

VILLAGE OF LAKE BLUFF
SUSTAINABILITY AND COMMUNITY ENHANCEMENT AD HOC COMMITTEE
REGULAR MEETING

Tuesday, July 16, 2024 - 7:00 P.M.

Members of the public may view and participate in the meeting via:

- In person at the Village Hall Board Room, 40 E. Center Ave.
- Online: lakebluff.org/VirtualSEC
- Dial-in: [\(312\) 626-6799](tel:3126266799). Enter meeting ID [824 8670 7053](https://lakebluff.org/Channel19). Press # when prompted for a Participant ID.
- The meeting will be live-streamed at lakebluff.org/Channel19

AGENDA

1. Call To Order and Roll Call
2. Consideration of the June 18, 2024 Regular Meeting Minutes
3. Non-Agenda Items and Visitors (Public Comment)
The Chair will allocate fifteen (15) minutes during this item for those individuals who would like the opportunity to address the Sustainability and Community Enhancement Ad Hoc Committee on any matter not listed on the agenda. Each person addressing the Sustainability and Community Enhancement Ad Hoc Committee is asked to limit their comments to a maximum of five (5) minutes.
4. General Business
The Sustainability and Community Enhancement Ad Hoc Committee will entertain requests from anyone present to modify the order of business to be conducted.
 - a) Update on the Village's Tree Inventory and Analysis
 - b) Continued Discussion Regarding Draft Lighting Ordinance
5. Village Staff Report
6. Member's Report
7. Chair's Report
8. Adjournment

The Village of Lake Bluff is subject to the requirements of the Americans with Disabilities Act of 1990. Individuals with disabilities who plan to attend this meeting and who require certain accommodations in order to allow them to observe and/or participate in this meeting, or who have questions regarding accessibility of the meeting or the facilities, are requested to contact Clara Gable at (847) 283-6889 or TDD number 234-2153 promptly to allow the Village of Lake Bluff to make reasonable accommodations.

**VILLAGE OF LAKE BLUFF
SUSTAINABILITY AND COMMUNITY ENHANCEMENT AD HOC COMMITTEE
REGULAR MEETING**

June 18, 2024

DRAFT MINUTES

1. Call to Order & Roll Call

The meeting of the Sustainability and Community Enhancement Ad Hoc Committee (SEC) of the Village of Lake Bluff was called to order on Tuesday, June 18 at 7:01 pm.

The following members were present:

Members: Michael Buoscio
McCamie Cole
Marietta Hance
Sophia Twichell
Brian Rener, Chair

Absent: Alexa Richer

Also Present: Clara Gable, Assistant to the Village Administrator (AVA)
Lauren Chermak, Administrative Intern

2. Consideration of the April 16, 2024 Regular Meeting Minutes

Member Twichell submitted edits to the minutes prior to the meeting, concerning a few grammar changes.

A motion was made by Member Cole and seconded by Member Twichell to approve the minutes as amended.

3. Non-Agenda Items and Visitors (Public Comment)

There were no non-agenda items.

4. General Business

a. Discussion Regarding Draft Lighting Ordinance

Chair Rener explained the SEC had discussed the draft outdoor lighting ordinance at previous meetings. Chair Rener has since met with Village staff to incorporate some of the edits received from the lighting consultant. He stated there are still a few open items highlighted in red and is looking for the SEC's comments at this meeting. Chair Rener offered they are not looking to make this ordinance final as of tonight, but this will be a part of a series of discussions and they can reach out to the consultant again if more research is needed.

The SEC began to review the draft ordinance page by page. The SEC started reviewing the purpose of the draft ordinance.

Purpose:

Chair Rener outlined the information in the purpose section of the draft ordinance. He highlighted the objectives of the ordinance, promoting cost effective lighting to conserve energy, the 5 DarkSky International lighting principles and prescribed lighting controls.

Member Cole suggested the language in the second bullet point “protect residents” may be too strong of language and suggested something less intense such as “limit”. Additionally, Member Cole added they should consider moving the bullet concerning more sustainable options higher on the bulleted list as they are the SEC.

Member Twichell asked if the SEC should add specific colors of lighting that are best for wildlife; AVA Gable noted this is included later in the current draft.

Definitions and Regulated Activities:

Chair Rener moved to the definitions section of the ordinance and as there were no comments on this specific section, he moved to the regulated activities section of the ordinance. Chair Rener commented that this section is written very forward thinking as it incorporates both residential and nonresidential, which a lot of ordinances do not.

Member Twichell asked if having some form of a purpose statement emphasizing DarkSky and why this ordinance is coming out of the SEC. Chair Rener noted that the 5 DarkSky principles aim to give context and a discussion ensued.

Chair Rener outlined the regulations for outdoor lighting controls.

Member Cole asked about the differences in luminaire standards based on zoning districts. The SEC discussed how there could be one definition for commercial and one for residential.

Member Buoscio asked if the SEC could add a translation for the definition of lumen that people could better recognize. Chair Rener commented that lumens and foot candles are two terms used interchangeable. A conversation continued and the SEC agreed that language could be added to state that lumen ratings are typically featured on purchased light fixtures.

Member Buoscio asked what the maximum building height is in the Village, specifically if it was 20 feet. AVA Gable stated this varies based on the district but that it is taller than that. A discussion continued about the maximum height residents should be allowed to hang lights. The SEC continued discussing how best to regulate landscape lighting. Chair Rener emphasized it is important to be careful about issuing an ordinance that will make residents pull off their current lighting fixtures. Member Hance noted importance of public education for residents and contractors.

Luminaire Standards:

Chair Rener moved to discuss color temperature of outdoor lighting. He stated the accepted standard for lighting temperature is 3000K, but that this ordinance can be updated over time. Member Twichell asked what the conventional review period is for these types of ordinances. Chair Rener offered every 2-3 years may be likely and a discussion ensued.

Chair Rener moved to cover architectural façade lighting and outlined what is currently written in this section. Member Twichell asked if this was referring to mounted lighting on a façade that is going up toward a house. Chair Rener answered yes.

The SEC next covered prohibited lighting and discussed how holiday lighting should be addressed and exempted as a part of this lighting ordinance. A conversation on exempt luminaires and holiday lighting continued.

Member Twichell asked where lighting that projects onto homes fits into this category. Chair Rener replied this is a part of landscape lighting and it would not be allowed to shoot upwards. Member Twichell and Chair Rener discussed how best to word this requirement.

Member Cole felt ornamental lighting could be combined with landscape lighting and possibly strings of lights based on how these terms are defined. AVA Gable added that these lighting fixtures could be considered exempt if they meet certain requirements. A discussion continued on defining exempt lighting and categorizing outdoor lighting.

The SEC moved to further discuss lighting controls. Chair Rener shared how lighting controls should conform to the Villages latest adopted version of the International Energy Code with Illinois Amendments. Chair Rener offered that at the next meeting they can provide a summary of the current outdoor lighting control requirements in the packet.

Member Cole asked why lighting controls were in the exempt luminaries' section. Chair Rener agreed and AVA Gable offered this section should actually be section "F". Member Cole suggested a few other organizational edits that can also be made to the draft ordinance.

Site Standards:

Chair Rener discussed establishing a potential cap for lumens on a site rather than individual lighting. Member Cole asked how neighbors will be able to measure this. Member Buoscio added this may fall into more public education. A conversation continued.

Chair Rener moved to discuss light trespassing at property lines and the SEC questioned how this would be enforced. Chair Rener mentioned that street lighting is typically controlled by Com-Ed or the state of Illinois and is not something the Village can control.

Chair Rener reviewed the deviation process and the criteria these standards are based on, noting that the trickiest part of this section is the grandfathering. Chair Rener stated that the intention is to gradually eliminate inappropriate or substandard lighting throughout the Village in a manner that minimizes unnecessary cost to the property owners and realizes reasonable value from the

existing light systems. Chair Renner noted as of right now, the date for compliance is 10 years and opened this point up for discussion.

Member Buoscio asked why this could not be sooner as residents may not try to adapt to meet these standards for 9 years. After some discussion, the SEC liked the idea of lessening the amount of years.

The SEC moved to discuss lighting incentives to become compliant and the potential discounts that could be put in place for early compliance. Additionally, they agreed if a residential property is conducting a major project that all of the lighting needs to be updated to become compliant with this draft ordinance.

Chair Renner suggested the SEC take a look at the lighting zone document. Chair Renner asked if the SEC should include a section on lighting for sport or recreational areas and there seemed to be a positive consensus. AVA Gable noted that this category could be considered exempt if it meets certain requirements and controls.

Chair Renner noted the next section outlines lighting controls for signs. Member Twichell asked if the lighting consultant gave any recommendations for this section and AVA Gable answered that the language included in this draft were his recommendations.

Chair Renner noted the need to continue developing this ordinance.

Member Twichell stated that to then answer some of the correspondences they have received from residents on this matter, the Village does not typically have jurisdiction over streetlights as these are often under the control of Com-Ed. The SEC continued to discuss coach lighting as referenced in a resident letter along with ways to promote community engagement in getting residents to turn their lights off.

5. Village Staff Report

AVA Gable shared that while the SEC did not have an official meeting last month, they did have a presentation on insects, as was the theme of the year for the Illinois Audubon Society. She continued that the Village of Lake Bluff has been officially named a Bird City and that the Village was presented with this designation at the last Village Board meeting.

Member Cole asked if there is a DarkSky City USA and if the Village would qualify. Member Hance answered yes and Chair Renner added that adding a lighting ordinance is among the first steps to initiating DarkSky principles, however it will be some time before the Village can apply for this designation. Member Buoscio added that this is great and becoming a Bird City ties directly into DarkSky USA and these are great to focus on.

AVA Gable also shared that the Glen Avenue Footbridge has been replaced and should be open to the public within the next few weeks with some minor landscaping and other adjustments.

Member Cole asked if the bridge would be open by the 4th of July and AVA Gable replied that it should be open by the end of the month.

Member Buoscio added that the new landscaping and planting beds that have been recently added look really nice so far and asked if this project would also be ready by the 4th of July. AVA Gable responded yes, that is the target.

6. Member's Report

Member Buoscio shared that the Lake Bluff Auto Show is taking place this weekend and they have the maximum number of cars they can have.

Member Hance added that the landscaping and new plantings going into the downtown areas are all native plant species. She continued saying that the Lake Bluff Garden Club has worked closely with the Village, Joey Mariano, and Margot McMahon, who sculpted the dancer statue that is being reinstalled in the downtown area, to have even more native plants near the train station. Member Hance also added that a future discussion could be the residential use of neonicotinoids. A brief discussion ensued.

7. Chair's Report

There was no report.

8. Adjournment

As there was no further business to come before the SEC, Member Cole moved to adjourn the meeting. Member Hance seconded the motion. The motion passed on a unanimous voice vote at 8:27 p.m.

Respectfully submitted,

R. Drew Irvin
Village Administrator

MEMORANDUM



TO: Chair Rener & SEC Members

FROM: Clara Gable, Assistant to the Village Administrator
Lauren Chermak, Administrative Intern

DATE: July 12, 2024

SUBJECT: Update on the Village's Tree Inventory and Analysis

As previously reported, the Village was recently awarded an Urban and Community Forestry Grant from the Morton Arboretum/CRTI. With this grant, the Village hired Davey Resource Group to inventory all Village owned trees and provide an analysis which would provide overall data on the Village's public trees, set future goals and benchmarks, and focus on proactive maintenance opportunities. Public Works Superintendent and Village Forester Jake Terlap will present on the inventory and the findings from the analysis.

Attachments

- Tree inventory analysis.

TREE INVENTORY ANALYSIS & MAINTENANCE STRATEGY

Village of Lake Bluff, Illinois

Prepared for:

Village of Lake Bluff
Village Hall One 40 East
Center Avenue
Lake Bluff, Illinois 60044

Prepared by:

Davey Resource Group, Inc.
910 Riverside Drive – Suite 5
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630-381-1726

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ACKNOWLEDGMENTS

This project supports The Village of Lake Bluff'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.

The Village of Lake Bluff is thankful for the grant funding it received from the Morton Arboretum in cooperation with U.S. Forest Service Region 9 through direction of the Illinois Department of Natural Resources Urban & Community Forestry Program. The Illinois's Urban and Community Forestry program is to assist communities and other units of local government in the development and expansion of local urban and community forestry programs to better prepare Illinois urban forests for the 21st century environment.



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 Village of Lake Bluff's *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 street and natural area tree inventory for Lake Bluff in February 2024 and analyzed the inventory data to understand the structure of the Village's inventoried tree population and provide recommendations on priority and routine maintenance programs for future tree care. The data were 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).

Lake Bluff's inventoried street trees have an estimated replacement value of \$12 million and provide over \$40,000 annually in stormwater, air quality, and carbon benefits each year.

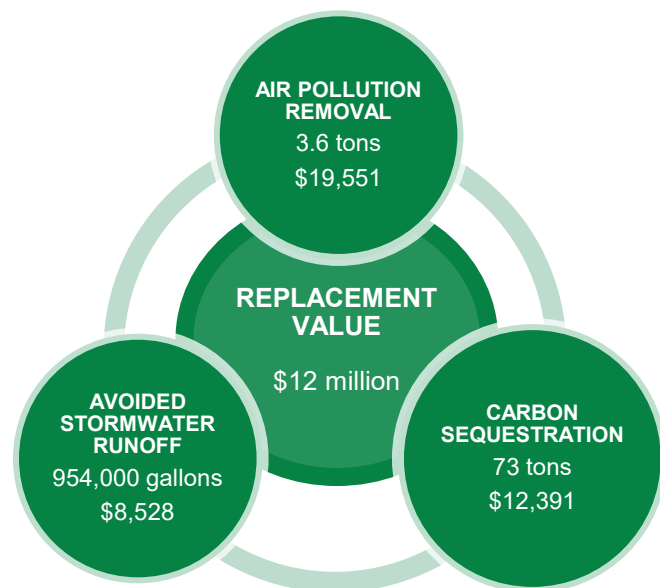
Supporting and funding proactive maintenance of Lake Bluff's public trees is a sound long-term investment that will maximize tree benefits, reduce tree care costs over time, and increase the value of the urban forest. While other municipal infrastructure loses value over time (depreciates), the value 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 schedule as depicted in Table 5, 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 Lake Bluff'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, 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.



STREET TREE INVENTORY ANALYSIS SUMMARY

Inventoried Sites

Trees = **4,579**
Planting Sites = **166**
Stumps = **3**
Natural Areas Trees = **1,598**
Total Sites = **6,346**

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. Lake Bluff’s current stocking level is **96%**.

Annual Benefits

Avoided Stormwater Runoff = **\$6,690**
Air Pollution Removal = **\$15,000**
Carbon Sequestration = **\$9,610**

Species Diversity

Street and Park Trees

Species	% of Inventoried Population
Norway maple	13.2%*
Red oak	8.3%
Sugar maple	7.1%
Crabapple	6.2%
Littleleaf linden	5.7%

Natural Areas

Genus	% of Inventoried Population
American elm	14.3%*
Eastern cottonwood	12.2%*
Black cherry	8.6%
Red oak	6.6%
Silver maple	6.4%

Note: Street and Park Trees species total includes ravines and wooded edges.
* Exceeds industry guidelines of no more than 10% of one species in tree population.

Relative Age Distribution

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

- **30%** were young (0-8”), compared to the 40% industry guidelines.
- **40%** were established (9-17”), compared to the 30% industry guidelines.
- **16%** were maturing (18-24”), compared to the 20% industry guidelines.
- **14%** were mature (>24”), compared to the 10% industry guidelines.

Condition

Of the 4,579 inventoried street and park trees:

- **14%** are in **GOOD** condition
- **84%** are in **FAIR** condition
- **2%** are in **POOR** condition
- **0.5%** are **DEAD**

Pest Susceptibility

The proportion of street and park trees that are susceptible to pests of concern in Illinois:

- **64%:** spotted lanternfly*
- **42%:** Asian longhorned beetle*
- **32%:** spongy moth
- **22%:** European cherry fruit fly*

* Not currently detected in Lake County

Defect Observations

Of the inventoried street and park trees:

- **60%** have architecture concerns*
- **12%** have dead or dying parts
- **10%** have no identified defects
- **10%** have branch attachment concerns
- **3%** have trunk wounds, cavities, and/or decay
- **1%** have observable root concerns
- **<1%** have cracks or broken/hanging branches

* Tree inventory was completed after year 1 of a 4-year pruning cycle

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 = **48** trees Moderate Risk = **2** trees
Extreme Risk = **1** trees Low Risk = **41** trees
High Risk = **3** trees Stumps = **3**



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 = **4,057** trees
Moderate Risk = **27** trees
Low Risk = **4,030** trees



Discretionary Pruning Cycle

Over time, discretionary (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 = **150** trees
Moderate Risk = **3** trees
Low Risk = **147** trees



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: **Maintain or exceed current stocking level**



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 = **474** trees
Number of trees in training cycle each year = **158**



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 = **4,057 trees*** not recommended for removal
Number of trees in cycle each year = **811**
*4,057 = street and park trees excluding young trees and suggested removals

INTRODUCTION

Lake Bluff is home to over 5,500 residents benefiting from the public trees in their community. The Forestry Division is responsible for the planting, pruning, monitoring, and removing of trees located on Village owned properties, major road corridors, and Village parks.

