala*)
8. **Tatarian maple** (*Acer tataricum*)
9. **Norway maple** (*Acer platanoides*)



Minnesota
Noxious Weed
List, State of
Minnesota,
Department of
Agriculture

6. TREE PRUNING GUIDELINES

PRUNING TREES

Pruning of trees as regulated by the City Code shall be performed following the standards and applications as outlined in this section. These practices will not be enforced upon those performing work on private property outside of the regulation set-forth by the City Code, but they may serve as an approved reference.

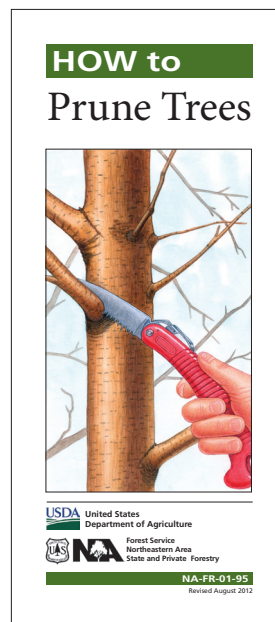
A. PRUNING STANDARDS

Outlined in this section are specific standards of practice that must be adhered to when pruning trees as regulated by the City Code.

All pruning shall adhere as a minimum practice to *ANSI A300 Part 1: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning)* as disturbed by the American National Standards Institute.

As general guidelines the following must be followed while performing City approved maintenance on City trees.

1. **All pruning tools must be kept adequately sharp to insure smooth cuts.**
2. **All tools used on the pruning or removal of trees shall be properly disinfected prior to use on any other tree or plants. Tools shall also be disinfected between pruning infected and unaffected areas in the same tree. Disinfecting can be accomplished by wiping the tools with isopropyl alcohol or 10% bleach to water solution.**
3. **No spurs, climbing irons, or spike shoes shall be permitted for use on trees, unless the tree is to be removed.**
4. **Do not prune if boring insects are flying (they are attracted to fresh wounds). Do not prune Oak trees between April 1 and August 30 unless for imminent danger or other safety concerns.**
5. **All wood pruned/removed from the tree(s) shall be cleaned up and chipped or hauled off the City's right-of-way daily. Each jobsite shall be left in "better than arrival" condition. Any holes created in turf area must be repaired by contractor.**
6. **Absolutely NO TOPPING will be permitted. Branches must be cut back using "Rule of 1/3"**



**How to Prune
Trees, USDA
Forest Service**

B. PRUNING CATEGORIES

Approved pruning categories have been established for pruning trees found within City Properties, rights of way, and other city maintained areas. The following categories are outlined for use by private residents, City employees, or City contractors working on behalf of Hibbing.

1. Light or Safety Prune shall consist of the minimum pruning necessary to correct extreme or undesirable conditions that may be hazardous to persons or property.

- i. *Remove all dead and dying branches greater than 3 inches in diameter*
- ii. *Remove all broken or loose branches lodged in the trees*
- iii. *Remove all lower limbs that constitute a threat to persons or property, including those that fall within the City clearance standards. (The City discourages removing lower limbs to the point that the trunk exceeds one- third of the height of the tree.)*

2. Medium Prune may include any or all of the specifications for Minimum pruning, in addition to the following:

- i. *Removal of all dead and dying branches*
- ii. *Remove all dead or live branch stubs from previously broken or poorly cut branches*
- iii. *Remove any live branches that interfere with the tree's structural strength and healthy development. These are to include:*
 - a. Crossed or rubbing branches
 - b. Multiple leaders in a single leader type tree
 - c. Undesirable sucker and sprout growth
 - d. Diseased or infested limbs
 - e. Excessively heavy branch ends
 - f. Multiple branches near the end of broken or stubbed limbs



A. Safety



B. Health

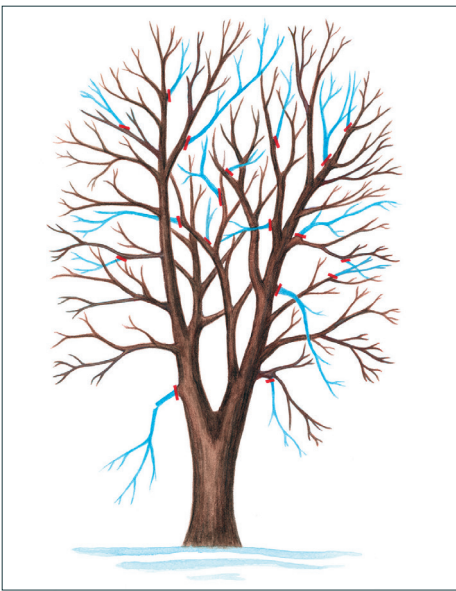


C. Aesthetics

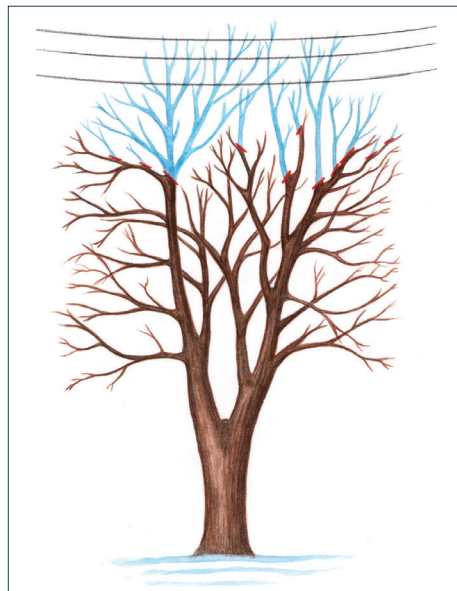
Figure 1: Reasons for Pruning.
Image taken from the **USDA Forest Service How to Prune Trees Guide.**
Artwork by Julie Janke.

3. **Heavy Prune** may include any or all of the specification for Medium pruning, in addition to the following:

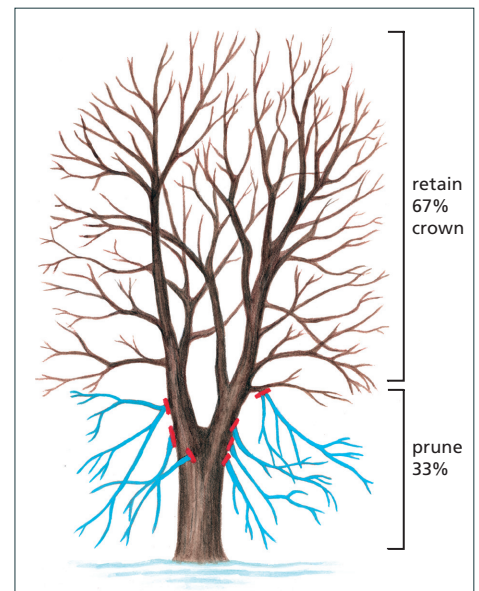
- i. *Inspection for health conditions*
- ii. *Crown thinning*
- iii. *Crown shaping*
- iv. *Crown restoration*
- v. *Up to 20% of the canopy may be removed.*



