

## Recommendation # 1

***Implement a proactive tree maintenance program for Ann Arbor’s publically managed trees emphasizing routine pruning, removals and care to improve the health and sustainability of the canopy.***

### Description

The city is responsible for managing over 49,000 trees growing along public streets and in mowed areas of parks. These trees are a tremendous asset to the city providing, \$2.9 million in net benefits each year, including managing stormwater, improving air and water quality, lowering energy costs, and increasing property values.

Current, 2012-2013, city urban forestry activities include:

- **Pruning:** no routine pruning cycle; pruning only for sight clearance, immediate hazards and storm damage
- **Tree Removal:** removal of hazardous trees and those identified as “priority removals” in the tree inventory
- **Street Tree Planting:** planting over 1000 street trees
- **Stump Removal:** done in coordination with tree planting, as funds allow
- **Tree Field Investigation:** conducted based on resident requests for tree trimming, tree planting or tree removal
- **Hazard Tree Assessment:** conducted to assess a tree’s hazard potential and to recommend management activities to mitigate hazard.

The current forestry program is best described as a *reactive* program. Field activities are primarily driven by resident service requests and emergencies. A reactive urban forestry program can lead to inefficient service delivery, low customer satisfaction and impacts to the overall condition, lifespan, value, and sustainability of the urban forest.

The purpose of this recommendation is to transition to a proactive forestry program. A proactive program that includes routine maintenance will better address current needs (i.e. an increasing backlog of priority removals/pruning), while instituting regular practices like a routine pruning cycle. Routine maintenance programs are more efficient, cost effective, and improve the quality, condition and value of the urban forest. Studies have shown that a routine pruning cycle can result in a reduction of tree-related service requests and yields trees that are less prone to storm damage. Managing the urban forest to withstand storms with minimal damage is important because future forecasts anticipate an increase in the frequency and intensity of severe storm events due to climate change.

As with other infrastructure, like roads, bridges, and utilities, Ann Arbor’s publicly managed trees require proactive and routine maintenance to ensure an efficient, safe and sustainable urban forest that maximizes benefits to the community. While other public infrastructure depreciates in value, properly maintained trees increase in value over time.

### Related Targets

- (2) Tree Health
- (3) Tree Pruning
- (7) Resident Requests

### Case Studies:

- **Boulder, Colorado**  
The street trees in the City of Boulder are on a 10-year pruning rotation and the park trees are on a 7-year pruning rotation. Pruning accounts for more than a quarter of total annual forestry expenditures.
- **Fort Wayne, Indiana**  
The city prunes their 52,000 street trees on a 5-7 year pruning cycle. Since they began their pruning cycle, tree mortality has decreased 70%. Individual pruning requests are addressed when the pruning cycle is in the area of the request.
- **Boise, Idaho**  
The City maintains a street tree population of approximately 23,000. The municipality is divided into eight geographic tree management districts that are used to organize and focus pruning efforts. Yearly efforts take place in one specific district; the current tree pruning cycle is about seven to eight years.

## Action Tasks

- A. Define geographic management areas for urban forestry activities, considering the following factors in delineating the areas:
  - i. Age, condition, number of tree planting sites, and species composition of the urban forest in the proposed management area.
  - ii. Maintenance needs of the proposed management area to ensure systematic service delivery.
  - iii. Neighborhood character and identity – the management areas should avoid fragmenting or fracturing currently defined neighborhood areas or groups.
- B. Use urban forestry management areas to develop a 5-7year pruning cycle.
  - i. Utilize the tree inventory and field investigations to identify priority areas to start the pruning cycle.
  - ii. Identify areas that should have shorter pruning cycles – high density/profile areas, such as downtown and neighborhoods with a high density of high-maintenance trees (ex: Lindens, Sugar maples).
- C. Utilize the tree inventory and urban forestry management areas (see Recommendations 2), to develop a systematic program to remove trees listed as priority removals in the inventory and dead/hazardous publically maintained trees that are not listed in the tree inventory.
  - i. Identify high-traffic and high profile areas where there is a higher priority to remove dead trees.
  - ii. Identify areas with the highest concentration of removals.
- D. Move towards removing all trees identified as Priority 1 removals each year and remove stumps as they are created.
- E. Continue program of planting trees in locations where there are currently not street trees.
- F. Develop a program where new trees are planted immediately following tree removals.
- G. Utilize the tree inventory and urban forestry management areas to develop a systematic program to trim all trees listed as priority prune in the tree inventory.