In December 2023, the Village of Lake Bluff worked with Davey Resource Group (DRG) to inventory its street trees and select natural areas and develop this *Tree Inventory Analysis & Maintenance Strategy*. Consisting of three sections, this plan considers the diversity, distribution, and condition of the inventoried tree population and provides a prioritized system for managing Lake Bluff'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 Lake Bluff's urban forest. The continuum includes other plans that can support Lake Bluff's urban forest, including:

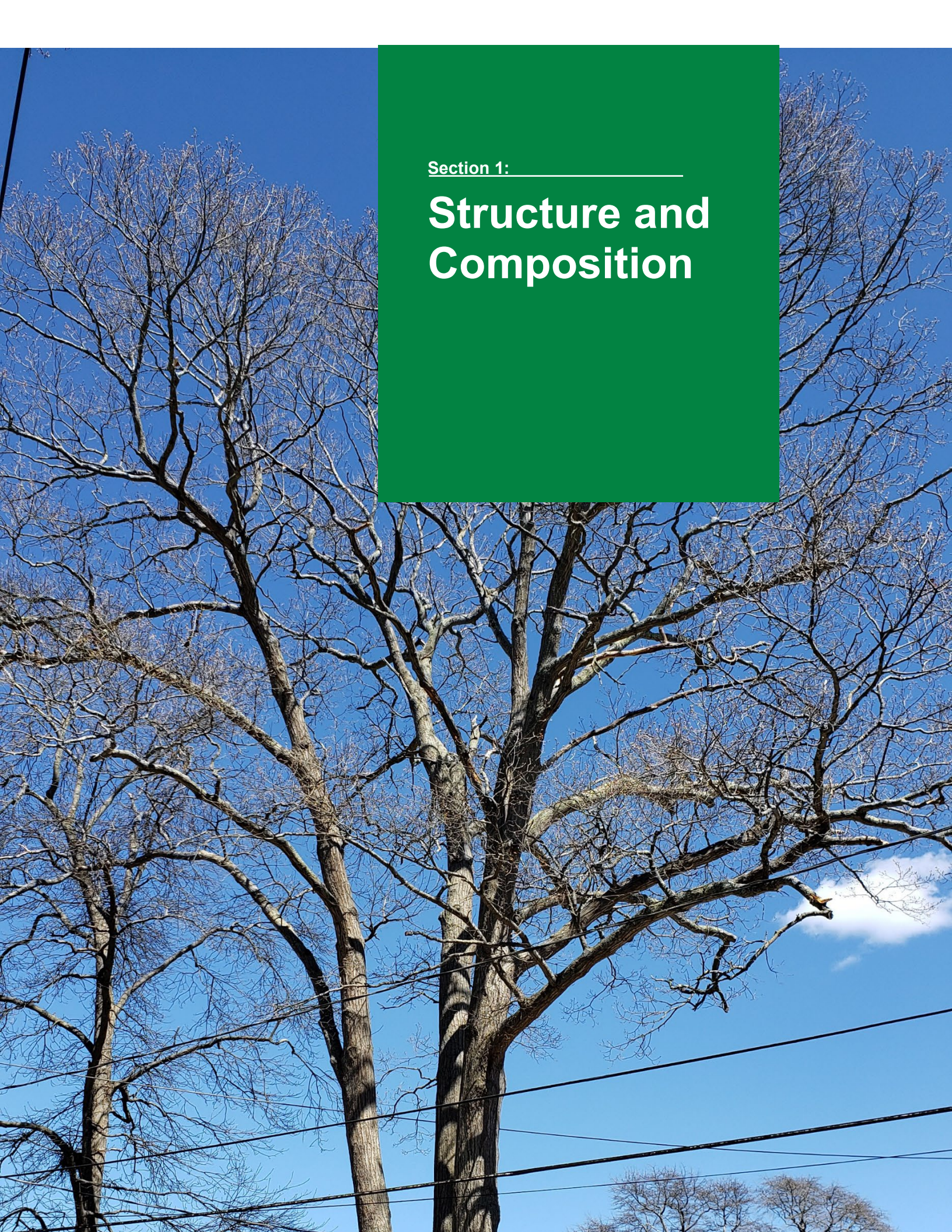
- An **urban forest management plan**, which establishes a detailed 3- to 5-year work plan to address risk and maintenance needs using current tree inventory data to streamline Lake Bluff's urban forest management program.
- An **urban forest master plan** engages stakeholder and community members to provide a comprehensive vision for the future of the Village's urban forest, with recommendations and a road map of action steps to reach Lake Bluff'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

Arborists collected data on trees, stumps, and planting sites along street rights-of-way (ROW) in parks, and in select natural areas throughout Lake Bluff. In streets and parks, 4,579 trees were inventoried, as well as 166 vacant planting sites and 3 stumps (figure 1). See Appendix B for inventory data collection methodology.

SPECIES & GENUS DIVERSITY

Diversity within plant communities is important for increasing their resistance and resilience to disturbance (see side panel, “The Importance of Species Diversity”, p. 12). 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.

There are **88 species of tree** within Lake Bluff’s ROW and parks. Figure 2 shows the species diversity breakdown for Lake Bluff’s most common inventoried trees. **Norway maple is the most common tree** (13%), followed by Northern red oak (8%), and sugar maple (7%).

The Village’s inventoried trees represent 46 distinct genera. Figure 3 shows the genus diversity breakdown for Lake Bluff’s inventoried trees. **Maple is the most common genus** (33%), followed by oak (20%), linden (7%), and apple (6%).

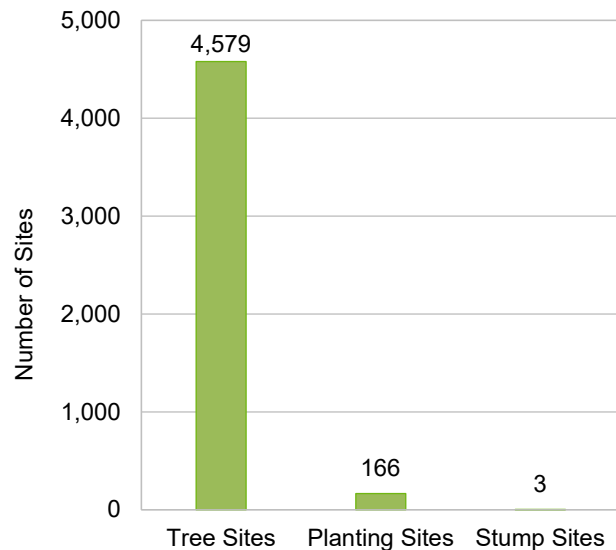


Figure 1. Number of inventoried street ROW and park sites by type.

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.

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.

Species & Genus Diversity Recommendations

- Avoid or limit planting of Norway maple (*Acer platanoides*) and increase planting of other species until Norway maples make up less than 10% of public trees.
- Avoid or limit planting of maples and oaks. Increase planting of other genera until maples (*Acer*) and oaks (*Quercus*) make up less than 20% of public trees.
- Remove volunteer trees that have invasive tendencies, such as Norway maple, callery pear, boxelder, white mulberry, and buckthorn, from maintained public areas while small.
- Increase planting of uncommon species and genera that are well suited to urban environments.

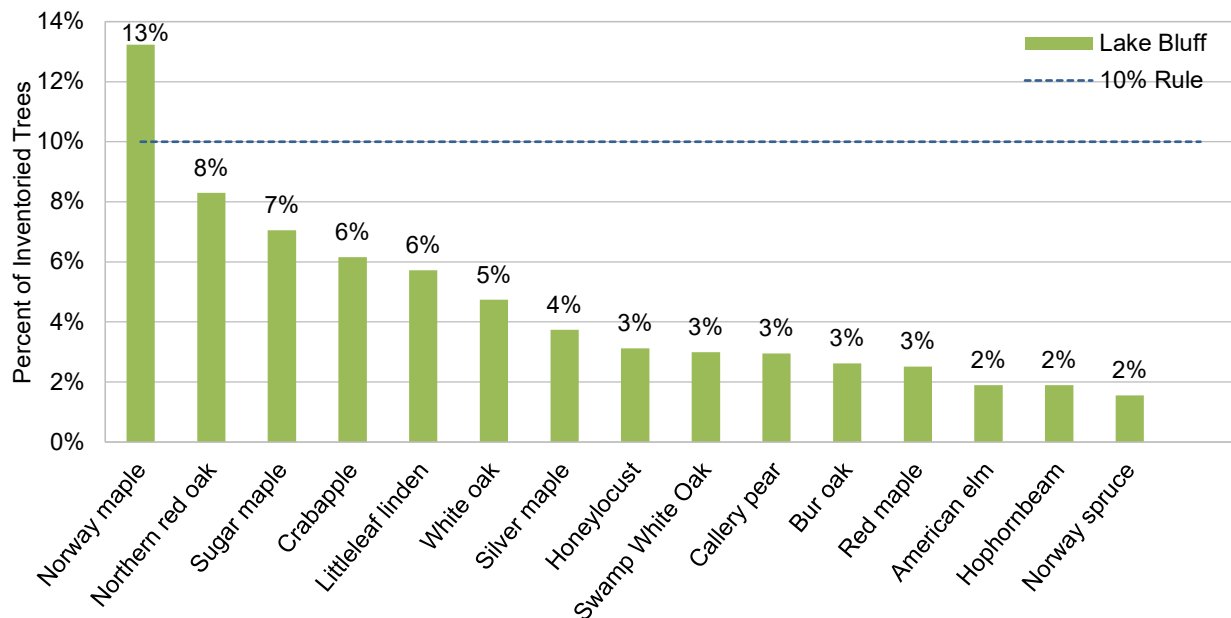


Figure 2. Species diversity of trees that make up at least 2% of inventoried street and park trees.

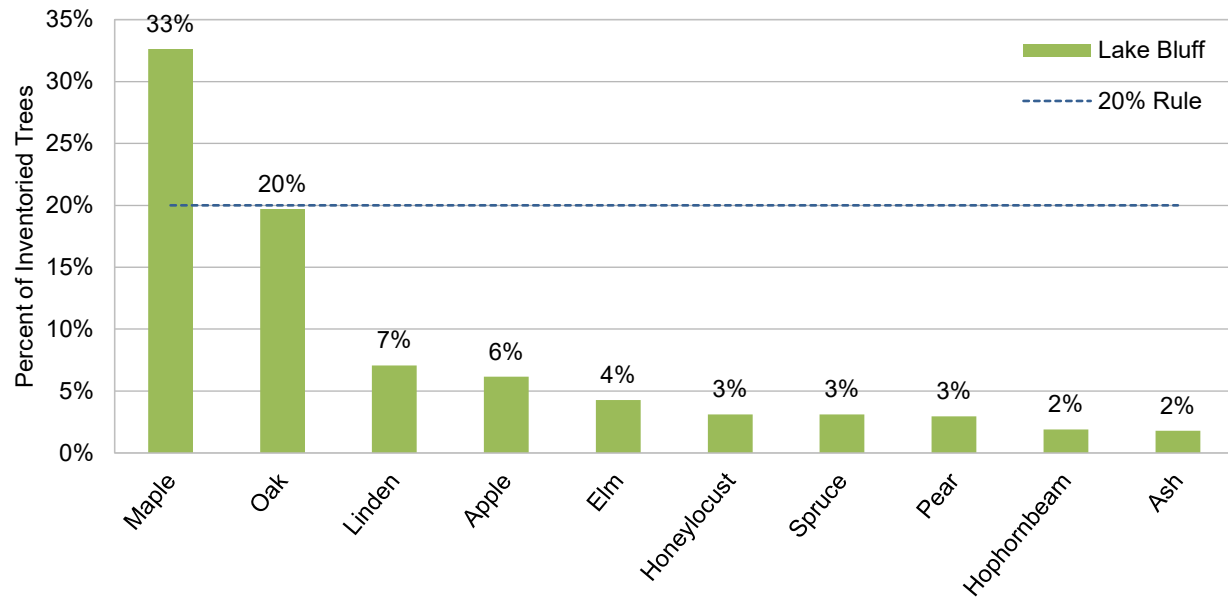


Figure 3. Genus diversity of trees that make up at least 2% of inventoried street and park trees.

PEST SUSCEPTIBILITY

Early identification of tree pests and diseases can reduce the impact of infestations on the urban forest. Infestations that 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 trees, the susceptibility of an urban forest to a pest or disease can be predicted based on its species and genus diversity.

Table 1 presents the percentage of inventoried trees that are susceptible to pests and diseases of concern in Illinois. It is important to remember that this figure only represents data collected during the inventory, and many more trees throughout Lake Bluff, such as those on private property, may be susceptible to hosting these invasive pests. Additionally, this list is not exhaustive, as other pests may affect the population.

64% of inventoried trees in Lake Bluff are susceptible to spotted lanternfly (*Lycorma delicatula*), an emergent pest of concern that was first documented in Illinois in 2023. Other pests that pose a potential risk to a large portion of public trees include Asian longhorned beetle (*Anoplophora glabripennis*, 42% of street trees), spongy moth (*Lymantria dispar*, 32% of street trees), and European cherry fruit fly (*Rhagoletis cerasi*, 22% of street 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.

- Spotted lanternfly can host on many tree species but prefer tree of heaven (*Ailanthus altissima*), an exotic, invasive, fast-growing tree. At the time of the tree inventory, no tree of heaven was documented along streets ROW or in parks. Continue managing tree of heaven populations on public and private land to reduce the suitability of Lake Bluff's urban forest to host spotted lanternfly.
- 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 Lake Bluff.

Table 1. Susceptibility of street and park trees to pests and diseases of concern in Illinois.

Tree Pests and Diseases of Concern	Susceptible Lake Bluff Street and Park Trees	
	Number	Percent
Spotted lanternfly *	2,919	64%
Asian longhorned beetle *	1,931	42%
Spongy moth	1,465	32%
European cherry fruit fly *	999	22%
Sudden oak death *	938	20%
Oak wilt	597	13%
Emerald ash borer	82	2%

*Not currently detected in Lake County

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, or Dead.

Figure 4 provides the condition rating breakdown for street and park trees in Lake Bluff. **Most trees were in good (14%) or fair (84%) condition.** 2% of the street 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 Lake Bluff's streets and natural areas.
- 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.

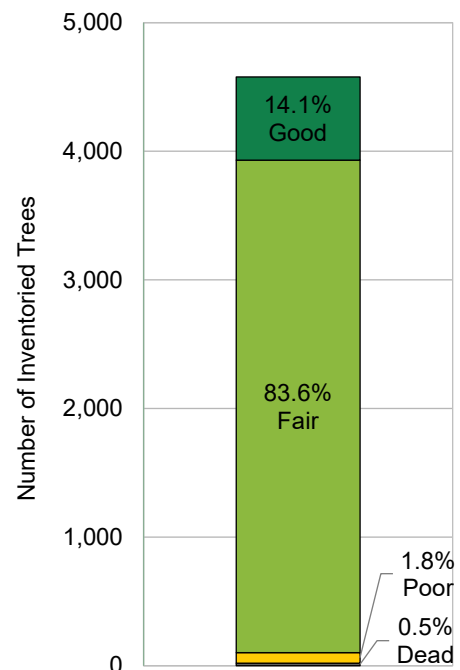


Figure 4. Condition ratings of street and park trees.

- 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 (Clause 5)* guidelines.

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 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 (DBH), as measured 4.5 ft above the ground	The age/size classes (left) are based on an urban forestry recommended 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 5 compares the age distribution of Lake Bluff's street and park trees to the industry recommendation. There is overrepresentation of trees in the Established age/size class (9-17 inches DBH) and underrepresentation in trees of the Young size class (0-8 inches DBH).
Established: 9-17 inches DBH	
Maturing: 18-24 inches DBH	
Mature: 25+ inches DBH	

Figure 6 compares tree condition ratings across the relative age classes for inventoried trees in streets and parks. **Trees across all age classes are generally in fair condition.** Trees in the young age class have a significantly higher proportion of trees in good condition compared to other classes. Notably, the maturing and mature age classes remain in predominantly fair condition.