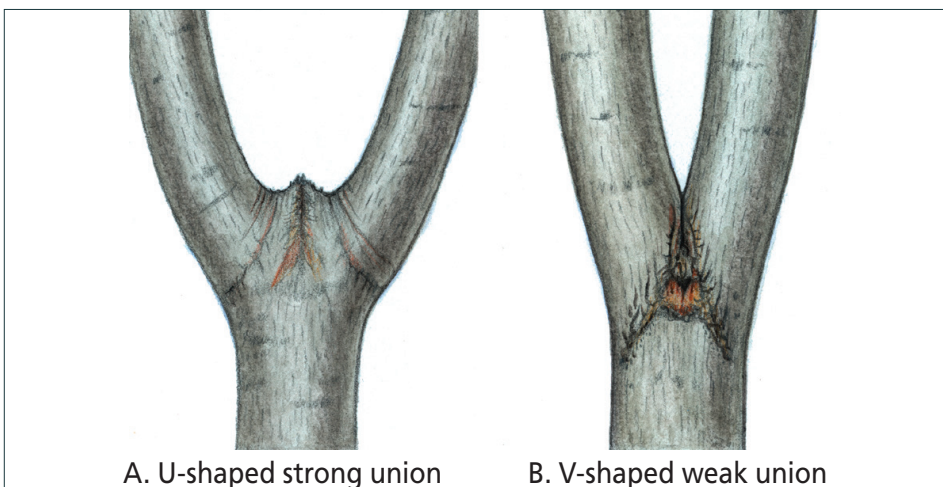
Crown Thinning.
Image taken from the USDA Forest Service How to Prune Trees Guide.
Artwork by Julie Janke.



Crown Reduction.
Image taken from the USDA Forest Service How to Prune Trees Guide.
Artwork by Julie Janke.



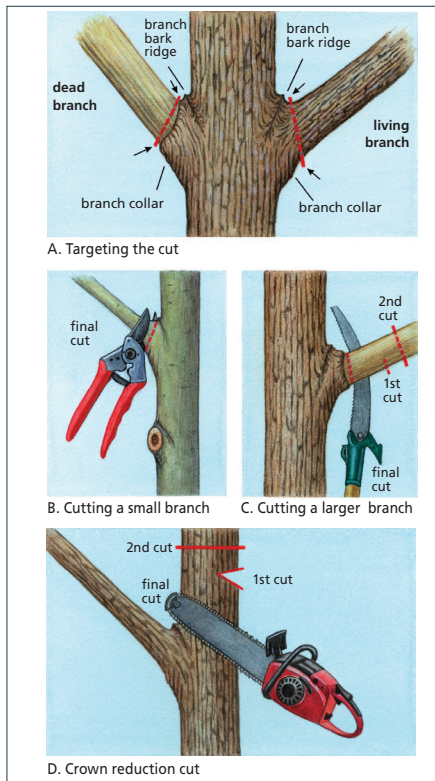
Crown Raising.
Image taken from the USDA Forest Service How to Prune Trees Guide.
Artwork by Julie Janke.



A. U-shaped strong union

B. V-shaped weak union

Types of Branch Unions.
Image taken from the USDA Forest Service How to Prune Trees Guide.
Artwork by Julie Janke.



Pruning shall be performed by using the “*Three Cut Method*”. This method is the removal of a limb using a 3-cut process to protect the branch collar. The first two cuts remove the weight of the branch. This prevents the bark from ripped away from the trunk at and below the branch collar.

1. **The first cut (marked A in figure) is an undercut about 1/4 through the branch made upward from the bottom of the branch about one or two inches farther out than the collar.**
2. **The second cut (marked B in figure) is a downward cut just outside the undercut that actually removes the entire branch, eliminating the weight of the branch before making the final natural target cut.**
3. **The third cut (marked C-D in figure) is the natural target cut. The remaining portion of stub is removed with a cut made just outside of the branch collar tissue**

Pruning Cuts.

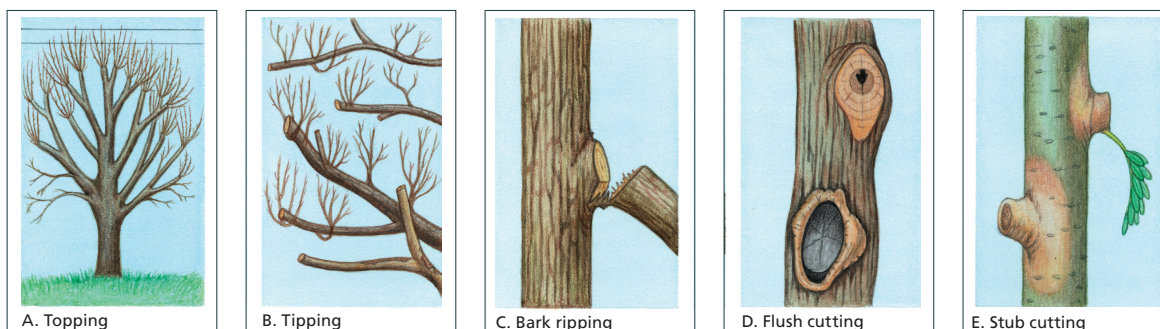
Image taken from the USDA Forest Service How to Prune Trees Guide.

Artwork by Julie Janke.

C. PROHIBITED PRACTICES

1. TOPPING or CROWN REDUCTION

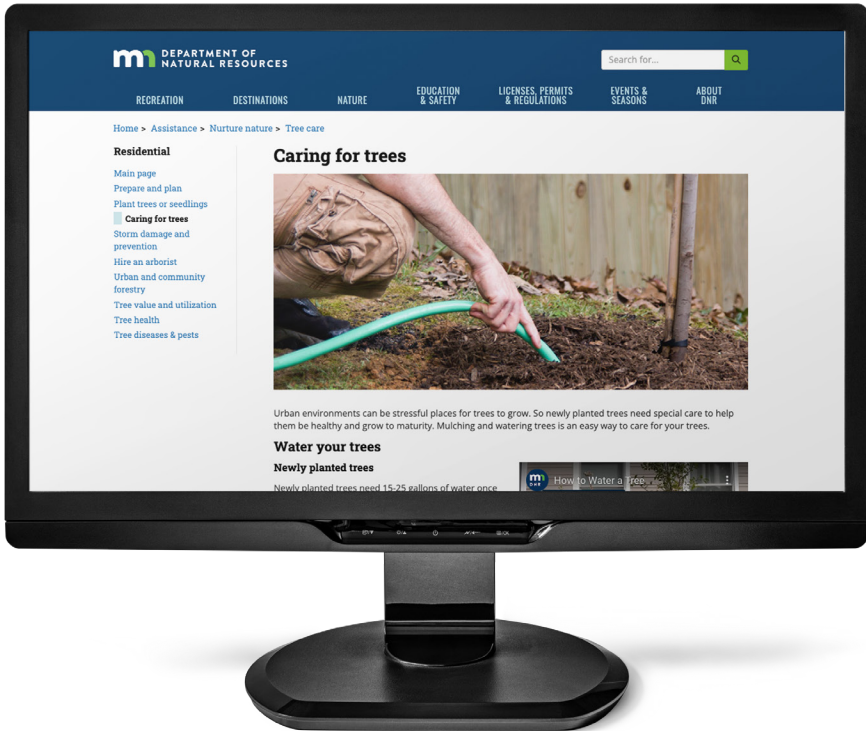
All pruning shall be completed with the “rule of 1/3”. The reduction of the crown by “topping” branches will not be permitted. The pruning of limbs shall be performed by pruning back to a lateral no less than 1/3 of the diameter of limb being pruned. Heading cuts will not be permitted.



Practices that harm trees. Image taken from the USDA Forest Service How to Prune Trees Guide. Artwork by Julie Janke.