### **Implementation Ideas:**

- *Conduct feasibility study to look at using other maintenance activities such as cabling/bracing trees and the treatment of diseased/insect infested trees. Study should include cost of conducting maintenance activities, benefits the tree provides, benefits of the maintenance activity, criteria for using the activity and on-going maintenance requirements.*
- H. Track resident tree maintenance service requests.
  - I. Provide routine work schedules to the public.

## **Recommendation #2**

***Expand on existing practices and programs to update the tree inventory and urban tree canopy analysis.***

### **Description**

The city currently maintains a comprehensive inventory of city street trees and trees in mowed areas of city parks, documenting the species, condition, and maintenance needs of each tree. The tree inventory is currently updated for individual trees when management activities (ex: removals, pruning, planting) are conducted by city staff or contractors.

The attributes currently updated in the inventory provide important information on work history for city trees but they do not provide necessary and regular updates on tree size, condition or maintenance needs. Conducting regular, periodic updates of all inventoried city trees to measure the size (diameter and height), and assess the condition and future maintenance needs will assist in more efficiently managing and monitoring the overall health of the urban forest.

#### ***Urban Tree Canopy Assessment***

While the tree inventory provides information on an individual tree basis, an urban tree canopy analysis (UTC) provides data on the tree canopy as whole. A UTC provides valuable information about changes to the urban forest ecosystem that may not be visible from the ground. For example, the analysis can identify areas of canopy loss indicating an insect outbreak, or it may show canopy increases due to improvements stemming from tree maintenance programs.

### **Action Tasks**

#### **Tree Inventory Program**

- A. Expand the inventory update program to regularly update the size, condition and maintenance needs of individual trees.
  - i. Utilize tree inventory, service requests and field investigations to identify areas of the city that require a 3-year inventory update cycle (ex: downtown, areas with declining tree populations). Use a 5-year inventory update cycle for all other areas.



#### ***Implementation Ideas:***

- *Develop a yearly “windshield survey” program, where city staff drive each city street visually assessing street trees to detect problems that need immediate attention in the coming year.*

#### **UTC Analysis**

- B. Conduct a follow-up urban tree canopy (UTC) analysis every 5-10 years to monitor changes in the city’s tree canopy.



#### ***Implementation Ideas:***

- *At 5 years, utilize the free USDA Forest Service i-Tree Canopy program to perform a basic UTC analysis.*
- *At 10 years, hire a consultant to conduct a UTC analysis with finer resolution satellite imagery to compare with the existing high resolution 2010 UTC results.*

### ***Related Targets***

- (1) *Tree Canopy Cover Land Use Targets*
- (2) *Tree Health*

### ***Case Studies:***

- **Lexington, Kentucky**  
Goals in Lexington’s 2010-2014 Community Forest Management Plan include conducting an urban tree canopy analysis every five years, and re-inventorying street and park trees every five years.
- **New Haven, Connecticut**  
Through the Community Greenspace program, volunteers monitor the urban forest by collecting information including tree size, condition and species composition.

## **Recommendation #3**


***Develop and implement a comprehensive program to monitor and address threats to the urban forest.***

### **Description**

The urban forest is a dynamic system; living and non-living factors can have a substantial impact on its condition, quality and health. A number of factors threaten Ann Arbor's urban and community forest including insects, diseases, climate change, invasive species, wildlife and storms.

The city currently does not have an active program to monitor and address threats to the urban forest; however, the recent experience with the emerald ash borer and the loss over 10,000 publicly managed trees, highlights the importance of developing such a program. This recommendation will develop and implement a comprehensive program to monitor the urban forest and identify/address potential and future threats.