Relative Age Recommendations

- Underrepresentation of trees within the Young age class suggests that increased, sustained tree planting efforts may be needed to maintain an even age distribution over time. A young tree training cycle should be instituted to prune these younger trees to ensure proper structure and maintain health as they mature.
- Roughly 30% of street trees fall within the maturing and mature age classes. Proactive tree care to mitigate risks associated with senescence will preserve these trees' capacity to provide benefits. Additionally, as these maturing and mature trees are removed, it is recommended that younger trees are planted to maintain or increase the Village's stocking rate, canopy coverage, and species diversity targets.
- Routine, proactive maintenance, such as young tree training and routine pruning, may help improve tree condition, particularly among maturing and mature trees.

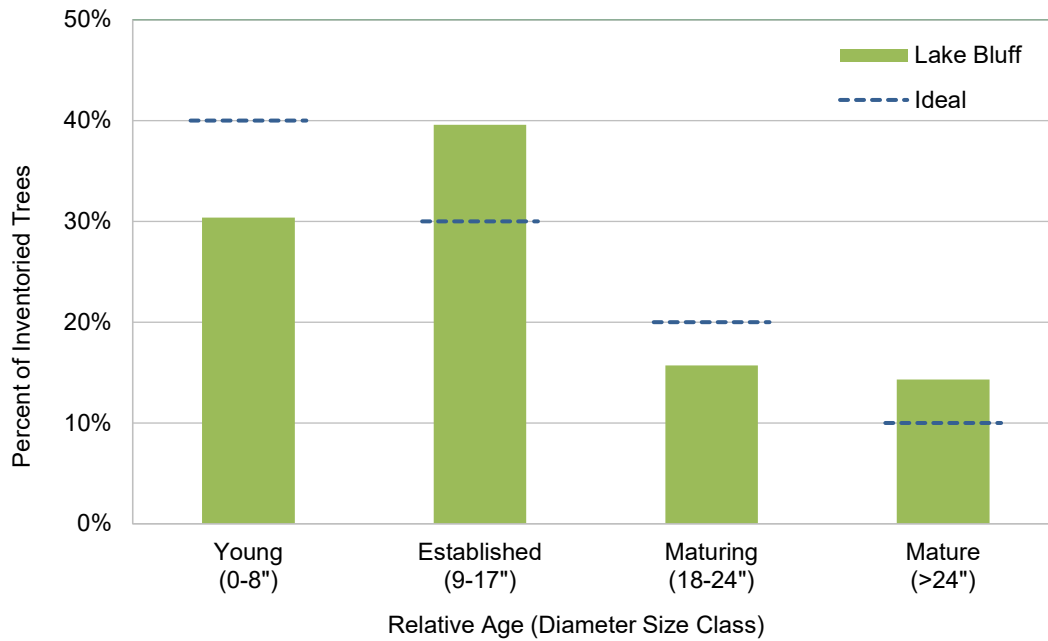


Figure 5. Relative age distribution of inventoried street and park trees.

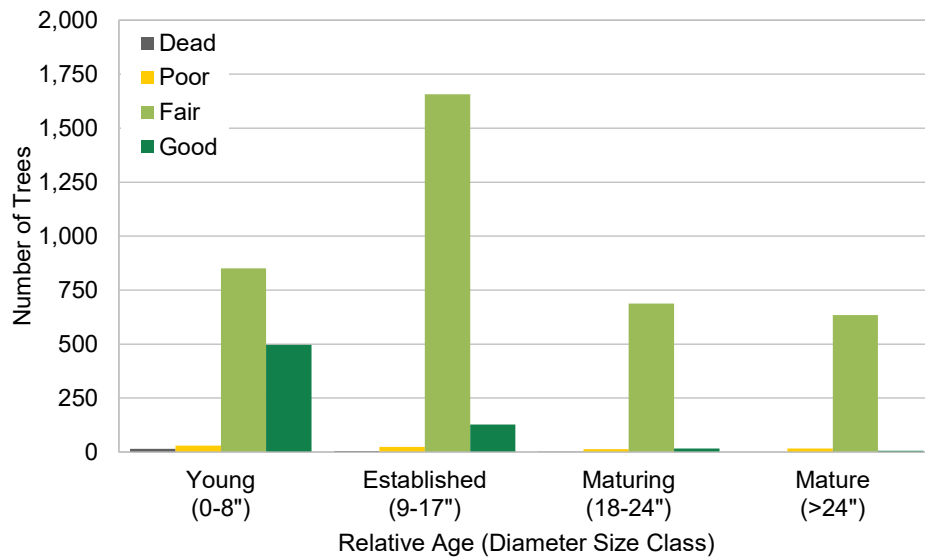


Figure 6. Street and park tree condition ratings by age class.

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.

Tree architecture was the most commonly recorded defect for street and park trees (60%), followed by dead or dying branches (12%; Table 2). Twelve percent of street and park trees had no significant defect at the time of the inventory.

Table 2. Defect observations for inventoried street and park trees.

Defect	Street Trees	% of Street Trees
Tree architecture	2,868	60%
Dead and dying branches	585	12%
None	580	12%
Branch attachment	452	10%
Trunk condition	149	3%
Root problems	60	1%
Decay or cavity	36	1%
Cracks	12	<1%
Broken and/or hanging branches	6	<1%
Total	4,748	100%

Defect Observation Recommendations

- **Tree architecture (60%) was the most common defect observation** for trees in Lake Bluff. This defect observation includes leans, bows, taper, live crown ratio concerns. Trees with this defect will require removal of one or more limbs to reduce risk, provide clearance, and restore the tree. Regular pruning, as done in a routine pruning cycle, can improve the health of these trees and reduce risk associated with structural defects. In cases where defects cannot be corrected by pruning without creating additional risk, removal is recommended.
- **Dead and dying branches** were observed in 12% of inventoried street trees. Regular pruning, as done in a routine pruning cycle, can improve the health of these trees and reduce risk associated with dead and dying branches. Removal of dead limbs also improves the visual aesthetics of trees and may help improve public perception of the level of tree care in the Village.
- A **branch attachment defect** was recorded for 10% of street 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.

CANOPY COVER & STOCKING LEVEL

“Stocking” is a term for the density and distribution of trees. In a town setting, 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. Lake Bluff has a total of 4,577 current and potential tree sites along streets, of which 4,415 are currently occupied by a tree. Therefore, the Village’s current stocking level is 96%.

Stocking level is a valuable way to compare urban forest cover over time, especially when canopy cover data are not available, as in Lake Bluff. “Canopy cover” refers to the percentage of area that 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 Village’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 assessment, which uses high-resolution aerial imagery, provides detailed analysis of a town’s tree cover 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, race, and social vulnerabilities; oftentimes, this stems from decades of disinvestment and inequitable policies. In communities with low tree cover, 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, the Village can take steps to analyze and improve the Lake Bluff’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 Lake Bluff. Once initial goals are achieved, further goals can be set. This incremental method of progress can help build capacity and community support for tree planting and care over time.
 - The Village 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.
- Conducting an urban tree canopy assessment may be helpful for setting and eventually achieving Village’s tree canopy and equity goals. Lake Bluff may want to consider an urban tree canopy assessment as a next step in their urban forest management program.

NATURAL AREAS

In addition to the public trees described above, arborists inventoried an additional 1,598 trees within Lake Bluff natural areas.

SPECIES & GENUS DIVERSITY

Tree species within natural areas are characterized by deciduous canopy trees that are commonly found in Illinois native forests (figure 7, top). Arborists documented 95 unique species within natural areas, compared to 88 species of street and park trees; American elm (*Ulmus americana*) and eastern cottonwood (*Populus deltoides*) both exceed the industry-recommended 10% limit for individual species abundance. At the genus level, maples are the most commonly found tree, accounting for 21% of all inventoried trees within natural areas (figure 7, bottom). The proportion of trees within natural areas that are susceptible to sudden oak death is nearly three times higher than in the street and park tree population (58% of natural areas trees compared to 20% of street/park trees), making sudden oak death a notable threat if this disease were to become endemic to Lake Bluff.

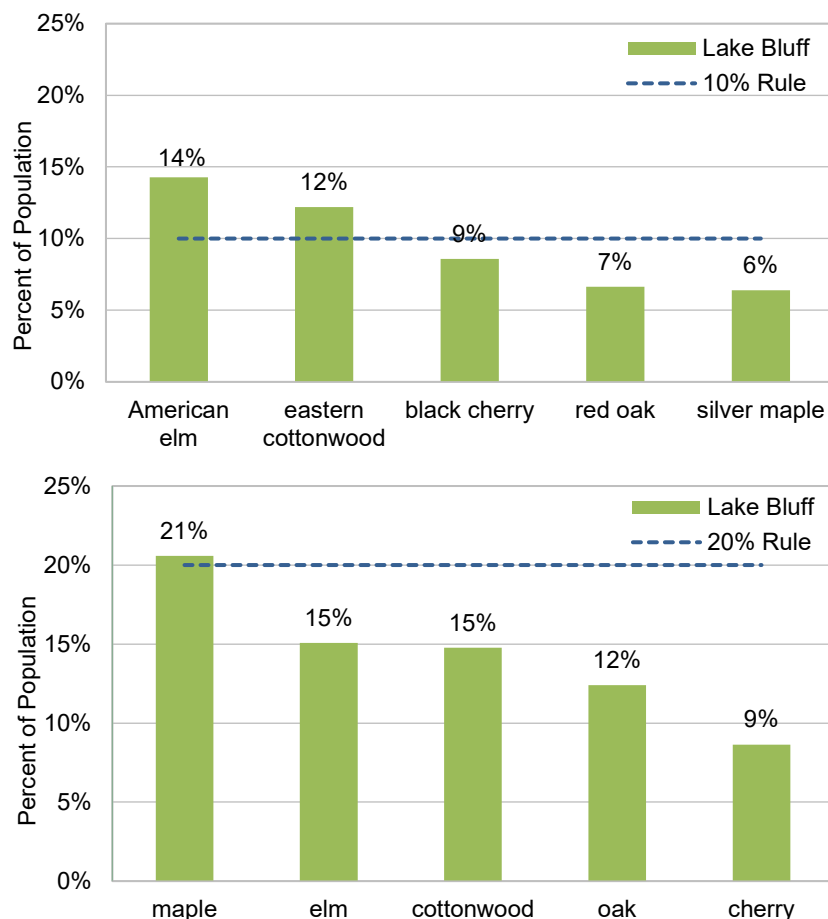


Figure 7. The five most common species (top) and genera (bottom) of inventoried trees within Lake Bluff natural areas relative to industry-recommended rules for species and genus abundance.

CONDITION & RELATIVE AGE DISTRIBUTION

More than 90% of trees within natural areas were in Fair to Good condition (figure 8, left). As observed within the street and park tree population, there are disproportionately more trees within the Established size class (9–17 inches DBH; 40%) in natural areas and fewer trees within the Maturing size class (18–24 inches DBH; 11%) compared to an industry-recommended size/age distribution

(figure 8, right). Proactive management can help young trees within natural areas succeed into larger age classes over time.

Based on an evaluation of their condition and structure, 228 trees (14%) within natural areas were flagged for priority pruning, and 15 trees (1%) were recommended for removal.

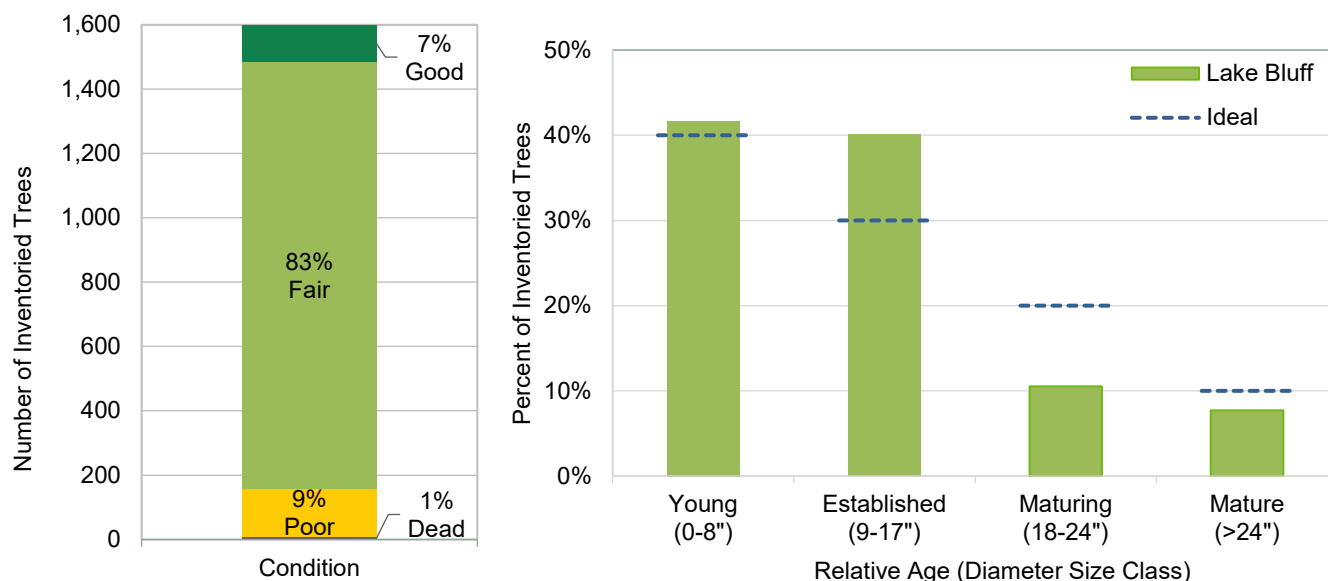


Figure 8. The condition (left) and size-age classes (right) of inventoried trees within natural areas.

Natural Areas Recommendations

- Conduct invasive species removal to promote natural regeneration of forested natural areas.
- Prepare an invasive species management plan to guide the response to future pest or disease infestations. Monitor natural areas for signs and symptoms of pests and diseases on a regular basis. When a pest or disease is suspected, act quickly to confirm the identification and begin management.
- Within natural areas, dead and dying trees may be left to decay in place for ecological reasons. Consider removal for any trees that pose a risk to visitors or structures.
- Prioritize native species when planting in the natural areas.

NA

Section 2:

Functions and Benefits

OPLE'S UNIVE

PUBLIC LIBRARY



SECTION 2: FUNCTIONS AND BENEFITS

Trees play a vital role in cities and towns 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

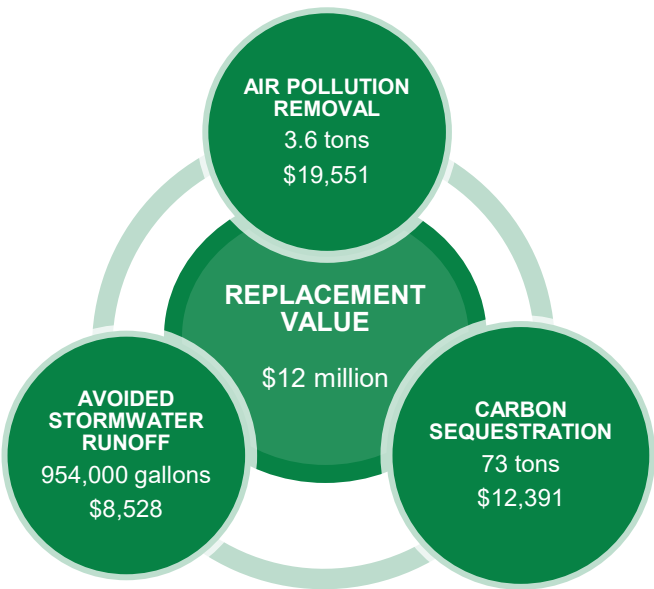
- Tree-lined streets slow traffic and are safer for drivers, pedestrians, and cyclists (Swift et al., 1997, Ewing & Dumbaugh, 2009).
- A 10% increase in neighborhood tree canopy cover has been associated with a 12-15% reduction in violent and property crimes (Gilstad-Hayden et al., 2015, O'Neil-Dunn,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

TREE BENEFITS

DRG used i-Tree Eco—a tool within the i-Tree Tools software suite developed by the U.S. Forest Service and partners—to model benefits provided by Lake Bluff’s inventoried trees on public streets and in select natural areas. 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). 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.



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 inventoried trees.

i-Tree Benefits Model		Streets & Parks	Natural Areas	Total
Trees	number	4,578	1,598	6,176
	ton	3,337	844	4,180
Carbon storage	value (\$)	\$569,068	\$143,865	\$712,932
	ton/yr	56	16	73
Gross carbon sequestration	\$/yr	\$9,607	\$2,784	\$12,391
	gal/yr	748,890	205,490	954,380
Avoided runoff	\$/yr	\$6,692	\$1,836	\$8,528
	ton/yr	2.8	0.8	3.6
Pollution removal	\$/yr	\$15,297	\$4,254	\$19,551
Replacement value		\$10,005,396	\$2,077,669	\$12,083,064

ANNUAL BENEFITS

Given benefits including air quality (\$19,551), stormwater management (\$8,528), and carbon sequestration (\$12,391), the inventoried trees in Lake Bluff provide more than \$40,000 of benefits each year (figure 9).