7. RESIDENT TREE CARE INFORMATION



Caring for Trees,
State of Minnesota,
Department of
Natural Resources

MORE RESOURCES

Residential Tree Planting, State of Minnesota,
Department of Natural Resources





8. AVOIDING TREE DAMAGE DURING CONSTRUCTION

Avoiding Tree Damage During Construction

Possible ways in which existing trees may be damaged during a construction project and methods for planning and facilitating the prevention of tree damage.



The Importance of Engaging an Arborist

The process of protecting trees during construction is not always easy, but the benefits can be substantial. Larger trees provide aesthetic beauty, financial value, and benefits to the environment and quality of life.

Construction damage to trees may take many years to impact the tree and can be deadly. Small injuries accumulating over time can start a hard-to-reverse decline.

To ensure that trees will survive and thrive after construction, it is important to work with a qualified arborist from the beginning of the planning phase through to the end of the post-construction phase of the project. The sooner and more involved an arborist is in the project, the greater chance of maintaining or improving tree health and survival.

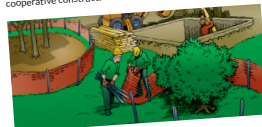
The Critical Root Zone and Tree Protection Zone

A tree's tolerance for damage depends on its age, species, condition, and other factors. One of the most important factors is the tree's root zone.

A tree's root zone can extend far from the trunk and outer branch spread. The portion of the root zone that is essential for tree health and stability is called the critical root zone.

One of the early steps in protecting trees and the critical root zone during construction is to have an arborist define a tree protection zone. This area should have specific limitations to construction activity and requirements for protection.

Finding the balance between project requirements and protection zones requires a knowledgeable arborist and a cooperative construction team.



How Construction Can Damage or Kill Trees

Root Damage

Grading, trenching, paving, altering drainage patterns, and adding or removing soil within a tree's critical root zone damages tree roots. If too many roots are damaged, the tree will be affected.

Soil Compaction

Heavy construction equipment increases soil density (compaction), slowing root growth, limiting water penetration, and decreasing oxygen needed for root survival.



Physical Injury to Trunk Crown and Root Collar

Construction equipment can break branches, tear bark, and wound the trunk. These wounds weaken the tree and allow the entry of decay-causing fungi. The base of the tree and its root collar are especially vulnerable to damage from machinery and soil or debris placed over the lower trunk.

Heat and Chemical Damage

Bark and foliage are easily damaged by the heat from running machinery and burning material. When spilled fuels and runoff from cleaning concrete delivery vehicles seep into the soil, soil chemistry changes and root growth and function are reduced.

Removal of Supporting Trees

Closely spaced trees grow as a community, supporting and protecting each other. Removing some of the trees exposes the remaining trees to sunscald stress or structural failure.

Construction Phase

During the construction phase, trees and any required protection zones must be monitored by an arborist regularly. Having access to the construction site allows the arborist to confirm the requirements are properly being followed.

Construction plans may change often and the arborist can make adjustments to protect trees as the project changes. Flexibility and establishing trust between all team members is critical to the successful preservation of large trees.

Post-Construction Phase

At the end of the project, installation of new plantings, irrigation, lighting, and planting soil are often made close to existing trees. These new changes in a tree's environment can have a devastating impact on the tree.

Despite the best tree protection plans and intentions, construction can result in unintended damage that may take years to become apparent. An arborist can develop a post-construction maintenance plan to help trees recover and adapt to their new environment.

What Is a Certified Arborist?

ISA Certified Arborists are individuals who have proven a level of knowledge in the art and science of tree care through experience and by passing a comprehensive examination developed by some of the nation's leading experts on tree care. ISA Certified Arborists must also continue their education to maintain their certification. Therefore, they are more likely to be up to date on the latest techniques in arboriculture.

Finding an Arborist

Visit TreesAreGood.org for free tools:

The "Find an Arborist" tool can help you locate an arborist in your area.

The "Verify a Credential" tool enables you to confirm whether an arborist has an ISA credential.

An Informed Consumer

The best methods to use in choosing an arborist is to educate yourself about some of the principles of tree care. Visit TreesAreGood.org and download all brochures in this series.



Avoiding Tree Damage During Construction, TreesAreGood

MORE RESOURCES

Protecting trees from construction, University of Minnesota Extension





9. MAPLE TAPPING

Tapping sugar maple in a sugar bush is an acceptable practice, while tapping urban trees is not recommended, and is prohibited in most cities with forestry departments.

The following are general guidelines for tapping maple trees with minimal harm.

1. Limit the number of tap holes per tree:

- a. Less than 10 inch diameter trees - DO NOT TAP
- b. 10-20 inch diameter tree - Only ONE tap hole per tree.
- c. Over 20 inch tree - 2 tap holes per tree.
- d. Never more than 2 tap holes on a single tree.
- e. Do not add taps to trees that already have active taps.

2. Use a new or sharpened drill bit, with wood clearing capabilities- keep drilling depth to approximately 1.5 inches deep.

3. Only use tapping spiles (spouts) that are specifically manufactured for tree tapping

4. Consider using the smaller 5/16 inch spiles.

Questica Budget Proposal

City of Hibbing, MN | January 2025

Prepared By: Justin Borrow

Prepared On: January 10th, 2025



January 10th, 2025



Sheena Mulner
Finance Director/Treasurer
City of Hibbing, MN

Dear Sheena,

Euna Solutions, inc is thrilled with the possibility of partnering with the City of Hibbing in its effort to transform the current budget development and management process. We welcome an opportunity to leverage over 27 years of success with similar sized customers across North America to help the City of Hibbing:

- Transition from labor-intensive, unsupported on premise software to an efficient, comprehensive, cloud based budgeting and forecasting software system
- Enable City staff to more actively participate in a collaborative budgeting process remotely or in the office
- Better serve the planning team, finance staff, executive leadership and the community by facilitating analytics with up-to-date information presented in actionable reports, dashboards, and queries
- Budget more effectively for Operating, personnel, manage multiple scenarios and decision packages in a single system with a consistent, user-friendly user-interface

Euna proposes a Software-as-a-Service (SaaS) subscription of our industry leading multi-user Questica Budget solution and our professional services for implementation, integration, configuration, training, and post-implementation customer support. Questica is unique in providing a fully integrated solution offered with a consistent and well-organized user-interface that is purpose-built for budgeting in the public sector.

Simply put, Questica is THE most trusted budgeting solution provider by governments in North America. Some key considerations that set Questica apart include the following:

- **Full circle, end-to-end budgeting solutions:** Questica provides a single solution with modules and functionality to address your budgeting needs from start to finish. Per your requirements, we've provided a proposal that addresses your Operating and Personnel budgeting needs.
- **More configurable, less customizations:** Questica's 25 plus years in the government budgeting space means we've seen best practices across multiple budgeting approaches at hundreds of State and Local agencies and organizations. Rather than customize the platform for each approach, Questica builds in incremental best practices as configurable options, offering Questica customers the ability to replicate those processes without re-inventing the wheel. Ultimately, this leads to quicker, less costly, and more stable implementations for long-term ROI.
- **You are in control:** Questica Budget is designed for client-side administration, with security, reports, and workflow configurable at the admin user level. We also leverage a single tenant architecture, which means that each customer has a unique and segregated instance of our software, enabling the City to choose when to apply software updates, based on your convenience and schedule.
- **Singular focus and purpose built for government:** Questica Budget is not a generic "one-size-fits-all" solution, nor is it a "Swiss army knife" that proposes to do many things half-well. Instead, Questica Budget is a point solution that excels at enabling a collaborative budgeting process for state and local governments, and public agencies. Since our inception, we have been 100% focused on crafting best-in-class budgeting solutions for the public sector.
- **Right sized for you.** Questica is big enough to support your organization, yet nimble enough to remain agile. We currently have 130+ employees, which means we have the resources needed to support large-scale, complex implementations while remaining flexible to accommodate your unique requirements. We manage all aspects of our customer implementation, from kick-off to post-implementation support, exclusively with Questica employees.

We have an unmatched track record of success in implementing our solutions for government organizations and we stand firm in our '**getting it done right the first time**' mission. We look forward to continued conversations with your finance team and to demonstrating how Questica will provide unquestionable value and return on investment to the City of Hibbing.

Sincerely,

Justin Borrow

Justin Borrow
Senior Account Executive
justin.borrow@eunasolutions.com

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WHO WE ARE

For the past 27 years, Questica has partnered with public sector organizations to enable data-driven budgeting and decision-making, while increasing data accuracy and productivity and improving stakeholder trust. These organizations are modernizing their business processes using Questica's budgeting, performance, transparency, and engagement software solutions.



Questica is consistently recognized as one of the leading and most trusted budgeting software solutions:

- 2021 – 2019** As part of Euna Solutions (previously GTY Technology), recognized by Government Technology in their annual GovTech 100 Index which showcases the 100 leading companies serving state and local governments in unique, innovative, and effective ways.
- 2019** CV Magazine's Canadian Business Awards, "Best Cloud-Based Budgeting Software Solutions Provider."
- 2018** "10 most trusted public sector solution providers" by Insights Success magazine.

The Questica team is comprised of roughly 130+ technology experts, budget professionals and business specialists who have decades of experience working with local government. We in fact represent the largest group of budget software experts in North America dedicated to serving the public sector.



Euna Solutions is a leading provider of purpose-built, cloud-based solutions that power critical administrative functions and financial operations for the public sector. Formerly GTY Technology, Euna Solutions offers easy-to-use solutions for procurement, payments, grant management, budgeting, permitting and K-12 administration that are proven to increase operational efficiency, transparency, collaboration, and compliance. Euna Solutions is a trusted partner to more than 3,300 government and public sector organizations across North America, empowering digital transformation and streamlining business processes through a relationship-centered, service-focused approach. Euna propels public sector progress. To learn more, visit www.eunasolutions.com.

Our team understands the unique challenges that government organizations face when preparing, managing, and sharing the details of a budget, and we bring our collective years of experience to the City of Hibbing project.

WHO USES QUESTICA BUDGET?

- ◆ City of Marshall, Minnesota
- ◆ Crow Wing County, Minnesota
- ◆ City of Seattle, Washington
- ◆ City of Blaine, Minnesota
- ◆ City of Plymouth, Minnesota
- ◆ City of Crystal, Minnesota
- ◆ Dodge County, Minnesota
- ◆ City of Waconia, Minnesota
- ◆ Wood County, Wisconsin
- ◆ City of La Vista, Nebraska
- ◆ Saline County, Kansas
- ◆ City of La Vista, Nebraska
- ◆ Town of Erie, Colorado
- ◆ City and County of Denver, Colorado
- ◆ City of Bellevue, Washington
- ◆ City of Lee's Summit, Missouri
- ◆ Larimer County, Colorado
- ◆ City of Southfield, Michigan
- ◆ City of Rock Springs, Wyoming
- ◆ Kansas City Area Transportation Authority (KCATA)

QUESTICA BUDGET CLIENT SUCCESS STORIES

Select a logo to learn more about how our clients are using Questica.



We have a lot more confidence in the data that's in and coming out of Questica. The security structure in Questica is much more robust and it's just a really good powerful system. Some of the things that hadn't ever worked correctly in the old system, we now have.



— **Laura Altizer**, Former Budget Performance Manager
City of High Point



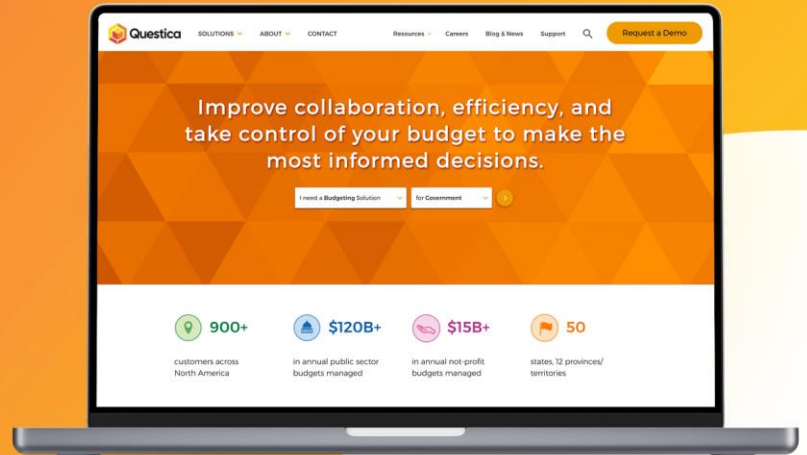
Questica's customer service and responsiveness are excellent.



— **Kelly Greunke**, Manager of Budget Operations
Office, City and County of Denver

ABOUT QUESTICA

Questica proposes a Software-as-a-Service (SaaS) subscription of our industry leading multi-user Questica Budget solution and our professional services for implementation, integration, configuration, training, and post-implementation customer support.



OUR MISSION

“We’re on a mission to simplify the complexities of public sector finance, empowering brilliance at every turn.”

—TJ Parass, Co-Founder of Questica



At Questica, our mission is to empower many to work together in a secure environment, to take control of their budget, and make informed decisions. For the past 25 years, Questica has partnered with public sector organizations to enable data-driven budgeting and decision-making, while increasing data accuracy and productivity and improving stakeholder trust. These organizations are modernizing their business processes using Questica’s budgeting, performance, transparency, and engagement software solutions.

OUR GOAL

Questica’s goal is to drive budget transformation by creating a single source of data truth. As a leader of budgeting preparation and management software since 1998, Questica partners with public sector organizations to better enable data-driven budgeting and decision-making, while increasing data accuracy, productivity and improving stakeholder trust.



Over 800 local and provincial governments, colleges, universities, K-12 schools, hospitals, healthcare facilities and non-profit organizations have eliminated spreadsheets using our budgeting, performance, transparency and engagement solutions. Across 50 states, and 12 provinces and territories, we’ve engineered custom budget solutions for public sector customers which seamlessly integrate with existing financial and other systems.

WHY CLIENTS CHOOSE US

We have an unmatched track record of success in implementing our solutions for government organizations and we stand firm in our ‘getting it done right the first time’ mission. We’ve integrated highly scalable solutions for public sector entities managing budgets of a few million, and other organizations multi-billion-dollar annual spending plans. Our team is comprised of technology experts, budget professionals and business specialists. We are passionate and friendly collaborators who enjoy teaming with our customers to find the right solution to meet their needs.



KEY BENEFITS OF QUESTICA



CLOUD-BASED

Questica Budget Suite is a cloud-based solution hosted on Questica's secure Microsoft Azure server. Cloud-based solutions enable clients to access their budget data online at any time and from any location. Hosting on single tenant architecture means your budget data is isolated from other clients', with the flexibility to choose when to upgrade to new versions of the product.