The quantity of benefits provided by a tree is influenced by its species, size, and location. Table 4 summarizes the key tree species that provide the greatest contribution to Lake Bluff’s annual benefits

based on the results of the i-Tree Eco analysis of the tree inventory. Along streets and in parks, the top contributors of tree benefits include the Miyabe maple, swamp Spanish oak, English oak, white poplar, and European beech—mostly introduced species for which there are only a few specimens in the inventory. Within natural areas, more native species (with more representatives per species), provide the most benefit, including eastern cottonwood, willow, white oak, bur oak, and Norway spruce.

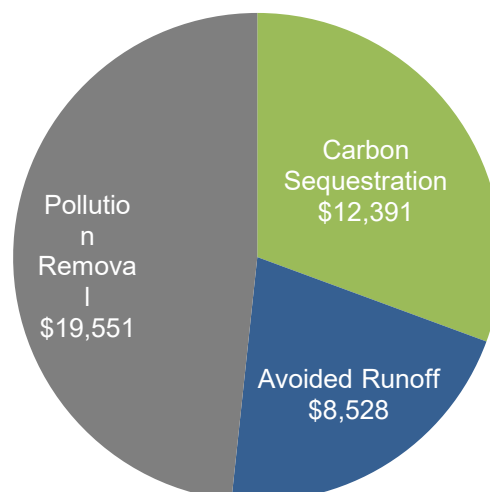


Figure 9. Annual benefits provided by Lake Bluff's inventoried trees.

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

Location	Species	Number	Annual Benefits per Tree
Streets & Parks	Miyabe maple	1	\$20.02
	Swamp Spanish oak	33	\$17.24
	English oak	1	\$16.82
	White poplar	1	\$16.15
	European beech	2	\$15.59
Natural Areas	Eastern cottonwood	195	\$10.96
	Willow	8	\$10.36
	White oak	55	\$10.31
	Bur oak	33	\$10.17
	Norway spruce	2	\$9.35

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.

Forty-eight percent of Lake Bluff's annual public tree benefits are derived from air pollutant removal. **The inventoried street trees in Lake Bluff remove 3.6 tons of airborne pollutants each year, a service valued at \$19,551 (table 4).**

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. **Lake Bluff's public street trees sequester (absorb and store) an estimated 72.7 tons of carbon each year, valued at \$12,391, and have stored 4,180 tons of carbon over their lifetime, valued at \$712,932 (table 4).**

CONTROLLING 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 10). Since stormwater runoff can cause infrastructure damage and flooding, reducing the amount of precipitation that becomes surface runoff can save a community costs in infrastructure repair and flooding mitigation. **The inventoried trees in Lake Bluff divert 952,380 gallons of stormwater each year valued at \$8,528 (table 4).**

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 Lake Bluff.

In total, Lake Bluff's inventoried street trees have a replacement value of \$12,083,064. Table 5 compares the per-tree replacement value of the trees with the overall highest replacement values. **English oak has the highest average replacement value (\$8,200, based on one specimen) among street and park trees, while littleleaf linden has the highest average replacement value (\$4,131, based on 14 specimens) among natural areas trees.**

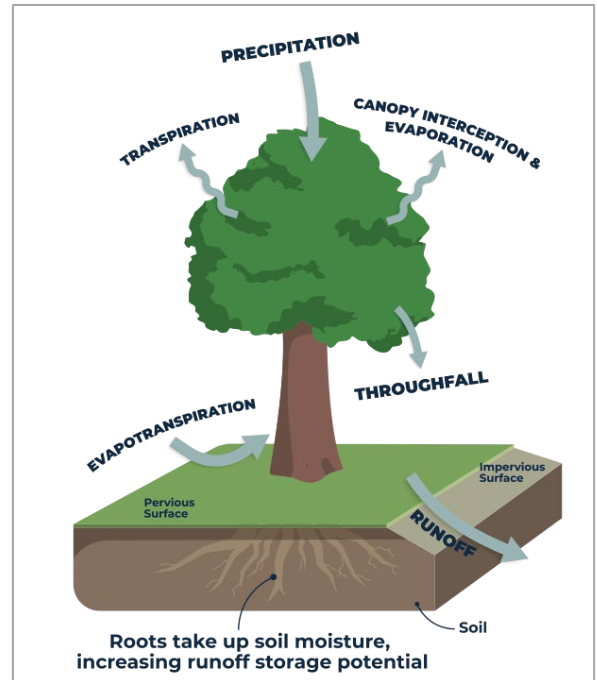


Figure 10. Hydrological functions of trees. Source: 'Stormwater to Street Trees: Engineering Urban Forests for Stormwater Management', EPA publication 841 B 13 001.

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

Location	Species	Number	Annual Benefits per Tree
Streets & Parks	English oak	1	\$8,200
	Bur oak	120	\$7,705
	Miyabe maple	1	\$6,855
	White oak	217	\$5,607
	Northern catalpa	12	\$4,960
Natural Areas	Littleleaf linden	14	\$4,131
	Bur oak	33	\$4,034
	Willow	8	\$3,432
	White oak	55	\$3,321
	Honeylocust	22	\$2,719

Tree Benefit Recommendations

- Tall deciduous trees with broad canopies tend to provide the greatest benefits. Lake Bluff 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 new large tree planting spaces to accommodate large-stature street trees. The Village should strive to preserve existing large-stature trees and provide proactive care to young public trees to ensure they achieve mature status in the future.

- The protection of very large trees should be a priority, and succession planning to replace large trees and increase tree cover in parks will have a large positive impact on tree benefits in Lake Bluff in the future. Creating a heritage tree program can be one way to provide special protection for very large trees.
- The public trees in Lake Bluff account for only a fraction of the total benefits provided by the Village's trees. This benefits analysis does not account for the trees that provide benefits to Lake Bluff that are located on private property. Lake Bluff should consider methods to preserve existing trees and promote new tree planting on private property throughout the Village to increase tree benefits.
- Lake Bluff should consider opportunities to provide community outreach and education to promote retention and planting of trees on private property such as providing tree-related updates and tips in Village communications and holding informational public meetings and events on tree-related topics.

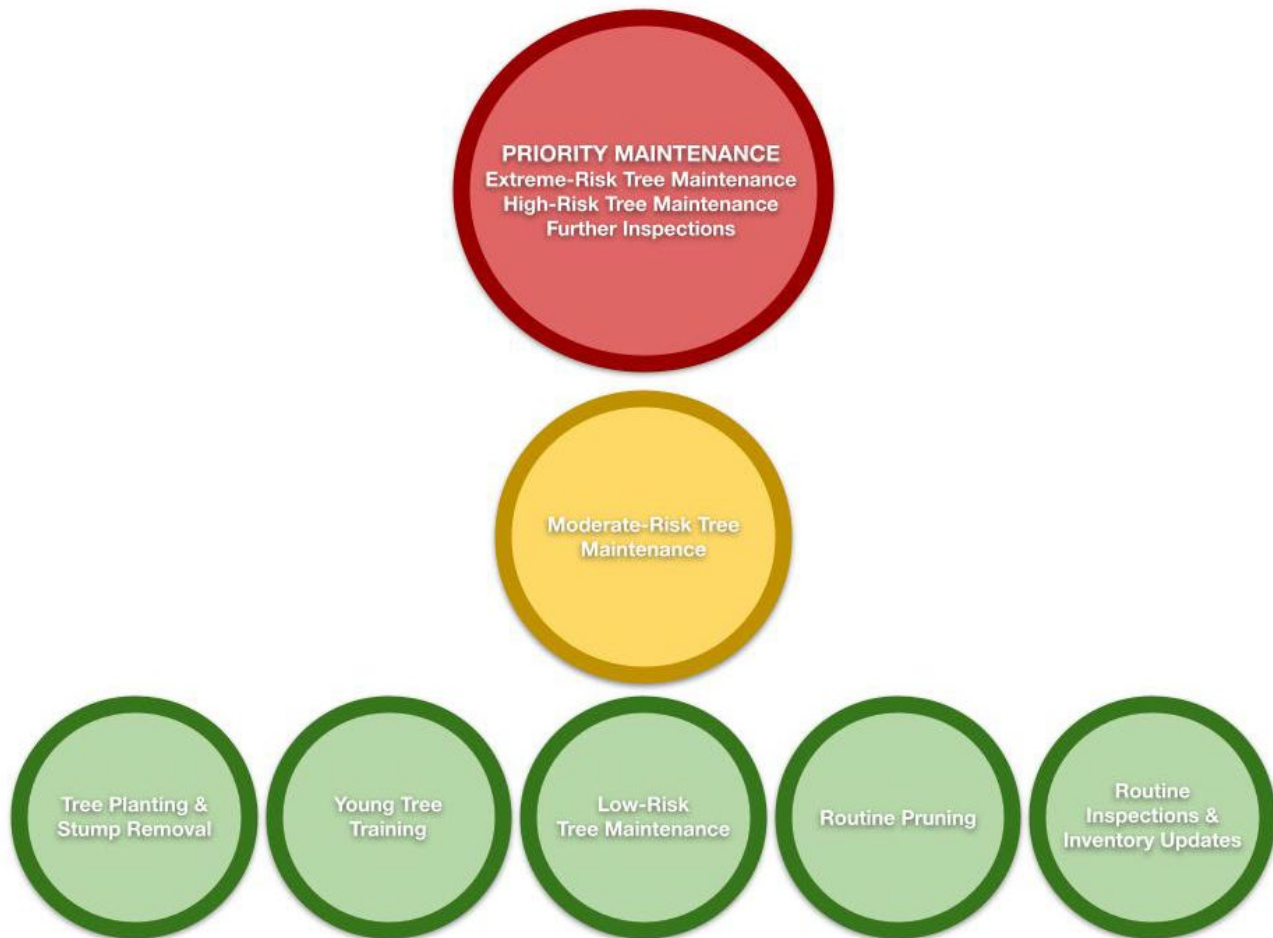


Section 3:

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 Lake Bluff'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 basic (Level 2) risk assessment of each inventoried tree was conducted, and a risk rating was assigned based on the current editions of ANSI A300 (*Clause 13*) 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 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 that were identified in the inventory (Figures 12 and 13) 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:

- **1 Extreme-risk tree**
- **3 High-risk street trees** (Figure 13). These High-risk trees, recommended for removal, ranged in size from 6 to 18 inches DBH.

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.
- None of the inventoried Extreme- or High-risk rated street trees were recommended for pruning. In the future, if pruning is recommended for trees that have been assigned Extreme- or High-risk, they 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.

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 continuing the proactive pruning program (currently in year 2 of 4-year cycle), gradually increasing to a 5-year cycle.

The inventory identified:

- **27 Moderate-risk street trees recommended for pruning** (figure 11)
- **2 Moderate-risk street trees recommended for removal** (figure 12)
- **4,030 Low-risk street trees recommended for pruning** (figure 11)
- **41 Low-risk street trees recommended for removal** (figure 12)

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 & Removal Recommendations

- Moderate-risk pruning and removals should be performed after all Extreme- and High-risk pruning and removal work 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 (see below).
- 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.

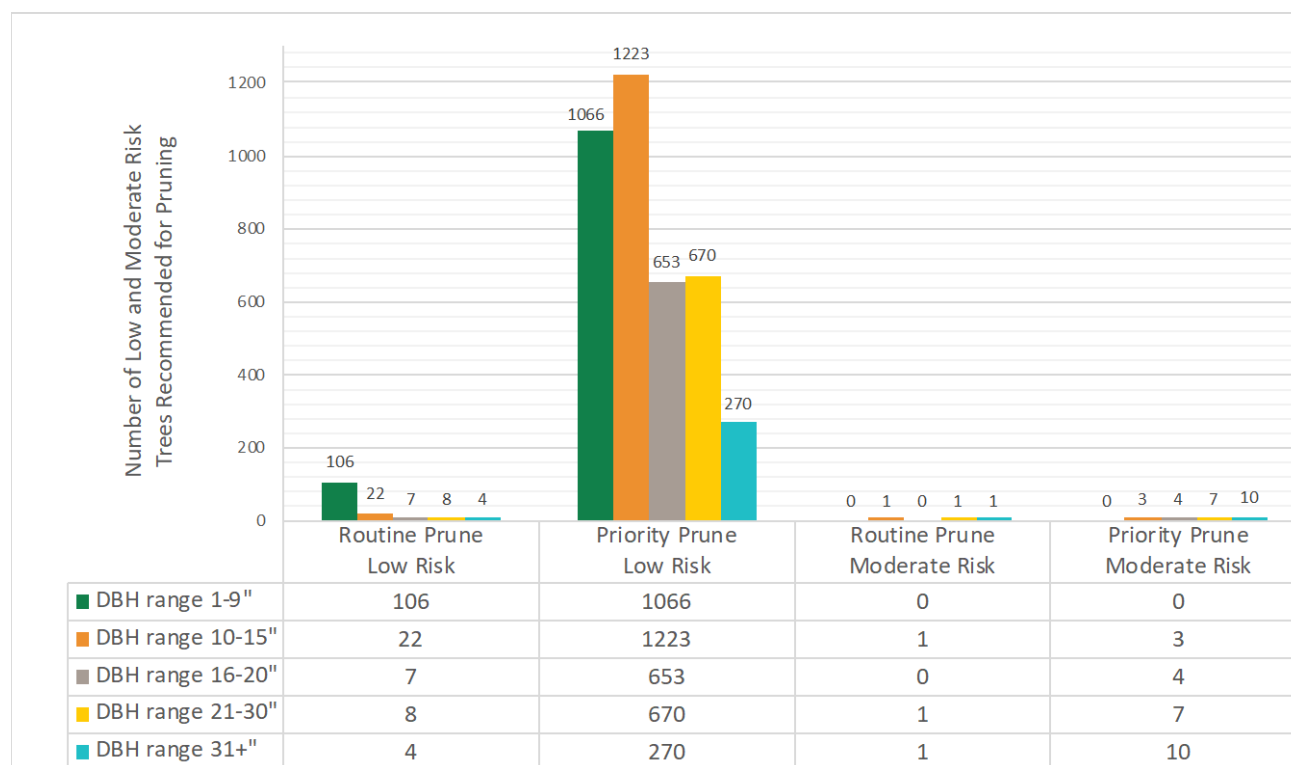


Figure 11. Pruning recommendations for street trees.

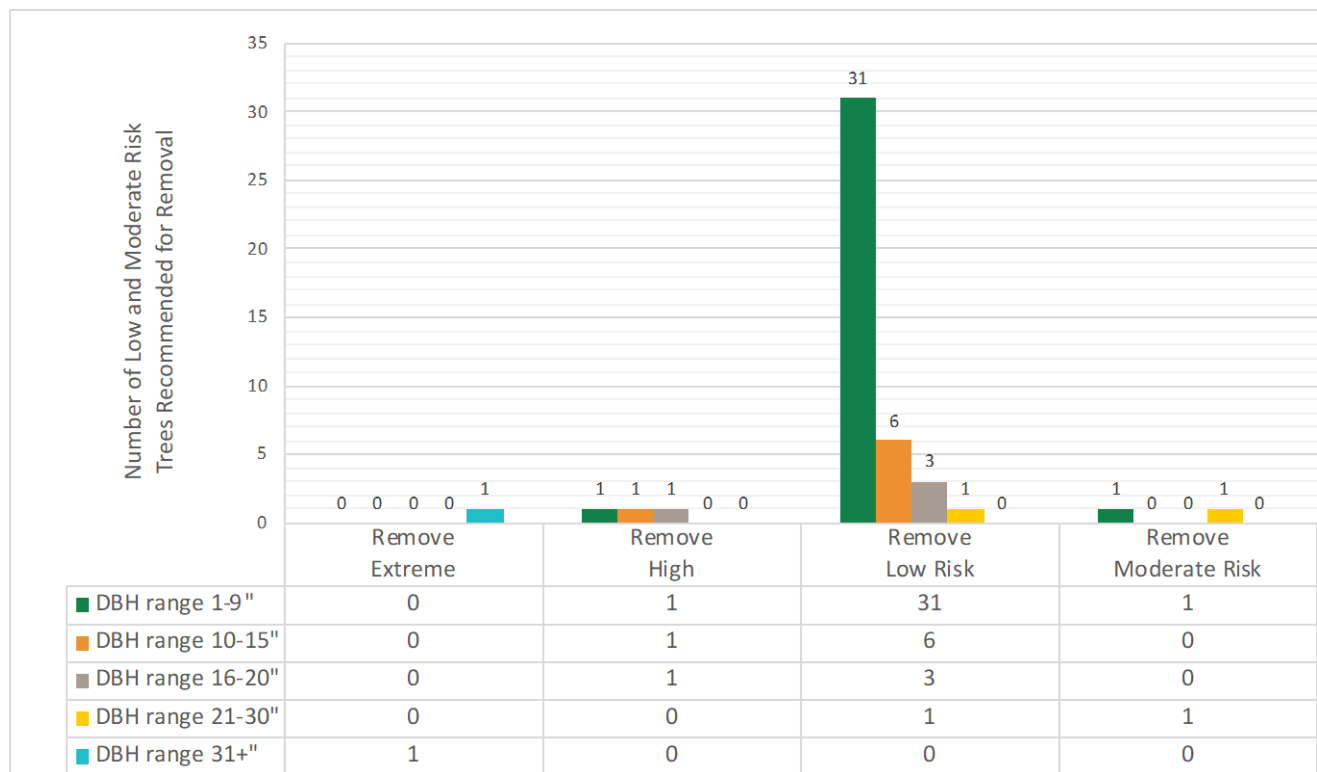


Figure 12. Removal recommendations for street trees.