COLLABORATIVE

Budgeting is a people-centric process that requires communication and teamwork. The Questica Budget Suite is a collaborative platform that allows your budget managers to work with departments to prepare and manage budgets efficiently. We streamline budget access for financial and non-financial contributors; the result improves communication and expedites decision-making. This is particularly important if staff work remotely.



FUNCTIONALITY

Questica Budget is feature-rich and provides powerful functionality for greater control and visibility into budgets. With the tools to calculate, analyze, forecast, report on, and develop what-if scenarios for budgets, users gain deeper financial insights while creating budgets that last. With seamless integration for flow of data to the existing ERP, users can build budgets based on accurate, real-time financial information.



CONFIGURABILITY

Configurability means fewer requirements for customization. This will save time, resources, and complexity both in the initial implementation, and through ongoing use as upgrades and enhancements are released. The bottom line is a significantly lower cost of ownership over your lifetime use of our product.

FLEXIBILITY

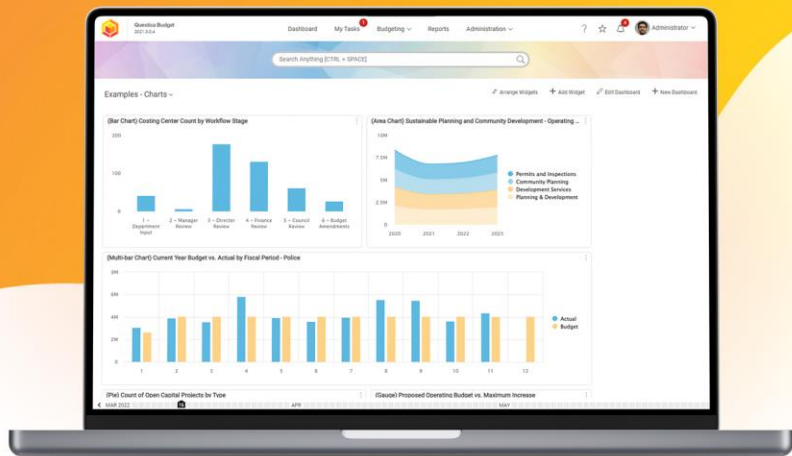
COVID-19 continues to challenge communities, heightening the need for local governments to make decisions quickly and accurately. Our product offers the capacity for multiple scenario models, for governments preparing for the future, and pivoting as plans change. When your plans shift, you don't want to be limited by manual data entry, spreadsheets, or an inflexible legacy system. Questica Budget adapts with you, adjusting to your new budget trajectory to reallocate funds or evaluate potential cost savings.



INNOVATION

Innovation at Questica is driven by feedback on existing product features, and the anticipated need for new features that accommodate new challenges. Questica's product strategy is based on feedback from our clients, all public sector organizations, and serves as a guiding star that directs our focus. From user forums to early adopter groups, Questica clients are with us every step of the way as we develop new features or improve the functionality of our product Suite.

QUESTICA BUDGET



OVERVIEW

The Questica Budget Suite is an end-to-end budgeting system that will help you manage the budgeting process with greater efficiency and accuracy. We are confident that our budget system is the right application for your needs, providing powerful features that support ongoing budget development and reveal key budget insights that may have been hidden in a spreadsheet.

OPERATING MODULE

Questica Budget is designed for non-finance department and non-technical users to prepare and maintain their budgets directly in the system. Budgets can be categorized on an organizational basis where cost centers roll-up into their respective departments and divisions and can also be categorized on a fund basis where cost centers roll-up into their particular funds and fund categories. Cost centers can easily be moved from one department and division to another, as well as from one fund to the next. Additional hierarchical structures can be configured as needed.

A screenshot of the Questica Budget Suite interface showing the 'Account Summary' table. The table displays budget data for various cost centers across multiple years (2019 Actual, 2019 Budget, 2019 Variance, 2020 Actual, 2020 Budget, 2020 Variance, 2021 Actual, 2021 Budget, 2021 Variance, 2022 Actual, 2022 Budget, 2022 Variance). The table is organized into sections for 'GL Account Type Revenues' and 'GL Account Type Expenses'. The 'GL Account Type Revenues' section includes items like '3006 - User Fees - Storage', '3274 - Miscellaneous Fees', and '3922 - Financial Stability Reserve'. The 'GL Account Type Expenses' section includes items like '4102 - Benefits', '4008 - Salaries - Pump Technician', '4024 - Retirement', '9211 - WOT Regular Time', '9201 - WOT Outside Purchases', '9111 - WOT Inside Equipment Repairs', '4070 - Overtime', '4014 - Salaries - Outside', '4119 - Conferences/Travel', '4358 - Cable', '4366 - Water', '4072 - Insurance', '4021 - Repairs and Maintenance', '9204 - Work Order Resources', '4024 - Recovery', '4014 - Miscellaneous', '4084 - Telecommunications', '4154 - Recovery - WOT', and '4204 - Laundry'. The table also includes a 'Promote' button in the top right corner.

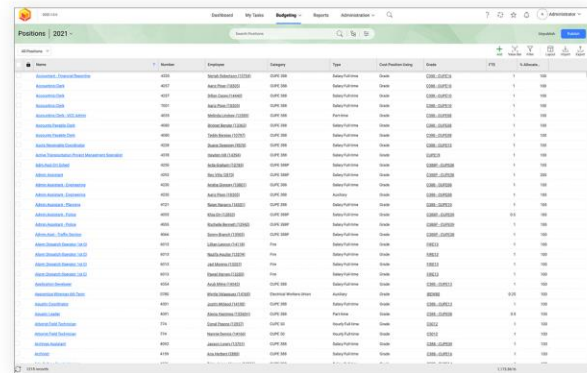
Sample Costing Center Information

Role-based security ensures that users have streamlined access to only the data and functions that they need. Cost center information can be maintained, and comments, notes, and attachments (e.g., scans, documents, or links) may be added to the budget or even to the detailed line items. Budgets can be managed at a monthly, quarterly, annual, or biennial basis. Grids are configurable and may consist of historical years, current year, and future forecast years.

PERSONNEL PLANNING & BUDGETING MODULE

Questica Budget's Personnel Planning & Budgeting module performs like a calculator with advanced features, enabling accurate modeling and forecasting all costs associated with positions (filled and vacant) to accommodate the workforce budget. Step or pay increases, cost of living adjustments, new benefits, and other employee-related costs are all accounted for.

Each position is a record of all the information required to calculate base wages, as well as overhead costs such as benefits, allowances, and employer taxes; each is attributed to the appropriate GL Account (object code). Positions paid according to a union contract are assigned a pay grade and step, calculating pay from the pay scale for that contract. Alternatively, a position's base wage can be entered as a distinct salary value for each position, or as a percentile of the range configured for a selected grade.