ROUTINE PRUNING CYCLE

The routine pruning cycle includes all Low-risk trees with a primary maintenance need of 'discretionary prune'. 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, 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 147 trees were rated Low risk with a maintenance recommendation of "discretionary" prune and should be included in a routine pruning cycle (Figure 11).

Routine Pruning Cycle Recommendations

- The Village of Lake Bluff should **aim to prune 1/5 of its public trees each year** during a five-year routine pruning cycle.
- Trees that 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 that 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 that are planted and removed in future years.
- Not every tree in the routine pruning cycle will need to be pruned each cycle; therefore, 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.

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

- The Village of Lake Bluff 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 Village and the number of new plantings.

- Young tree training is recommended to begin two to three 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; therefore, 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 6).

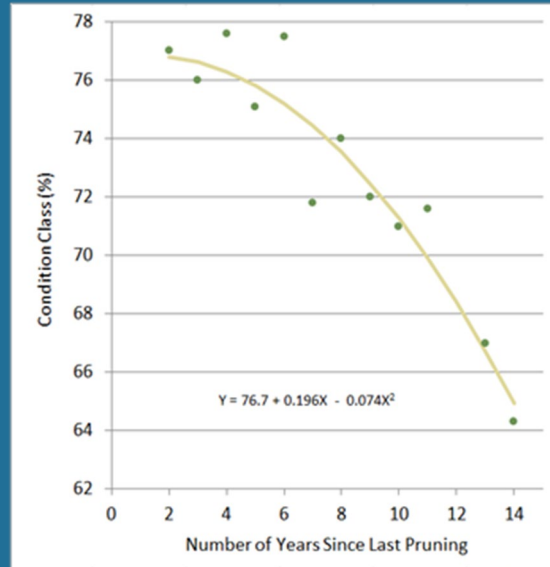
ROUTINE INSPECTIONS AND INVENTORY UPDATES

Inspections are essential to uncovering potential problems with trees. They should be performed by a qualified arborist who is trained in 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

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 that was 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.

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.
- Basic 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 **4,057 street trees** in the current inventory not recommended for removal, approximately **811** 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 Lake Bluff'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, **166 potential planting sites and 3 stumps were identified in Lake Bluff's street ROW and parks.** There are likely more than the inventoried number of vacant planting sites in Lake Bluff'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.

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.
- Lake Bluff 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, Lake Bluff should aim to maintain or exceed their current stocking level. The budget table (table 6) assumes a 2:1 replacement strategy to show the costs of maintaining such a planting program. A 2:1 replacement strategy may only be necessary when replacing large mature trees.

- 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, Lake Bluff 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 Village 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 level, particularly for planting projects within Environmental Justice areas.
- Continue to develop and foster partnerships with groups such as The Morton Arboretum's Chicago Region Trees Initiative (CRTI) who can help promote and support tree planting goals in the community.

MAINTENANCE STRATEGY AND EXAMPLE BUDGET

Using the Lake Bluff 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 the Lake Bluff's current tree care contract rates, Village staff costs, industry knowledge, and public bid tabulations. Following this schedule, or a similar schedule, can help shift the Village's tree care program from reactive toward a more proactive model.

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

- No less than \$213,813 for the first year of implementation.
- No less than \$255,827 for the second year of implementation.
- No less than \$175,469 for the third year of implementation.
- No less than \$196,079 for the fourth year of implementation.
- No less than \$171,193 for the fifth year of implementation.

Currently Lake Bluff has forecasted budgets that exceed minimum projections. The actual forecasted budgets are: **\$254,253** for 2024, **\$306,858** for 2025, and **\$321,303** for 2026. 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	Diameter	Cost/ Tree	Year 1		Year 2		Year 3		Year 4		Year 5		Five-Year Cost
			Count	Cost	Count	Cost	Count	Cost	Count	Cost	Count	Cost	
Extreme & High Priority Removals	1-3"	\$28											
	4-6"	\$58	1	\$58									\$58
	7-12"	\$138	1	\$138									\$138
	13-18"	\$314	1	\$628									\$628
	19-24"	\$605											
	25-30"	\$825											
	31-36"	\$1,045											
	37-42"	\$1,485											
	>43"	\$2,035	1	\$2,035									\$2,035
Activity Total(s)			4	\$2,859									\$2,859
Moderate Priority Removals	1-3"	\$28											
	4-6"	\$58	1	\$58									\$58
	7-12"	\$138											
	13-18"	\$314											
	19-24"	\$605	1	\$605									\$605
	25-30"	\$825											
	31-36"	\$1,045											
	37-42"	\$1,485											
	>43"	\$2,035											
Activity Total(s)			2	\$663	0								\$663
Low Priority Removals	1-3"	\$28			7	\$196							\$196
	4-6"	\$58			11	\$638							\$638
	7-12"	\$138	2	\$276	15	\$2,070							\$2,346
	13-18"	\$314	4	\$1,256									\$1,256
	19-24"	\$605	1	\$605									\$605
	25-30"	\$825	1	\$825									\$825
	31-36"	\$1,045											
	37-42"	\$1,485											
	>43"	\$2,035											
Activity Total(s)			8	\$2,962	33	\$2,904							\$5,866
Stump Removals	1-3"	\$18											
	4-6"	\$28											
	7-12"	\$44			1	\$44							\$44
	13-18"	\$72											
	19-24"	\$94											
	25-30"	\$110			1	\$110							\$110
	31-36"	\$138			1	\$138							\$138
	37-42"	\$160											
	>43"	\$182											
Activity Total(s)					3	\$292							\$292

High Priority Pruning	1-3"	\$20											
	4-6"	\$30											
	7-12"	\$75											
	13-18"	\$120											
	19-24"	\$170											
	25-30"	\$225											
	31-36"	\$305											
	37-42"	\$380											
	>43"	\$590											
Activity Total(s)													\$0
Moderate Priority Pruning	1-3"	\$20											
	4-6"	\$30											
	7-12"	\$75	1	\$75									\$75
	13-18"	\$120	5	\$600									\$600
	19-24"	\$170	1	\$170									\$170
	25-30"	\$225	7	\$1,575									\$1,575
	31-36"	\$305	2	\$610									\$610
	37-42"	\$380	3	\$1,140									\$1,140
	>43"	\$590	5	\$2,950									\$2,950
Activity Total(s)			24	\$7,120									\$7,120
Low Priority Pruning	1-3"	\$20							10	\$200		\$200	
	4-6"	\$30							168	\$5,040		\$5,040	
	7-12"	\$75							1307	\$98,025		\$98,025	
	13-18"	\$120						1066	\$127,920			\$127,920	
	19-24"	\$170				610	\$103,700					\$103,700	
	25-30"	\$225			393	\$88,425						\$88,425	
	31-36"	\$305	206	\$62,830	206	\$62,830						\$125,660	
	37-42"	\$380	83	\$31,540								\$31,540	
	>43"	\$590	39	\$23,010								\$23,010	
Activity Total(s)			328	\$117,380	599	\$151,255	610	\$103,700	1066	\$127,920	1485	\$103,265	\$603,520
Routine Inspection	Drive-by	\$1	3,663	\$3,663	3,663	\$3,663	3,663	\$3,663	3,663	\$3,663	3,663	\$3,663	\$18,316
	Walk-by	\$5	916	\$4,579	916	\$4,579	916	\$4,579	916	\$4,579	916	\$4,579	\$22,895
Activity Total(s)			4,579	\$8,242	4,579	\$8,242	4,579	\$8,242	4,579	\$8,242	4,579	\$8,242	\$41,211
Young Tree Training (3-year Cycle)	1-3"	\$20	96	\$1,927	96	\$1,927	158	\$3,163	100	\$1,996	34	\$676	\$9,688
	4-6"	\$30	61	\$1,830	61	\$1,830	61	\$1,830			34	\$1,014	\$6,504
	>6"	\$40	2	\$80									\$80
Activity Total(s)			159	\$3,837	157	\$3,757	219	\$4,993	100	\$1,996	68	\$1,690	\$16,272
Routine Pruning (5-year Cycle)	1-3"	\$20									21	\$420	\$420
	4-6"	\$30									51	\$1,530	\$1,530
	7-12"	\$75			8	\$600	4	\$300	29	\$2,175	4	\$300	\$3,375
	13-18"	\$120					16	\$1,920					\$1,920
	19-24"	\$170			7	\$1,190							\$1,190
	25-30"	\$225	3	\$675	1	\$225							\$900
	31-36"	\$305	3	\$915									\$915
	37-42"	\$380	1	\$380									\$380
	>43"	\$590											
Activity Total(s)			7	\$1,970	16	\$2,015	20	\$2,220	29	\$2,175	76	\$2,250	\$10,630
Replacement Tree	Purchasing	\$250	28	\$7,000	66	\$16,500							\$23,500

Planting and Maintenance	Planting & Watering	\$200	28	\$5,600	66	\$13,200							\$18,800
	Mulching	\$25	28	\$700	66	\$1,650							\$2,350
Activity Total(s)			84	\$13,300	198	\$31,350							\$44,650
New Tree Planting	Purchasing	\$250	34	\$8,450	34	\$8,450	34	\$8,450	34	\$8,450	34	\$8,450	\$42,250
and Maintenance	Planting & Watering	\$200	34	\$6,760	34	\$6,760	34	\$6,760	34	\$6,760	34	\$6,760	\$33,800
	Mulching	\$25	34	\$845	34	\$845	34	\$845	34	\$845	34	\$845	\$4,225
Activity Total(s)			101	\$16,055	101	\$16,055	101	\$16,055	101	\$16,055	101	\$16,055	\$80,275
Natural Mortality (1%)	Tree Removal	\$314	46	\$14,378	46	\$14,572	47	\$14,682	46	\$14,475	46	\$14,475	\$72,582
	Stump Removal	\$72	46	\$3,297	46	\$3,341	47	\$3,367	46	\$3,319	46	\$3,319	\$16,643
	Replacement Tree	\$475	46	\$21,750	46	\$22,044	47	\$22,210	46	\$21,897	46	\$21,897	\$109,797
Activity Total(s)			137	\$39,425	139	\$39,957	140	\$40,259	138	\$39,690	138	\$39,690	\$199,022
Activity Grand Total			5,434		5,826		5,670		6,013		6,447		
Cost Grand Total				\$213,813		\$255,827		\$175,469		\$196,079		\$171,193	\$1,012,380

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 4,579 inventoried public trees generate at least \$31,596 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 Lake Bluff'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.

Lake Bluff'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 Lake Bluff 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 Lake Bluff.

EVALUATING AND UPDATING THIS PLAN

This *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 (figure 13). Below are some examples of implementing the steps of this cycle:

- Preparing planting plans in advance accounts for scheduling and completing stump removal in the designated area, and for selecting species best suited to the available sites.

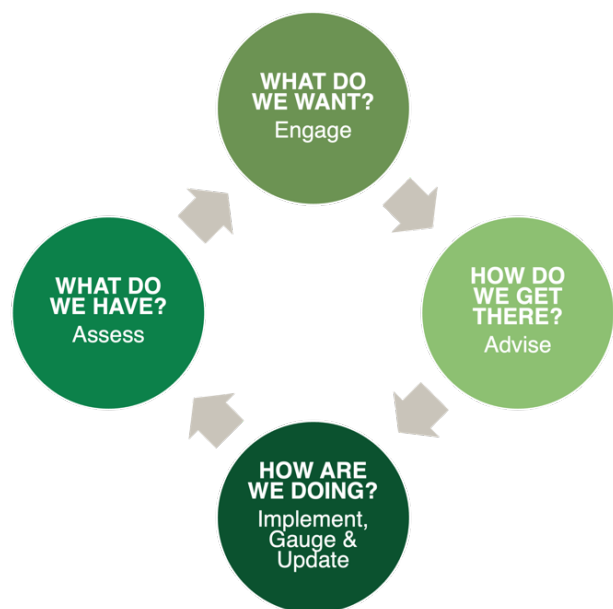


Figure 13. Adaptive management cycle flow chart.

- Annually comparing the number of trees planted to the number of trees removed and the number of vacant planting sites remaining, 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.

REFERENCES

- Coder, K. D. (1996). Identified Benefits of Community Trees and Forests. University of Georgia Cooperative Extension Service: Forest Resources Unit. Publication FOR96-39.
<https://nfs.unl.edu/documents/communityforestry/coderbenefitsofcommtrees.pdf>
- Ewing, R. and Dumbaugh, E. (2009). The built environment and traffic safety: a review of empirical evidence. *Journal of Planning Literature*, 23(4), 347-367.
- Gilstad-Hayden, K., Wallace, L.R., Carroll-Scott, A, et al. (2015). Greater Tree Canopy Cover Is Associated with Lower Rates of Both Violent and Property Crime in New Haven, CT. *Landscape and Urban Planning*, 143, 248–253. <https://doi.org/10.1016/j.landurbplan.2015.08.005>.
- Hughes, N. (2013). Trees Mean Business. *Invest From the Ground Up, California Urban Forests Council*. <https://investfromthegroundup.org/trees-mean-business/>
- Johnson, Z. S., Koski, T., and O'Conner, A. (2017). The hidden value of landscapes.
http://webdoc.agsci.colostate.edu/hortla/Colorado_Water_2017.pdf
- McDonald, R.I., Kroeger, T., Zhang, P. et al. (2020). The Value of US Urban Tree Cover for Reducing Heat-Related Health Impacts and Electricity Consumption. *Ecosystems*, 23, 137–150.
<https://doi.org/10.1007/s10021-019-00395-5>
- McPherson, E.G., Simpson, J.R., Peper, P.J., Maco, S.E., & Xiao, Q. (2005). Municipal forest benefits and costs in five U.S. cities. *Journal of Forestry*. 103(8): 411-416.
- Miller, R. W., & Sylvester, W.A. (1981). An Economic Evaluation of the Pruning cycle.
Journal of Arboriculture, 7(4), 109–112.
- Nowak, D.J., Hirabayashi, S., Bodine, A., and Greenfield, E. (2014). Tree and Forest Effects on Air Quality and Human Health in the United States. *Environmental Pollution*, 193, 119–129.
<https://doi.org/10.1016/j.envpol.2014.05.028>.
- Richards, N. A. (1983). Diversity and Stability in a Street Tree Population. *Urban Ecology*, 7(2), 159–171.
- Santamour, F.S. (1990). Trees for Urban Planting: Diversity Uniformity, and Common Sense. *U.S. National Arboretum: Agricultural Research Service*.
https://pdfs.semanticscholar.org/26a2/4c5361ce6d6e618a9fa307c4a34a3169e309.pdf?_ga=2.266051527.959145428.1587418896-558533249.1587418896
- Swift, P., Painter, D., and Goldstein, M. (1997). Residential street typology and injury accident frequency. *Swift and Associates*.
- Troy, A., Grove, M., and O'Neil-Dunn, J. (2012). The relationship between tree canopy and crime rates across an urban–rural gradient in the greater Baltimore region. *Landscape and Urban Planning*, 106, 262–270.
- Ulrich, R.S. (1984). View through Window May Influence Recovery from Surgery. *Science*, 224, 420–422. <https://pdfs.semanticscholar.org/43df/b42bc2f7b212eb288d2e7be289d251f15bfd.pdf>
- Ulrich, R.S. (1986). Human Responses to Vegetation and Landscapes. *Landscape and Urban Planning*, 13, 29–44.