Position ID	Position Name	Pay Grade	Step	Base Wage	Benefits	Taxes
4001	Police Officer	1000	1	\$45,000.00	\$1,200.00	\$1,200.00
4002	Police Officer	1000	2	\$46,000.00	\$1,200.00	\$1,200.00
4003	Police Officer	1000	3	\$47,000.00	\$1,200.00	\$1,200.00
4004	Police Officer	1000	4	\$48,000.00	\$1,200.00	\$1,200.00
4005	Police Officer	1000	5	\$49,000.00	\$1,200.00	\$1,200.00
4006	Police Officer	1000	6	\$50,000.00	\$1,200.00	\$1,200.00
4007	Police Officer	1000	7	\$51,000.00	\$1,200.00	\$1,200.00
4008	Police Officer	1000	8	\$52,000.00	\$1,200.00	\$1,200.00
4009	Police Officer	1000	9	\$53,000.00	\$1,200.00	\$1,200.00
4010	Police Officer	1000	10	\$54,000.00	\$1,200.00	\$1,200.00

Sample Annual Costing Positions



Description	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GL Account Type: Expenses / Expenditure	(\$4,978.09)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)	(\$4,981.91)
Base Wage	49,521.12	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76	4,126.76
FICA - Social Security (OASDI)	3,070.31	255.86	255.86	255.86	255.86	255.86	255.86	255.86	255.86	255.86	255.86	255.86	255.86
FICA - Medicare	716.06	59.84	59.84	59.84	59.84	59.84	59.84	59.84	59.84	59.84	59.84	59.84	59.84
Workers' Compensation	1,411.35	117.61	117.61	117.61	117.61	117.61	117.61	117.61	117.61	117.61	117.61	117.61	117.61
Life Insurance	77.25	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44	6.44
Dental and Vision	180.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00

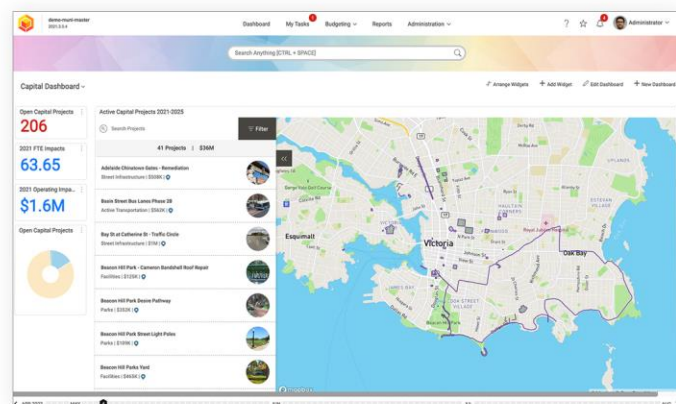
Sample Monthly Costing – Single Position

CAPITAL MODULE

Questica Budget's Capital module simplifies and centralizes the process of capital budget planning and execution. Users can import prior years' budget data (actual costs and budget values) into Questica Budget, and create multi-year capital projects where they can identify their expenditures and funding sources, and make adjustments as they prepare their budgets.

Users can construct their capital projects on an annual, quarterly, or monthly basis, enter narrations or explanations for their requests and categorize their projects based on different criteria such as tangible capital assets, fund(s), or project status. Requests get escalated through the configurable workflow system integrated within Questica Budget. Project ranking can also be administered according to user-defined criteria, and multiple project scenarios can be created for each project.

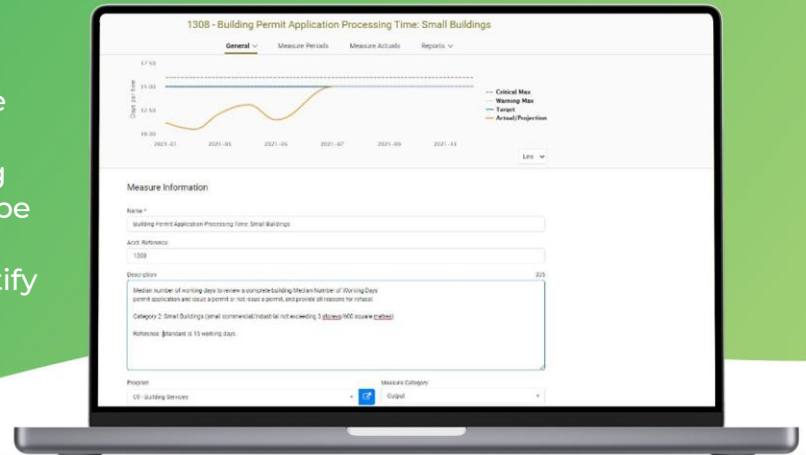
The Capital module also gives the ability to manage budgeting activities related to grant programs of varying complexities. The "type" field on projects is commonly used to indicate that the project is to be treated as a grant.



Sample Capital Improvement Plan Transparency – Interactive Visual Map

PERFORMANCE MODULE

Questica Budget's Performance module allows users to establish objectives and track budget progress toward achieving these objectives over time. Targets can be identified by intended outcome, where warning and critical threshold limits notify users whenever budget performance requires attention.



Sample Performance Dashboard

Measures, whether financial or statistical, may reference existing values already in the system, or may otherwise be manually entered. In either case, these measures can also be calculated based on other measures. They can be consolidated under various programs and can also be incorporated into an Organizational Scorecard. Responsibilities can be established for the various Programs and Measures, inclusive of due date and automated reminders, to facilitate workflow processing.

Questica Budget's Performance module fully integrates with the rest of the Questica Budget Suite and leverages the Questica Dashboard platform. This functionality helps improve performance, encourages innovation within your team, encourages cost-effective practices, and delivers an enhanced level of transparency and accountability.



SPECIAL FEATURES

STATISTICAL LEDGER

The Questica Budget Statistical Ledger allows budget staff to plan and track numbers other than spending dollars (e.g., hours worked, number of clients, resource utilization).

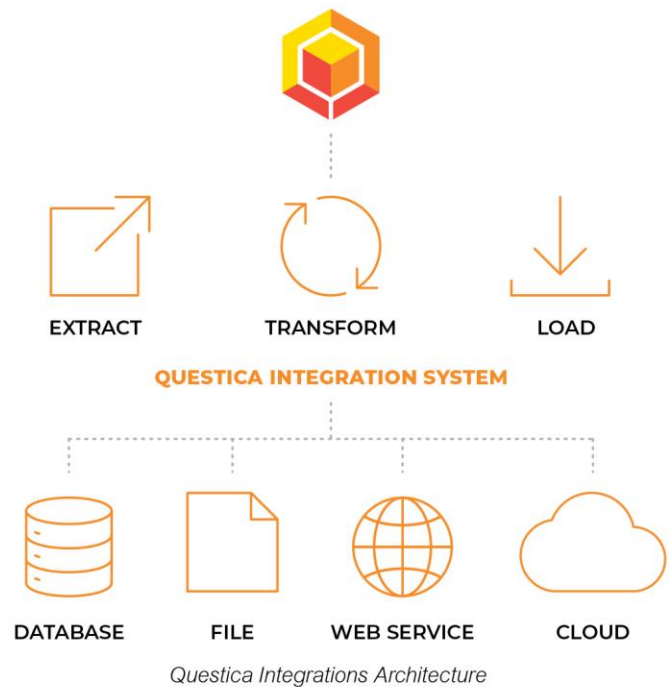
Staff can create a budget for any numeric data and work with it very much like financial budgets. This can be very useful for planning and tracking activities and outputs, and the data can be used as a guideline for building budgets. Statistical Ledger data can also be a component of a performance measurement plan.

QUESTICA INTEGRATION SYSTEM (QIS)

Questica Budget will integrate with your City's financial system via its proprietary Questica Integration System (QIS). QIS is a specialized, database-independent tool developed to exchange data between Questica Budget and external systems on a scheduled or as-needed basis. QIS also simplifies the integration process and reduces the time required to integrate Questica Budget with other customer systems or data warehouses.

QIS provides a highly configurable framework for importing or exporting budget related or non-financial data with existing and future external data sources, using API (Application Programming Interface) and ETL (Extract, Transform and Load) integration methods to ensure the budgeting solution always reflects updated data.

The diagram on the right illustrates the Questica Integration System. The Questica Budget application is represented by the symbol at the top, with the QIS system in the middle, and various customer systems on the bottom. When data is being extracted from an external system and moved to Questica Budget, data would be moving from the bottom to the top of the diagram. On the other hand, when extracting data from Questica Budget to insert into an external system, data moves from the top to bottom.



The process can be scheduled or run on-demand by an authorized Questica user. Monitoring of scheduled integration tasks can be performed in many ways, but the most popular method is exception or failure notification, which can be configured to email one or more people. As detailed below, implementations can include three distinct interface points—two on the financial side and one on the HR/personnel side, and sometimes a fourth:

Actual cost integration	Actual costs are automatically imported into Questica Budget from the Financial System. This can be set up to occur at a variety of timeframes, but most often this automated process of copying the actual costs from the Financial System into the Questica Budget system occurs on a nightly basis. This allows users to see Budget vs. Actuals that are no more than 24 hours old.
Movement upon approval	When the budget is approved/adopted, it is typically moved from Questica Budget into the Financial System, the system of record.
Salary sync	The process for loading HR/payroll data into the Questica Budget system is via our 'Salaries Synchronization Tool'. This provides a mechanism to populate our salary and benefit engine with data from the city's HR records system. The integration can be run on demand, whenever updated personnel data is needed in the budget system.
Budget adjustments (if required)	As adjustments are made throughout the year (e.g., transfers, new budget requests, etc.), these changes can also be synchronized between Questica Budget and the Financial System so that budget revisions are always current in both systems.

ALLOCATIONS

The Allocations tool within Questica Budget allows dollars to be moved throughout the Operating and Capital budget in a structured and balanced fashion. The functionality supports complex arrangements of allocations between many budget elements.

An employee's cost may, for example, be split between multiple programs or cost centers, or Internal Service Provider budgets can be managed. In the latter example, an IT budget that is developed in detail like any other costing center may get allocated to other budget elements, perhaps using a cost driver such as 'number of computers' as the distribution basis. Once the allocation has been run, each recipient Costing Center will have a Destination Budget Line representing a portion of IT expenses, and the IT Costing Center budget will subsequently have a Recovery Budget Line that effectively zeroes out their allocated budget.

ADVANCED CALCULATION ENGINE (ACE)

Questica Budget's Advanced Calculation Engine is a powerful feature that brings familiar Excel functions into Questica Budget and allows users to create reusable calculation packages/models. The tool is simple to use and is designed to keep users working inside Questica Budget.

In addition to containing familiar Excel functions, there are also budget-specific functions documented in an integrated library, enabling users to reference data based on its qualities rather than by specific location. For example, a function can be performed on the budget values for a particular account code or using the actuals from a certain statistical account. Functions can also be period-based, enabling the option to reference data from past months or years, or reference a range of data such as the average from the past three years for a given month or quarter.

CHANGE REQUESTS/DECISION PACKAGES

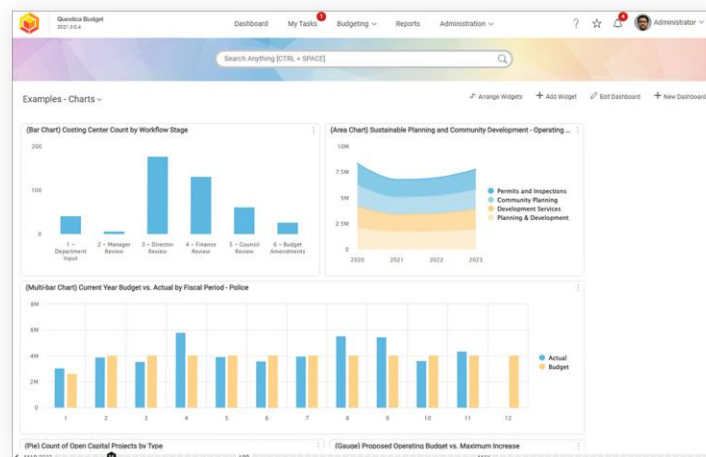
Questica Budget's Change Requests feature, also referred to as Budget Adjustments, Budget Modifications or Decision Packages, allow authorized users to process pre- and post-approval budget changes, both one-time and recurring, using a controlled process and workflow-based approval. These requests can be created individually, or they can be bundled together and treated apart from the general budget with their own dedicated approval process. Questica Budget does this in a controlled environment so that users can only submit, change, and see budget requests that are appropriate for them.

ADVANCED SEARCHES

Questica Budget's Advanced Search function is an intuitive user-facing feature that allows non-technical users to compose detailed searches using a variety of comparators and the ability to infinitely nest AND/OR groupings. Essentially, the Advanced Search functionality allows authorized users to perform sophisticated and highly dynamic data analytics and ad-hoc queries based on multiple dimensions, including specific criteria or descriptive words. This robust and powerful tool allows complex queries to be easily built up—one line at a time.

REPORTING AND DASHBOARDS

Questica Budget's reporting and analytics capabilities are delivered as part of its core software feature set. The system includes pre-built ad-hoc data views (i.e., queries), advanced “smart reports” that combine rows and columns of numbers with graphics (e.g., pie chart), 80+ pre-built ready-to-use reports, each with a variety of input selections, and pre-built dashboards with rich interactive visualizations of information that can be utilized to create actionable at-a-glance displays—all of which include data security to ensure users only see what they're allowed to see. Standard reports leverage Microsoft's SQL Server Reporting Services (SSRS) and can be copied and modified by budget staff without requiring programming skills.



Sample Full-Featured Dashboard

QUESTICA'S DIGITAL BUDGET BOOK SOLUTION



Questica Digital Budget Book sample screenshot

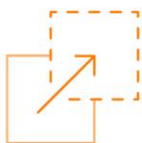
Budget Book

Questica's Budget Book Studio (BBS) solution is a user-friendly and comprehensive document management and financial reporting tool that enables our customers to create, collaborate, edit, approve, and publish an annual budget document with ease – eliminating the headaches often associated with managing multiple spreadsheets, version control issues, manual updates, and duplicating content.

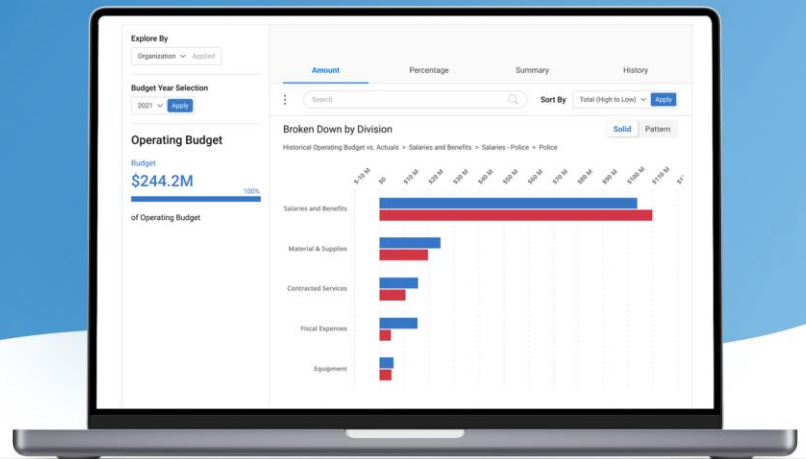
BBS is directly integrated with the Questica Budget module, allowing budget information to be seamlessly refreshed on-demand. Paired with our Questica OpenBook interactive online transparency solution, customers can provide the community with a complete understanding of the budget that is presented in a manner geared for a non-financial audience.