- Ulrich R.S., R.F. Simmons, B.D. Losito, E. Fiority, M.A. Miles, & M. Zeison. (1991). Stress Recovery During Exposure to Natural and Urban Environments. *Journal of Environmental Psychology*, 11(3), 201–230.
- United States Census Bureau. (2024). QuickFacts: Lake Bluff village, Illinois. Retrieved from <https://www.census.gov/quickfacts/fact/table/lakebluffvillageillinois/PST045222>
- USDA Forest Service. (2011). Trees pay us back in the Inland Empire Region. https://www.fs.fed.us/psw/topics/urban_forestry/products/18/804uesd_uep_tpub_InlandEmpire.pdf
- USDA Animal and Plant Health Inspection Service. (2020). Pest Tracker. <https://www.aphis.usda.gov/aphis/resources/pests-diseases/hungry-pests/Pest-Tracker>
- US Department of Energy. (n.d.) Low-Income Community Energy Solutions. <https://www.energy.gov/eere/slsc/low-income-community-energy-solutions>
- Wolf, K. L. (1998). Trees in Business Districts: Positive Effects on Consumer Behavior! *University of Washington: College of Forest Resources* Human Dimensions of the Urban Forest Fact Sheet #5. <https://www.naturewithin.info/CityBiz/Biz3Ps-FS5.pdf>
- Wolf, K. L. (1999). Grow for the Gold: Trees in Business Districts. *Washington State DNR: Community Forestry Program* Number 14. <https://www.naturewithin.info/CityBiz/TreeLink.PDF>
- Wolf, K.L. (2005). Business district streetscapes, trees, and consumer response. *Journal of Forestry*, 103(8), 396-400. https://nacto.org/docs/usdg/city_trees_retail_wolf.pdf
- Wolf, k. L. (2007). City trees and property values. *Arborist News*, 16(4), 34-36.

APPENDIX A: SUMMARY OF RECOMMENDATIONS

SECTION	RECOMMENDATION
Species & Genus Diversity <i>(Long-Term Goals)</i>	• Avoid or limit planting of Norway maple (<i>Acer platanoides</i>) and increase planting of other species until Norway maples make up less than 10% of public trees. • Avoid or limit planting of maples and oaks. Increase planting of other genera until maples (<i>Acer</i>) and oaks (<i>Quercus</i>) make up less than 20% of public trees. • Remove volunteer trees that have invasive tendencies, such as Norway maple, Callery pear, boxelder, white mulberry, and buckthorn, from maintained public areas while small. • Increase planting of uncommon species and genera that are well suited to urban environments.
Pest Susceptibility <i>(Long-Term Goals)</i>	• 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. • Spotted lanternfly can host on many tree species but prefer tree of heaven (<i>Ailanthus altissima</i>), an exotic, invasive, fast-growing tree. At the time of the tree inventory, no tree of heaven was documented along streets ROW or in parks. Continue managing tree of heaven populations on public and private land to reduce the suitability of Lake Bluff's urban forest to host spotted lanternfly. • 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 Lake Bluff.
Condition <i>(Long-Term Goals)</i>	• 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 Lake Bluff's streets and natural areas. • 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 (Clause 5)</i> guidelines.
Relative Age Distribution <i>(Long-Term Goals)</i>	• Underrepresentation of trees within the Young age class suggests that increased, sustained tree planting efforts may be needed to maintain an even age distribution over time. A young tree training cycle should be instituted to prune these younger trees to ensure proper structure and maintain health as they mature.

	• Roughly 30% of street trees fall within the maturing and mature age classes. Proactive tree care to mitigate risks associated with senescence will preserve these trees' capacity to provide benefits. Additionally, as these maturing and mature trees are removed, it is recommended that younger trees are planted to maintain or increase the Village's stocking rate, canopy coverage, and species diversity targets. • Routine, proactive maintenance, such as young tree training and routine pruning, may help improve tree condition, particularly among maturing and mature trees.
Defect Observations <i>(Long-Term Goals)</i>	• Tree architecture (60%) was the most common defect observation for trees in Lake Bluff. This defect observation includes leans, bows, taper, live crown ratio concerns. Trees with this defect will require removal of one or more limbs to reduce risk, provide clearance, and restore the tree. Regular pruning, as done in a routine pruning cycle, can improve the health of these trees and reduce risk associated with structural defects. In cases where defects cannot be corrected by pruning without creating additional risk, removal is recommended. • Dead and dying branches were observed in 12% of inventoried street trees. Regular pruning, as done in a routine pruning cycle, can improve the health of these trees and reduce risk associated with dead and dying branches. Removal of dead limbs also improves the visual aesthetics of trees and may help improve public perception of the level of tree care in the Village. • A branch attachment defect was recorded for 10% of street 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.
Canopy Cover & Stocking Level <i>(Long-Term Goals)</i>	• 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 Lake Bluff. Once initial goals are achieved, further goals can be set. This incremental method of progress can help build capacity and community support for tree planting and care over time. ○ The Village 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. • Conducting an urban tree canopy assessment may be helpful for setting and eventually achieving Village's tree canopy and equity goals. Lake Bluff may want to consider an urban tree canopy assessment as a next step in their urban forest management program.
Natural Areas <i>(Long-Term Goals)</i>	• Conduct invasive species removal to promote natural regeneration of forested natural areas. • Prepare an invasive species management plan to guide the response to future pest or disease infestations. Monitor natural areas for signs and symptoms of pests and diseases on a regular basis. When a pest or disease is suspected, act quickly to confirm the identification and begin management. • Within natural areas, dead and dying trees may be left to decay in place for ecological reasons. Consider removal for any trees that pose a risk to visitors or structures. • Prioritize native species when planting in the natural areas.

Tree Benefits and Outreach (Long-Term Goals)	• Tall deciduous trees with broad canopies tend to provide the greatest benefits. Lake Bluff 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 new large tree planting spaces to accommodate large-stature street trees. The Village should strive to preserve existing large-stature trees and provide proactive care to young public trees to ensure they achieve mature status in the future. • The protection of very large trees should be a priority, and succession planning to replace large trees and increase tree cover in parks will have a large positive impact on tree benefits in Lake Bluff in the future. Creating a heritage tree program can be one way to provide special protection for very large trees. • The public trees in Lake Bluff account for only a fraction of the total benefits provided by the Village's trees. This benefits analysis does not account for the trees that provide benefits to Lake Bluff that are located on private property. Lake Bluff should consider methods to preserve existing trees and promote new tree planting on private property throughout the Village to increase tree benefits. • Lake Bluff should consider opportunities to provide community outreach and education to promote retention and planting of trees on private property such as providing tree-related updates and tips in Village communications and holding informational public meetings and events on tree-related topics.
Priority Maintenance (Short-Term Goals)	• 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. • None of the inventoried Extreme- or High-risk rated street trees were recommended for pruning. In the future, if pruning is recommended for trees that have been assigned Extreme- or High-risk, they 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.
Routine Maintenance (Short-Term Goals)	• Moderate-risk pruning and removals should be performed after all Extreme- and High-risk pruning and removal work 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 (see below). • 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.
Routine Pruning Cycle (Short-Term Goals)	• The Village of Lake Bluff should aim to prune 1/5 of its public trees each year during a five-year routine pruning cycle. • Trees that 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 that 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 that are planted and removed in future years. • Not every tree in the routine pruning cycle will need to be pruned each cycle; therefore, 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.
Young Tree Training Cycle <i>(Short-Term Goals)</i>	• The Village of Lake Bluff 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 Village and the number of new plantings. • Young tree training is recommended to begin two to three 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; therefore, 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.
Routine Inspections and Inventory Update <i>(Short-Term Goals)</i>	• 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. • Basic 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 4,057 street trees in the current inventory not recommended for removal, approximately 811 would need to be updated each year during a five-year inventory update cycle.
Tree Planting and Stump Removal <i>(Long-Term Goals)</i>	• 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. • Lake Bluff 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 <i>Growing Space Recommendations</i> section. • To avoid loss of public trees, Lake Bluff should aim to maintain or increase their current stocking level. The budget table assumes a 2:1 replacement strategy to show the costs of maintaining such a planting program. 2:1 replacement may only be possible when removing large mature trees • 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, Lake Bluff 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 <i>Silva Cells</i> to improve root movement through soils and reduce infrastructure conflicts. ○ Working with other Village 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 level, particularly for planting projects within Environmental Justice areas. • Continue to develop and foster partnerships with groups such as The Morton Arboretum's Chicago Region Trees Initiative (CRTI) who can help promote and support tree planting goals in the community.
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APPENDIX B: STUDY AREA AND DATA COLLECTION

STUDY AREA

Lake Bluff, Illinois spans an area of approximately 4 square miles, a quarter of which is open space and parkland. The Village's eastern boundary is the Lake Michigan shoreline. Lake Bluff's landscape is varied - ranging from bluffs, to ravines, to forest preserves. The 2023 Village of Lake Bluff inventory collected data for 4,748 street right-of-way and park sites and 1,598 sites in natural areas.

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
- Inventory Date
- Level 2 Assessment Complete
- Multi-Stem
- Primary Maintenance Need
- Residual Risk
- Risk Rating
- Size*
- Species

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.

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

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:

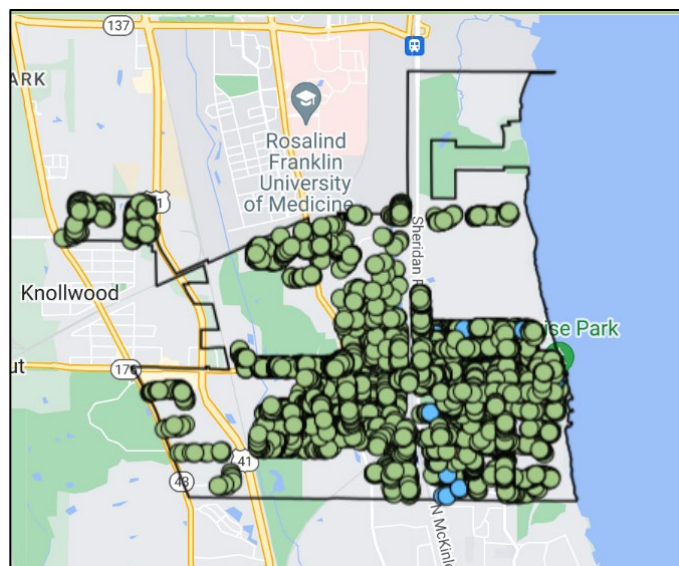


Image 1. Screenshot of inventoried points taken from Lake Bluff's TreeKeeper® program. Each dot represents an inventoried site.

- **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 (Clause 13)* 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

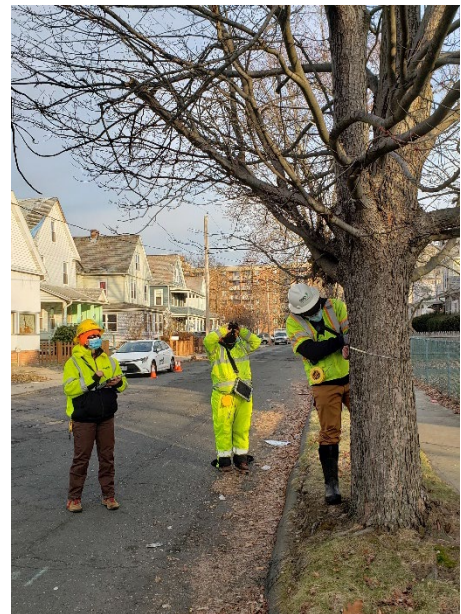
A walk-by or drive-by assessment designed to quickly scan a large population of trees and identify those which need a more advanced assessment due to defects with an imminent or probable likelihood of failure. Level 1 assessments do not typically result in risk ratings, but rather provide a list of tree 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.

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.



DRG arborists conducting a Level 2 risk assessment.

PROCESS OF RISK ASSESSMENT

The primary components of a risk assessment in line with the current editions of *ANSI A300 (Clause 13)* 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
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat Likely	Low	Low	Moderate	Moderate
Unlikely	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.

MEMORANDUM



TO: Chair Rener & SEC Members

FROM: Clara Gable, Assistant to the Village Administrator
Lauren Chermak, Administrative Intern

DATE: July 12, 2024

SUBJECT: Continued Discussion Regarding Draft Lighting Ordinance

As the SEC may recall, Village staff previously contracted John Barentine, Principal Consultant of Dark Sky Consulting, LLC, to review the SEC's draft lighting ordinance. Updates have been made to the draft lighting ordinance following the June SEC meeting. The SEC may want to discuss how to proceed forward with the draft lighting ordinance.

Attachments

1. Draft Lighting Ordinance
2. Recommended Lighting Zones Document and Map

TITLE (9? 10?)

CHAPTER XX: OUTDOOR LIGHTING

10-XX-XX PURPOSE

This chapter governs lighting within the Village, in order to fulfill the objective identified in the Village's Sustainability Plan of combatting light pollution within the Village.

Objectives: The regulation of lighting also accomplishes the following objectives:

- A. Minimize light pollution and glare resulting from the use of outdoor lighting;
- B. Promote efficient and cost-effective lighting and to conserve energy;
- C. Encourage preservation, to the greatest practical extent, of natural nighttime darkness;
- D. Encourage quality outdoor lighting design and prevent inappropriate, poorly designed or installed outdoor lighting;
- E. Reduce unwanted light that would enter homes and businesses at night;
- F. Provide adequate light for safety and security;
- G. Incorporate responsible lighting design into all new construction projects;
- H. Recognize that certain holidays and special events may have unique lighting needs; and
- I. Follow the IES and DarkSky International's Five Principles for Responsible Outdoor Lighting:
 1. **Useful:** All light should have a clear purpose
Before installing or replacing a light, determine whether light is needed. Consider how the use of light will impact the area, including wildlife and the environment. Consider using reflective paints or self-luminous markers for signs, curbs, and steps to reduce the need for permanently installed outdoor lighting.
 2. **Targeted:** Light should be directed only to where it's needed
Use shielding and careful aiming to target the direction of the light beam so that it points downward and does not spill beyond where it is needed.
 3. **Low level:** Illumination should be no higher than necessary
Use the lowest light level required. Be mindful of surface conditions, as some surfaces may reflect more light into the night sky than was intended.
 4. **Controlled:** Light should be used only when it is useful
Use controls such as timers or motion detectors to ensure that light is available when it is needed, dimmed when possible, and turned off when not needed.
 5. **Warm-colored:** Use warmer-color lights where possible
Limit the amount of shorter wavelength (blue-violet) light to the least amount needed. Light where you need it, when you need it, in the amount needed, and no more.

10-XX-XX DEFINITIONS

For the purposes of this title, the following terms, phrases, and words shall have the meanings given herein:

Footcandle (FC). A quantitative unit measuring the amount of light (illumination) falling onto a given point. One footcandle equals one lumen per square foot.

Fully shielded. A light luminaire constructed, installed and maintained in such a manner that all light emitted from the luminaire, either directly from the light source or a diffusing element, or indirectly by reflection or refraction from any part of the luminaire, is projected below the horizontal plane through the luminaires lowest light emitting part.

Mounting height. The vertical distance from the ground directly below the centerline of the luminaire to the lowest direct-light-emitting part of the luminaire.

IES. The Illuminating Engineering Society, a non-profit professional organization of lighting specialists that has established recommended design standards for various lighting applications.

Isocandle plan. A demonstration or topographic of light distribution over a given area.

Light source. The device in a lighting luminaire that provides illumination, typically a bulb, florescent tube, or light emitting diode (LED).

Luminaire. A complete lighting unit consisting of a light source(s) and ballast(s) (when applicable) together with the parts designed to distribute the light, to position and protect the light sources, and to connect the light sources to the power supply. A luminaire does not include any mounting hardware such as poles.

Lumen. A quantitative unit used to identify the amount of light emitted by a light source. A light source is generally rated in lumens. The luminous flux emitted within a unit solid angle (one steradian) by a point source having a uniform luminous intensity of one candela. Purchased fixtures typically include a lumen rating.

10-XX-XX REGULATED ACTIVITIES

This Chapter shall apply to all exterior residential and non-residential (including public) lighting, including illumination from outdoor signs that impact the outdoor environment. No person shall install or maintain any light luminaire unless such luminaire meets the requirements of this Chapter. If an existing light luminaire is removed, replaced, moved, upgraded, or otherwise changed, it shall only be replaced with a conforming light luminaire.

10-XX-XX LUMINAIRE STANDARDS.

A. Maximum Luminaire Emissions.

1. Fully Shielded. For fully shielded building-mounted luminaires, the maximum permitted light output per luminaire and the maximum permitted luminaire height shall be:

Zoning District	Maximum Light Output (lumens)	Minimum Height (feet above grade)	Maximum Height (feet above grade)
Residential (Single Family)	1,400	N/A	20
Residential (Other Than Single Family)	2,800	N/A	10
Other Than Residential	17,500	Greater than 10	30

2. Other Than Fully Shielded. For luminaires that are not fully shielded, the maximum permitted light output per luminaire and the maximum permitted luminaire height shall be:

Zoning District	Maximum Light Output (lumens)	Maximum Height (feet above grade)
Residential	700	10
Other Than Residential	1,400	15

- B. Color Temperature. The maximum correlated color temperature (CCT) of any light source shall be equal to or lower than 3,000 Kelvin degrees to help support the natural nighttime environment.
- C. Architectural Façade Lighting.
1. Upward-Aimed Façade Lighting. Upward-aimed façade lights are subject to the lumen output restrictions applicable to luminaires that are not fully shielded luminaires. However, Upward-aimed façade lights shall be fully shielded, fully confined from projecting into the sky by eaves, roofs, or overhangs; and will be mounted as flush to a wall.
 2. Downward-Aimed Façade Lighting. Downward-aimed façade lighting shall be fully shielded and mounted as flush to a wall as possible.
 3. No Reflective Surfaces. No light shall be aimed at any reflective architectural surface, such as polished metal or glass.
- D. Prohibited Luminaires. No luminaire may be installed that violates the standards of this Section or that:
1. Distracts by flickering, flashing, blinking, scrolling, rotating, or varying in intensity except in response to a time or motion lighting control.
 2. Is upward aiming above 90 degrees, except as otherwise permitted herein.
 3. Is a laser light source.
- E. Exempt Luminaires. The standards of this Section shall not apply to the following luminaires:
1. Regulatory Lighting. Any lighting required by local, state, or federal agencies, to the extent that such requirements are inconsistent with this Section.
 2. Temporary Lighting. Any lighting used for emergency, repair, construction, special events, or similar activities.
 3. Right-of-Way Lighting. Any public lighting that is located within the right-of-way.
 4. Underwater Illumination. Any underwater lighting used to illuminate swimming pools or fountains.
 5. Landscape or Ornamental Lighting. Any lighting used to illuminate landscaping, paths, or similar outdoor features. Landscape lighting must be controlled using timers and may not be upward facing. Self-contained solar-operated light luminaires where no luminaire emits more than 100 lumens do not require timers.

6. Seasonal Lighting Displays. Lighting displays from November 15 through January 30 of the following year.
7. Strings of Lights. Suspended strings of lights that are either:
 - a. On a property used as a single-family dwelling; or
 - b. Around, in, or over outdoor dining areas for eating and drinking establishments only where all of the following are true:
 - 1) Each incandescent bulb emits less than 25 lumens.
 - 2) Each LED bulb emits less than 50 lumens.
 - 3) The lights are only on when the outdoor dining area is in use.
8. Outdoor Sports Lighting. Any lighting used for outdoor recreational facilities must be controlled using timers and may not be upward facing.
- F. Lighting Controls. Outdoor lighting controls should conform with the Village's latest adopted version of the International Energy Conservation Code (with Illinois Amendments).

10-XX-XX SITE STANDARDS.

- A. Maximum Total Light Emissions. The total light output from all luminaires on any zoning lot shall not exceed a certain ratio of lumens per developed acre (see chart below). Luminaires (other than fully shielded) may not exceed 10% of all installed lumens. A zoning lot used for single-family residential purposes shall be presumed to satisfy this requirement and need not demonstrate conformity.

Zoning District	Lumens Per Developed Acre
Residential (Single Family)	10,000
Residential (Other Than Single Family)	20,000
Other Than Residential	50,000

- B. Light Trespass.
 1. General Standard. All outdoor lighting shall be designed, installed, and maintained in order to minimize light trespass onto adjacent properties and rights-of-way.
 2. Performance Standard.
 - a. The light source of a luminaire shall not be visible at the property line on which the luminaire is located;
 - b. For adjacent non-residential uses, the illuminance at the property line shall not exceed 1 foot-candle; and
 - c. At any property line "abutting a residential lot", the illuminance at the property line shall not exceed 0.5 foot-candle.

- C. Hours of Operation. For zoning lots other than those used for residences, hours of operation should conform with the Village's latest adopted version of the International Energy Conservation Code (with Illinois Amendments). For residentially used lots, (need to determine).

10-XX-XX SUBMISSION REQUIREMENTS.

- A. Required Technical Submissions. Applications for permits for projects involving outdoor lighting, except for single-family residential projects, shall contain documentation that demonstrates the proposed lighting complies with the provisions of this Chapter. Submission is required at the time of site plan or building permit application and shall contain, but not be limited to, the following, all or part of which may be part of or in addition to other required processes and permits until Titles 9, 10, and 11 of the Municipal Code:
1. Photometric Plan. A point-by-point footcandle array or isocandle plan in a printout format indicating the location and aiming of illuminating devices.
 2. Location and Height. The location and height above grade of all proposed and existing light luminaires on the subject property.
 3. Schedule of Luminaires. The type, initial luminaire lumen rating, color rendering index, and wattage of each light source.
 4. Technical Specifications. The general style of the light luminaire such as cutoff, lantern, coach light, globe, and a copy of the manufacturer's catalog information sheet and IESNA photometric distribution type, including any shielding information such as house side shields, internal, and/or external shields.
 5. Light Controls. Control descriptions including type of controls (timer, motion sensor, time clock, etc.), the light luminaires to be controlled by each type, and control schedule when required;
- B. Waiver for Minor Projects. The Building Commissioner may waive the requirements in subsection A of this Section for small independent projects on less than one-quarter acre, provided the applicant has provided all other required information and can otherwise demonstrate compliance with this article.

10-XX-XX DEVIATIONS.

- A. Purpose. The provisions of this Chapter cannot possibly address every specific situation to which they may have to be applied. Many such situations can be addressed by adjusting the specific provisions of this Chapter in light of the general and specific purposes for which the provisions have been enacted.
- B. Deviation Authority. In conjunction with approval of a site plan, deviations may be granted in implementing the strict standards of this Chapter. Said deviations do not require a finding of hardship or that the deviation will create compensating public amenities. Deviations shall be recommended and approved in the same manner as site plans pursuant to Section 10-2C-5.
- C. Criteria for Deviations. A deviation may be granted where any one of the following criteria is satisfied:
1. Special Circumstances. There are special circumstances or conditions applying to the land, buildings, or outdoor light luminaires for which the deviation is sought, which circumstances or conditions are peculiar to such land, buildings or outdoor light

luminaires and do not apply generally to the land, buildings or outdoor light luminaires in the vicinity.

2. Professional Standards. Both:

- a. The use is subject to a special use permit, or is a use that is otherwise rare or uncommon within the Village; and
- b. The proposed lighting levels are consistent with recommendations from the IESNA for the use or activity to be undertaken.

3. Historic Features. Where all of the following are true:

- a. The lighting luminaire is located on a property designated as a landmark or recognized as a contributing property to a designated historic district;
- b. The lighting luminaire is of historic significance to the property; and
- c. Removal of or a modification to the lighting that would otherwise be required to come into compliance with the requirements of this Chapter would have an adverse impact on the historic character of the property.

10-XX-XX NON-CONFORMING LIGHTING; GRANDFATHERING; AMORTIZATION.

- A. Purpose. This Section is intended to (i) gradually eliminate inappropriate and substandard lighting practices throughout the Village in a manner that minimizes unnecessary costs to property owners; (ii) allow property owners to realize a reasonable value from existing lighting systems rendered non-conforming by this Chapter; and (iii) ensure that property owners who voluntarily choose to improve their lighting systems are not placed at a competitive disadvantage relative to the owners of non-conforming lighting systems.
- B. General Standard; Amortization. The outdoor lighting of all properties in the Village shall be brought into compliance with the standards of this section no later than **XX, XX 2031**, a date seven years subsequent to the adoption of this Chapter.
- C. Fee Adjustments; Early Adoption Incentive. The following discounts shall apply wherever a property owner proposes to replace a non-conforming lighting system with a completely conforming lighting system:

Complete Application Received:	Site Plan Review Fee Discount:	Discount for Portion of Building Permit Fee Consisting Of Lighting:
Prior to XX, XX 2028 (Less Than 4 Years)	50%	75%
Between XX, XX 2028 and XX, XX 2031 (4-7 Years)	0%	25%
After XX, XX 2031 (Overdue)	0%	0%

D. Loss of Grandfathered Status.

1. No Replacement of Grandfathered Luminaires; Maintenance Exempted. Whenever a non-conforming luminaire is removed, replaced, moved, upgraded, or otherwise changed, the replacement luminaire must be brought completely into compliance with this Chapter. Routine maintenance is permitted for all existing luminaires, including changing the light source, ballast, starter, photo control, lens, and other required components.
 - a. Exception: Color Temperature. No light source may be replaced with a light source with a color temperature in excess of that permitted by **Section 10-XX-XX(C)**, unless the owner demonstrates to the satisfaction of the Building Commissioner that no light source with an acceptable color temperature is available for the luminaire.
2. Percentage Replacement Threshold. Whenever more than 20 percent of the original luminaire count of a site is replaced or proposed for replacement with conforming luminaires, the owner shall be required to bring the entirety of the site into conformity with this Chapter.
3. Major Project Threshold. The owner shall be required to bring the entirety of the site into conformity with this Chapter where any of the following occur relative to a given lot's conditions on **XX XX, 2024**, the effective date of this Chapter:
 - a. Renovation or addition with a total cost exceeding 25 percent of the assessed market value of the building.
 - b. Expansions or additions exceeding 25 percent of existing floor area.
 - c. Any combination of additions or reconstruction of 50 percent or more of the paved area used for on-site parking.
4. Cessation of Use. No lighting system that has been abandoned or willfully removed from operation for a period of longer than 30 days shall be restored to use unless in full compliance with this Chapter.

E. Extension of Amortization Schedule

1. Factors for Extension. It is anticipated that the general amortization period provided in this Section will be adequate to provide all property owners with a reasonable value from any non-conforming lighting improvements before they must be replaced. However, the Building Commissioner may extend the amortization period in order to avoid causing an economic hardship based on his consideration of the following factors:
 - a. The owner's investment in improvements and other assets on the property before the time the improvements became non-conforming.
 - b. Any costs that are directly attributable to the compliance date, such as demolition and reconstruction expenses.
 - c. Any return on investment since inception of the non-conforming systems, including net income and depreciation.
 - d. The anticipated annual recovery of investment, including net income and depreciation.

2. Extension Binding Upon Owner. The Building Commissioner may provide a date certain for the conclusion of the non-conforming lighting use. All non-conforming lighting systems on the site must cease operations on that day and may not operate thereafter except in complete conformity with this Section. The owner shall sign and acknowledge the revised amortization schedule in writing in a form provided by the Building Commissioner. Said document shall be filed with the Lake County Recorder of Deeds and any requirements, regulations, restrictions, or conditions thereto shall be a covenant running with the land benefitting from the extended schedule.
3. No Late Application. No application to extend the amortization schedule shall be accepted after the date listed for full compliance in subsection B of this Section.

Other items to consider (will need to find correct location in code):

Lighting zones:

We recommend that the Village consider the use of the IES Lighting Zones (LZs) as overlays to existing land-use zones. Such overlays enable the potential for allowances in the code that scale according to needs. A rough correspondence between use types and appropriate LZs is:

- Open space: LZ0
- Recreational and institutional: LZ1
- Single-family residential: LZ1
- Industrial and service: LZ2
- Multi-family residential: LZ2
- Central Business District: LZ2
- Other business: LZ1

Sign code:

The sign code (Chapter 10) regulates aspects of illuminated signs that may either conflict with the provisions of the draft lighting code or that otherwise do not follow best practice. We recommend that the Village consider amending the sign code as needed to modernize it, especially with respect to the regulation of electronic displays, and to harmonize its content with the lighting code.

Phased implementation:

Overall, we recommend a plan along the lines of the following:

1. Begin community education efforts as soon as possible, even as the new ordinance is still being developed.
2. As the details of the ordinance come into focus, prepare materials for property owners, contractors and others that help answer questions, and resources that help them comply with the new requirements.
3. Affect an amnesty, for a period not to exceed one year, during which building permits may be sought and granted using standards in the Municipal Code prior to the enactment of the new ordinance.

4. Promote early compliance through simple changes to existing lighting, where possible, and through provisions like the Early Adoption Incentive.

5. As amnesties and grandfathering periods come to an end, consider a limited period in which penalties for non-compliance are reduced.

DRAFT



Recommended Lighting Zones

Lighting zones reflect the base (or ambient) light levels desired by a community. The use of lighting zones (LZ) was originally developed by the International Commission on Illumination (CIE) and appeared first in the US in IES Recommended Practice for Exterior Environmental Lighting, RP-33-99. To learn more read about our [Model Lighting Ordinance](#).

IDA Suggested Lighting Zones for Codes and Ordinances

At this time, IDA recommends the use of five (5) outdoor lighting zones. The following are suggested criteria for the appropriate wording of the proposed lighting zones.

- **LZ0: No ambient lighting**
Areas where the natural environment will be seriously and adversely affected by lighting. Impacts include disturbing the biological cycles of flora and fauna and/or detracting from human enjoyment and appreciation of the natural environment. Human activity is subordinate in importance to nature. The vision of human residents and users is adapted to total darkness, and they expect to see little or no lighting. When not needed, lighting should be extinguished.
- **LZ1: Low ambient lighting**
Areas where lighting might adversely affect flora and fauna or disturb the character of the area. The vision of human residents and users is adapted to low light levels. Lighting may be used for safety, security and/or convenience but it is not necessarily uniform or continuous. After curfew, most lighting should be extinguished or reduced as activity levels decline.
- **LZ2: Moderate ambient lighting**
Areas of human activity where the vision of human residents and users is adapted to moderate light levels. Lighting may typically be used for safety, security and/or convenience but it is not necessarily uniform or continuous. After curfew, lighting may be extinguished or reduced as activity levels decline.
- **LZ3: Moderately high ambient lighting**
Areas of human activity where the vision of human residents and users is adapted to moderately high light levels. Lighting is generally desired for safety, security and/or convenience and it is often uniform and/or continuous. After curfew, lighting may be extinguished or reduced in most areas as activity levels decline.
- **LZ4: High ambient lighting**
Areas of human activity where the vision of human residents and users is adapted to high light levels. Lighting is generally considered necessary for safety, security and/or convenience

[Model Lighting Ordinance \(MLO\) PDF](#)

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Lighting

Outdoor Lighting Basics

Find Dark Sky Friendly Lighting

[Lighting For Policy Makers](#)

[Residential/Business Lighting](#)

[My Neighbor's Lighting](#)

[Bad Streetlights](#)

[Model Lighting Laws & Policy](#)

[LED Practical Guide](#)

Find a Dark Sky Friendly Lighting



Illuminating
ENGINEERING SOCIETY



INTERNATIONAL
DARK-SKY
ASSOCIATION

JOINT IDA - IES **Model Lighting Ordinance** **(MLO)** **with USER'S GUIDE**

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NORTH SHORE LIFE
LAKE BLUFF STYLE