Key aspects of Questica's DBB include:

- ◆ GFOA compliant—meets all standards for GFOA Award Qualifying Book Production
- ◆ Automation—automates the creation of fund summary pages, charts, tables, and more
- ◆ Templates—creates new pages quickly with easy-to-use templates
- ◆ Multiple Formats—produces budget books in digital (online) and PDF (printed) formats
- ◆ Charts and Graphs—allows automatic updates of embedded narratives and smart charts



OPENBOOK TRANSPARENCY AND DATA VISUALIZATIONS

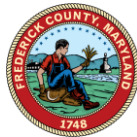


OpenBook - Sample Operating Budget: Interactive Chart

Questica Budget's OpenBook tool fosters transparency for public agencies, enabling the information to be visualized in an array of charts, tables, bars, graphs, and GIS mapping for Capital planning. Like all Questica tools, OpenBook is intuitive and easy-to-learn. With descriptive text, informational pop-ups, filtering and sorting capabilities, diving in and discovering information is made easy for all stakeholders.

OPENBOOK CUSTOMER EXAMPLES

Select a logo to visit our customers' OpenBook websites.



SEE OUR SOFTWARE SOLUTIONS IN ACTION

Learn how Questica and our software solutions can help your organization today. Our team will reach out to determine how we can help you increase efficiencies for your budgeting process.

GOVERNMENT PROCUREMENT OPTIONS

Today's modern governments have recognized the traditional methods of procuring software through Request for Proposal are expensive, time consuming, and often very limiting in scope. An increasing number of customers have contracted with Questica utilizing the methods outlined below.

1. *Take advantage of contract vehicles and cooperative purchasing agreements.* Contract vehicles are commonly relied upon as the most efficient way for governments to buy goods and services. Questica is listed on many cooperative purchasing contracts, such as DIR, Carahsoft, SHI, NASPO, BuyBoard, Sourcewell, and Omnia. These contracts include several vendors and were established via a competitive bidding process, much like an RFP cycle.
2. *"Sole source."* This method refers to opportunities where Questica is the only provider able to deliver the set of solutions that a government entity is looking for. This can justify the avoidance of an RFP, since there are simply no other vendors in the market who can deliver the necessary goods or services.
3. *Piggyback contracts:* To satisfy procurement policy, many Questica customers choose to piggyback from contracts already vetted by a competitive RFP process of similar size and scope. For example, The City of Spokane utilized a piggyback agreement (i.e., cooperative agreement statement) with City of Seattle to purchase Questica. Questica is open to helping The City explore best fit piggyback options with current customers.
4. *Emergency Funding:* State and local governments need the right tools to remain flexible and make critical data driven decisions. Several Questica customers, such as Imperial County, CA have invoked emergency purchasing measures to fund the purchase of Questica. The funding from the American Rescue Plan Act provides an opportunity for state and local governments to purchase new technology in support of expanding services to citizens and improving responsiveness.

Specifically, sections 602(c)(1)(C) and 603(c)(1)(C) of the Act provide recipients with broad latitude to use the Fiscal Recovery Funds for the provision of government services. Questica Budget now includes a built-in calculator which automates the lost revenue calculation formula as outlined in the guidance. Included below is sample verbiage that the City could utilize to justify purchase of Questica Budget using ARPA funds.

American Rescue Plan Justification

- ◆ Whereas COVID-19 and the required response by the (name of local government) had a significant impact on the budget of (name of local government), and
- ◆ Whereas: expenditures for essential public health and safety workers were higher than budgeted to ensure public health welfare and safety concerns; and
- ◆ Whereas: remote work of non-essential (name of local government) staff resulting from stay-at-home orders and legislated social distancing in the workplace revealed the need for upgrading IT software and infrastructure; and
- ◆ Whereas: ____ (name revenue source; e.g. sales tax, hotel tax, etc.) revenues in the (insert most full fiscal year) were reduced due to the economic impact of COVID-19 causing a budgeting shortfall, and
- ◆ Whereas: the (name of local government) needs to procure budgeting and performance management software that will enhance its ability to respond to the COVID-19 emergency and
- ◆ Whereas: the budgeting and performance management software will increase efficiency, improve constituent services, and enable remote work, and
- ◆ Whereas: the revenues to procure such software are not available due to the economic impacts of COVID-19 on the (name of local government) revenues.
- ◆ Now therefore be it resolved that the (name of local government) hereby declare that the use of American Rescue Plan Act funds in the amount of \$_____ be used to procure....

Should this method be the preferred procurement option, we are more than happy to facilitate reference conversation.



Questica Budget Price Quote

Prepared for:
Sheena Mulner

Finance Director/Treasurer
City of Hibbing, MN

January 10th 2025

Prepared by:
Justin Borrow
Euna Solutions, inc

This proposal is subject to a review of your Chart of Accounts and a review of the Scope of Work.



QUESTICA BUDGET PRICE QUOTE

Quotation ID#: City of Hibbing – January 10th 2025

Description	Qty.	Total
Questica Budget Framework – All Modules		
Operating License Seats	Unlimited	
Personnel Planning & Budgeting License Seats	Unlimited	
Capital License Seats	Not Included	
Unlimited Read-Only Licenses	Included	
Performance Measures	Included	
Allocations	Included	
Statistical Ledger	Included	
OpenBook Transparency	Included	
Budget Book Studio	Included	
Questica Year 1 Software Subscription (including software, maintenance, support, and hosting)	29,500.00	\$24,000.00
Professional Services (Per Statement of Work)		
Planning & Analysis	Included	
Installation	Included	
Data Load & Verify	Included	
Accounting Integration	Included	
Training	Included	
Project Management	Included	
Operating Integrations with Tyler Incode 9: Actuals Import, Budget Export	Included	
Budget Book Studio Professional Services	Included	
Total Questica Professional Services: (one-time fee)	\$14,500.00	\$6,600.00
GRAND TOTAL (Year 1)	\$44,000.00	\$30,600.00

PRICING NOTES

Quotation ID#: City of Hibbing – January 10th 2025

Pricing valid through: March 14th, 2025

- ◆ Questica annual subscription is based on a 3-year term
- ◆ Questica will apply a 3% inflationary increase beginning in year 2

Questica Annual Fees

- Year 1 is \$30,600.00 (SaaS and Professional Services)
- Year 2 is \$24,720.00 (includes 3% increase)
- Year 3 is \$25,461.60 (includes 3% increase)
- Total 3 Year contract is \$80,781.60

Above pricing in US dollars. Applicable Taxes Extra. Pricing is not applicable in response to a formal RFP Process.

Terms of Payment

- ◆ **Software:**
 - 100% upon Contract Effective Date (Net 30)
 - Year 2 due 365 days from Contract Effective Date and annually thereafter
- ◆ **Professional Services:**
 - Due 100% upon Contract Effective Date (Net 30)

SUMMARY

Questica greatly appreciates City of Hibbing's interest in learning more about our Company and our software. As stated, we welcome an opportunity to leverage our more than 27 years of success in public sector budgeting, to help the City improve the efficiency and effectiveness of its budgeting process and to provide a technology solution that optimizes and supports the budget formulation and management cycle.

We are happy to address questions and engage in more detailed conversations to showcase how our software fits your requirements, our implementation approach, and the support our company provides. I would also be happy to facilitate introductions to current clients and would encourage you to connect with your peers to understand why they decided to partner with Questica - the most trusted solution for government organizations.