Village of Lake Bluff, Illinois
Lighting Zones - DRAFT
July 2022

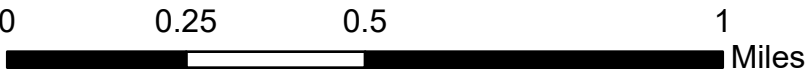
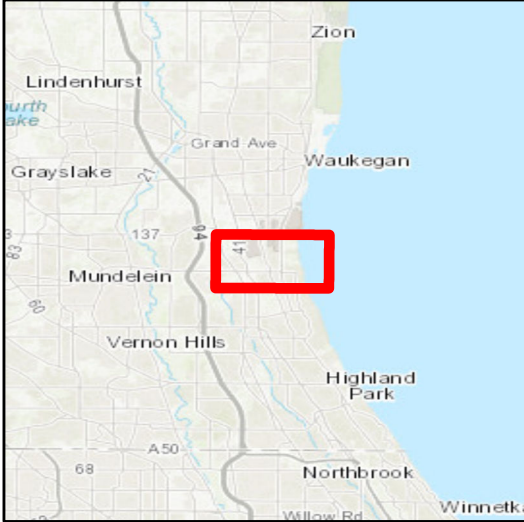
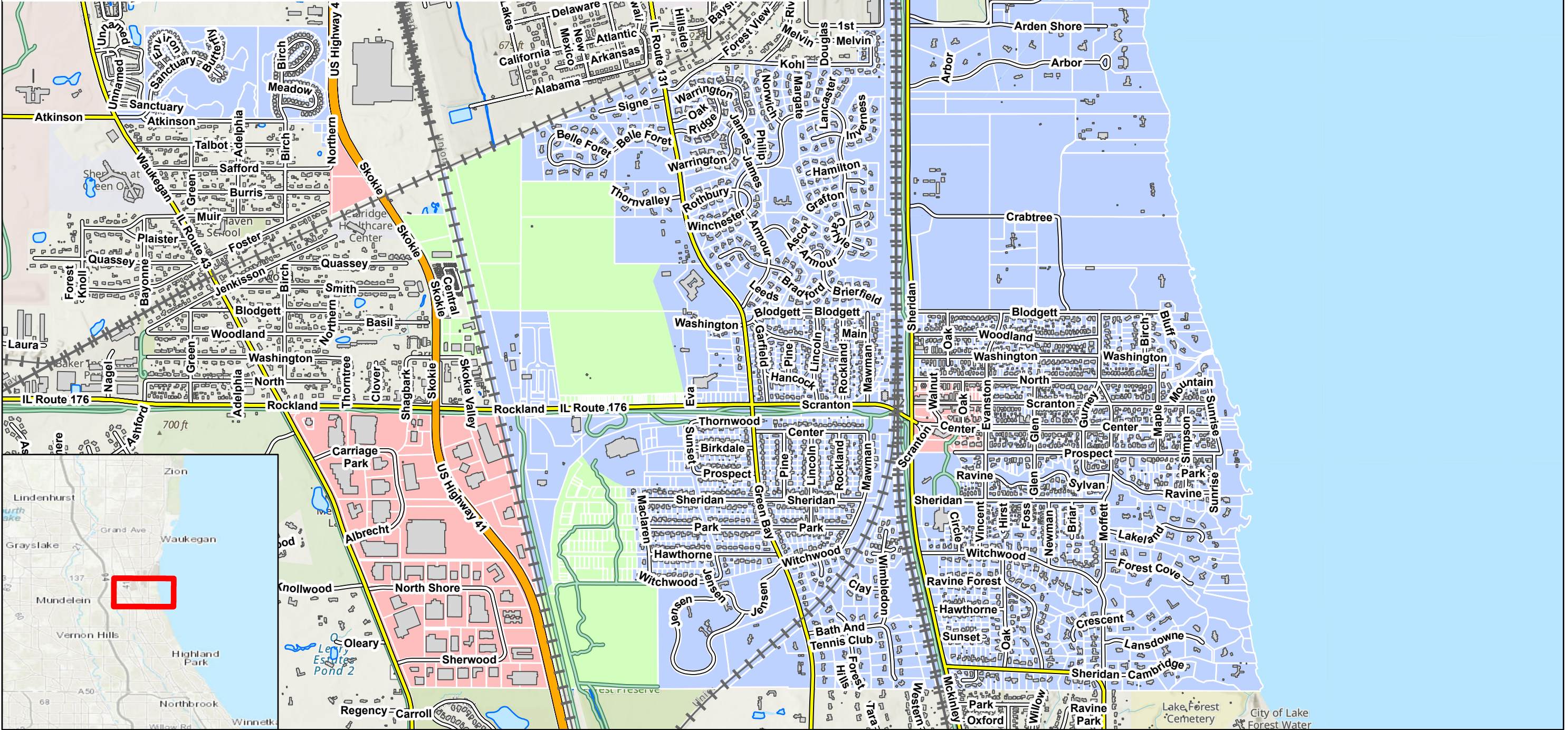
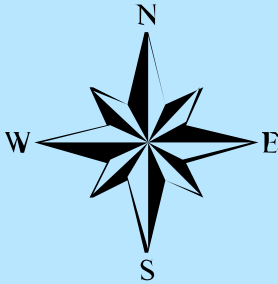
NO WARRANTY; LIMITATION OF LIABILITY: This product is for informational purposes only and includes data developed by others. The Village of Lake Bluff cannot accept any responsibility for any errors, omissions, or positional or content accuracy, and this product is provided without any warranty. The User is strongly cautioned to verify all information shown before relying on it. Further, the User agrees that it will indemnify and hold harmless the Village of Lake Bluff and its officers, agents, employees, and volunteers from any and all claims arising from any act or omission or commission in the use of this product.

Features

- Limited access highway
- Highway
- Major road
- Minor road
- Limited access
- Trail
- Railroad
- Bodies of Water
- Building Footprints
- Parcels

Lighting Zones (LZ)

- LZ-0
- LZ-1
- LZ-2



1:17,000

Bird City Illinois



A PUBLICATION OF THE
AUDUBON COUNCIL OF ILLINOIS

Contact:

birdcityillinois@gmail.com BIRDCITY.ORG/ILLINOIS

June 2024

Congratulations to our next three Bird Cities of Illinois!

This May and June, we added THREE municipalities to join our growing community that already includes Evanston, Freeport, Grayslake, Libertyville, Rockford, and Waukegan. We are excited to add the **City of St. Charles**, **the Village of Lake Bluff**, and **the Village of Homewood to our Bird City Network!** Learn more about each municipality and how they achieved their designation on the next few pages. We look forward to the growth of their Bird City Illinois programs and their World Migratory Bird Day events each year!

In this newsletter
you can expect:

The next THREE
Bird Cities of
Illinois!

Feature of the
City of St. Charles
(p. 2)

Feature of the
Village of Lake
Bluff
(p. 3)

Feature of the
Village of
Homewood
(p. 4)

WMBD
Highlights
throughout IL
(p. 5-6)

Birds in the News
(p. 7)



Congratulations to the City of St. Charles!

On May 8, 2024, the City of St. Charles officially became the 7th municipality to become a Bird City of Illinois. Audubon Council President Jennifer Kuroda presented the honor to members of the St. Charles Natural Resources Commission before a Kane County Audubon Society meeting.

St. Charles met ten criteria to fulfill their designation. The city achieved multiple accomplishments to meet the Habitat category including being a Tree City for 25 years, signing the Mayors' Monarch Pledge, with an action item to achieve within their term, managing a native plant demonstration garden at Pottawatomie Park, having a Certified Audubon Cooperative Sanctuary designation for Pottawatomie Golf Course, and having high quality areas at Ferson Creek Fen and Norris Woods.

The City of St. Charles also met criteria for the Education and Engagement category by displaying information about World Migratory Bird Day and Dark Skies initiatives during an annual Scarecrow Festival. Kane County Audubon volunteers also participate in Swift Night Out for community science. The City also met the required components of the annual WMBD proclamation and passing of the Bird City Resolution on April 15, 2024.

Congratulations to the City of St. Charles and we look forward to seeing what you do in the coming year! Read more about St. Charles [here](#)!



Above From left, Suzi Myers of the Natural Resources Commission (NRC), Jennifer Kuroda of Bird City Illinois, Pam Otto of NRC, and Lee Haggas of NRC (photo provided by Suzi Myers)



Scarecrow display (photo provided)

Congratulations to the Village of Lake Bluff!

On June 10, 2024, the Village of Lake Bluff became the 8th municipality to earn the Bird City designation. Lake Bluff met an astounding 29 criteria!

In the Habitat category, the Village has proposed a Comprehensive Land Use Plan to include parks, recreation, and open space as well as environmental resources; has been designated as a Tree City since 1995; has a 30-year initiative by the Lake Bluff Open Lands Association preserving 225 acres of natural areas and open spaces at the Skokie River Prairie Land and Water Reserve; has a Native Garden in Artesian Park, used an Openlands/ComEd grant award to restore nearly 10 acres of pollinator habitat along right-of-way space of Route 176 near the Lake Bluff Golf Course, supports No Mow May; offers weekly newsletters that often includes information about managing invasive species, and has managed plans to improve storm water management systems.

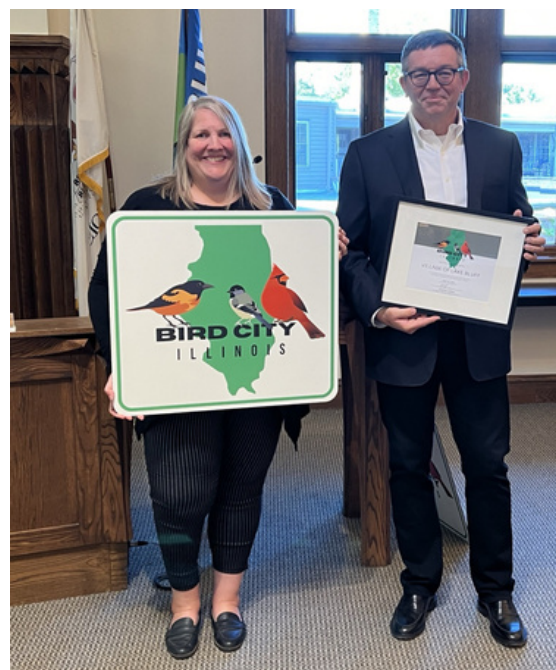
In the Category to Reduce Threats to Birds, the Village is currently working on a light pollution ordinance with education to the public about light pollution; has a LEED-certification at Lake Bluff Elementary School; supports Earth Day cleanups; and uses sustainable pesticide methods.

In the Education and Engagement Category, the Village fulfilled the requirements of the annual Proclamation for WMBD as well as passing the Bird City Resolution on January 8, 2024. They also have citizens participate in community science with volunteers monitoring Eastern Bluebirds and Common Nighthawks (with the Chicago Ornithological Society), both at the Skokie Forest Preserve. Also, the Lake County Forest Preserve has approved an ADA-compliant public access in the Oriole Woods Preserve. Finally, in the Sustainability Category, the Village Sustainability and Community Enhancement Committee has prioritized many great initiatives with schools and greater community. The Village also encourages residents to participate in Community Solar.



Above: Lake Bluff Native Garden display at Artesian Park (photo provided)

Right: Jennifer Kuroda presenting the Lake Bluff Village Board of Trustees Regis Charlot.with the Bird City Award and sign.



Congratulations to the Village of Homewood!

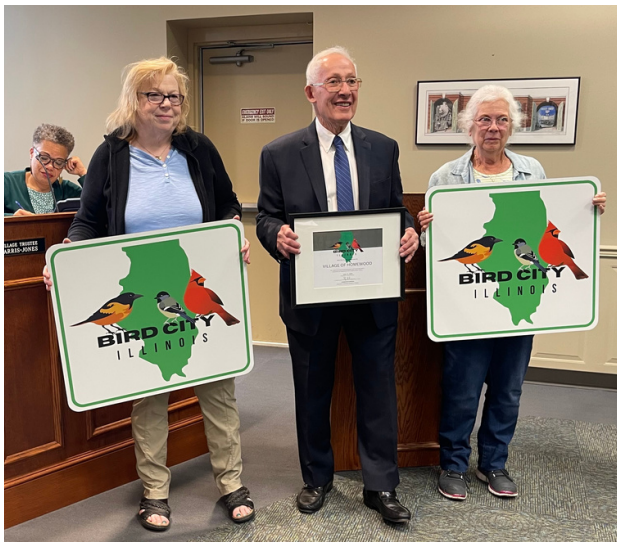
On June 11, 2024, the Village of Homewood became the 9th municipality to become the next Bird City of Illinois. Their application met 24 criteria!

In the Habitat Category, Homewood is an accredited Level 1 Arboretum as well as designated a Tree City for 25 years; added native plants along a 600-foot corridor near downtown area; has an Audubon International Cooperative Sanctuary certified Golf Course (Ravisloe Country Club) that is also the world's first golf course to be an Accredited Arboretum; established a Tree Preservation Ordinance that requires replacements of trees; has established native plant supplies with Thorn Creek Audubon, Homewood Izaak Walton Preserve, and the Possibility Place; has installations of Chimney Swift Towers and provides youth programs to build Wood Duck, Eastern Bluebird, and Barred Owl boxes; and has been acknowledged by the Conservation Foundation for their winter deicing operations that ultimately improve water quality.

Homewood met a few of the criteria to Reduce Threats to Birds, including educating residents on how to prevent bird strikes and holding multiple annual events and campaigns to reduce and remove litter in the Village.

In the Education and Engagement Category, the Village fulfilled the requirements of the Annual Proclamation & Event for WMBD as well as passing the Bird City Resolution on March 26, 2024. They fulfilled many other criteria in this category including working with Thorn Creek Audubon in hosting bird outings; having a great variety of educational programs with the Homewood Science Center at Homewood Izaak Walton Preserve; has an ADA-accessible Park (Butterfield Park); promotes stewardship at the 193-acre Izaak Walton Preserve; and has many opportunities for citizen science.

Homewood also met criteria in the Sustainability Category by installing geothermal heating and cooling systems in the police and fire departments as well as being a Bike-friendly community.



Left: Presentation of Bird City award and signs to Village of Homewood. In photo from left are Carolyn Bury, Mayor Rich Hofeld, and Thorn Creek Audubon member Pat Anderson

Right: New Bluebird Trail Project with Boy Scout Troop (Photo by Thorn Creek Audubon)



Highlights of 2024 World Migratory Bird Day events with many celebrating “Protect Insects, Protect Birds”



Evanston: Throughout Evanston were many events with Evanston North Shore Bird Club hosting field trips throughout the week, Evanston Public Library holding craft kits, kid's storytime, and "Why Birds Need Bugs" film, the Evanston Ecology Center hosting a Birding by Boat class, and Drawing Birds with the Levy Center at Field Museum.



Photo by Shun Graves/The Daily Northwestern ([read more](#))

Freeport: The Northwest Illinois Audubon Society, Freeport Park District, Freeport Public Library, and Illinois Extension hosted a day full of bird outings, bug hunts, art and crafts, insect education, and lots of fun. The highlight was the Insect Obstacle Course where kids had to put on insect goggles (with compound eyes) and go through the course, breaking out of a cocoon, survive a flyswatter, bug spray, and fly tape.



Photo by Juliet Moderow / from [Facebook](#)



Photo by Galena Green Team from [Facebook](#)

Galena: The Galena Green Team hosted their first WMBD event with Kids crafts and activities, Insect fun and facts. building a 'Bug Snug', teaching how to make a small inground water feature with native aquatic plants for one's backyard, education about impacts of light pollution to insects and birds, and a bird outing.

GRAYSLAKE VILLAGE HALL

LANDSCAPING WITH NATIVE PLANTS FOR BIRDS AND INSECTS



DID YOU KNOW THAT 96% OF OUR NATIVE BIRDS FEED THEIR YOUNG INSECTS? MANY OF THOSE INSECTS REQUIRE NATIVE PLANTS TO COMPLETE THEIR LIFE CYCLES.

LEARN HOW YOU CAN CREATE A HAVEN FOR BIRDS BY UTILIZING NATIVE PLANTS THAT PROVIDE THEIR FOOD!

Grayslake: Grayslake Village Hall hosted “Landscaping for Native Birds and Insects to educate the community.

Highlights of 2024 World Migratory Bird Day events with many celebrating “Protect Insects, Protect Birds” (continued)



Photo by Samantha Golden / [GoRockford](#)

Rockton: The Annual Pelican Fest was held in Rockton with co-sponsors Natural Land Institute, Sinnissippi Audubon Society, Village of Rockton, Jill Rae Finally Art, and Nygren Wetland Preserve. There was an early bird outing and guided tours throughout the afternoon. Many educational and fun activities were held in the downtown area.



Jennifer Kuroda / from [Facebook](#)

Rockford: Sinnissippi Audubon Society held a screening of “Moved by Waters” by Tammy and Kelly Rundle of Fourth Wall Films, celebrated the release of Birdsongs, Vol II by Micky Torpedo, and held a mural migration walk, which also aligns with the 10th Anniversary of the Audubon Mural Project.

Waukegan: Waukegan Public Library launched Birding Bags and held a screening of *Four Little Birds, One Extraordinary Journey* created by Lake County Audubon Board Member, Carolyn Lueck. They also had Plover cookies and encouraged attendees to take a Plover pledge.



Photo by Lake County Audubon / [Facebook](#)

Libertyville: The Village of Libertyville offered a guided bird watch and walk around Butler Lake.

WORLD
MIGRATORY
BIRD DAY

MAY 11TH 2024



BIRDS

In the News



Rockford Peregrine Falcons banding May 2024

Rockford celebrates the seventh year that Peregrine Falcons have nested on the eighth floor ledge of the Iconic Energy building. Four chicks were banded by the team from the Chicago Peregrine Program. Read more [here](#)!



By: Jennifer Kuroda

Lake County Illinois Board Passes Groundbreaking Bird-Friendly Building Design Policy

The Lake County Board approved a [new policy](#) that will keep birds at the top of mind on all newly constructed and renovated Lake County government-owned facilities. The primary aim of the policy is to mitigate hazards for birds posed by the building environment, particularly from collisions with glass surfaces.



By: Tammy Chatman



Endangered Piping Plovers Return to Breed on Lake County Beach

One day after the City of Waukegan proclaimed the Great Lakes Piping Plover its official city bird, two federally endangered, captive-reared plovers returned within a day of each other to a Lake County Beach where they had been released in July. Blaze, a female piping plover, spent the winter in North Carolina. Pepper, a male piping plover, wintered 775 miles away in Florida. Read more about the amazing story [here](#)!



By: Dan Kirk

Submit your news or upcoming events to us by [email](#)!