### **Action Tasks**

- A. Develop program to monitor and respond to threats to the urban forest by utilizing information from the tree inventory, urban tree canopy analysis updates, pest alerts, the Michigan Department of Natural Resources, USDA Forest Service and APHIS, and field assessments.
  -  **Implementation Ideas:**
    - Utilize free USDA Forest Service tools to assist in data gathering and monitoring (ex: i-Tree PED (Pest detection) & i-Tree Storm)
- B. Develop a program to train volunteers to conduct field assessments/pest monitoring.
  - i. Provide adequate staff supervision
  - ii. Develop protocols for quality control and assurance
- C. Work with universities and other experts to look at data on how climate change may impact and affect the urban forest.
  - i. Develop baseline data and metrics for use in measuring climate change impacts to the urban forest.
- D. Develop a city-wide invasive species management plan.
  - i. Conduct city-wide vegetation mapping and analysis of invasive species and pest free areas.
  - ii. Identify invasive pests (ex: plants, insects, diseases) currently impacting the city's urban forest and those that are a serious concern but have not been found in Ann Arbor (ex: Asian longhorned beetle) and develop strategies to manage them



#### **Implementation Ideas:**

- Create a city-wide natural areas/ park vision for plant communities, landscape design & management that is resilient & adaptable to future disturbance and invasive species management.
- Develop education program for private property owners on species diversity and invasive species management.
- Partner with local nurseries to offer discounts to residents to use native and non-invasive plant species

### **Related Targets**

- (2) Tree Health
- (5) Engage Volunteers

### **Case Studies:**

- **Seattle, Washington**  
The City of Seattle collaborates with Seattle Parks, Earth Corps and volunteers from the Green Seattle Partnership Forest Monitoring Team to monitor the urban forest. Volunteers collect specific data about Seattle's urban forest to monitor health and pest infestations.

## **Recommendation #4**

***Strengthen tree planting and young tree maintenance programs for both public and private trees.***

### **Description**

The tree canopy targets (Section X.X) set an ambitious goal for increasing the tree canopy across the city to optimize the benefits provided by the urban forest. While proactive maintenance (Recommendation #1) is vital to improving the health, condition and growth of the urban forest canopy, reaching the tree canopy targets will also require tree planting and young tree maintenance.

While there are currently over 6,500 vacant street tree planting sites along public right-of-ways, the majority of land in the city is privately owned. Working with different types of landowners, from residential to industrial, is important to ensure that tree planting is pursued where it is feasible and can be successful. Tree planting projects also need to be coupled with appropriate care during tree establishment. Proper care will ensure that newly planted trees live and thrive, because a shade tree planted today will take over 20 years to mature and provide the optimum ecological, economic and social benefits to the community.

### **Action Tasks**

- A. Identify areas of the city to prioritize for public and private tree planting projects, including areas with low existing tree canopy cover and where canopy improvements can help meet canopy cover targets.
  - a. Consider areas with high incidences of heat-related health impacts and aging tree populations.
  - b. Encourage the use of large shade trees, where appropriate
- B. Develop tree planting incentive programs to encourage tree planting and preservation on private property through partnerships with non-profit, civic, and other organizations.



#### **Implementation Ideas:**

- *Develop cost share programs with civic organizations that can assist homeowners and businesses with purchasing, planting, and maintaining trees.*
- *Develop partnerships with nurseries to provide tree purchase and planting incentives in parts of the city most in need of canopy improvements. Utilize financial assistance from city, philanthropic organizations and/or nurseries.*
- C. Develop procedures and guidelines for post-planting care (ex. Watering) for public and privately owned trees. These procedures will be included in the best management practice manual (see Recommendation #9)
- D. Coordinate city-wide urban forestry outreach and educational campaigns to teach community members about tree planting and care and to encourage them to become stewards of the urban forest.

### **Related Targets**

- (1) Tree Canopy Cover Land Use Targets
- (4) Tree Diversity
- (5) Engage Volunteers

### **Case Studies:**

- **Philadelphia, Pennsylvania**  
Tree canopy cover can count as an impervious area credit towards a non-residential customer’s stormwater charge. Credit is also given for tree planting. Property owners request the credits and they expire and must be renewed every 4 years.
- **Baltimore County, Maryland**  
“Growing Home Campaign” is an education and incentive program for planting trees on private property. The program provides a \$10 discount to residents at participating nurseries towards the purchase of a tree.
- **Los Angeles, California**  
Over the last 20 years, the City’s Environmental Affairs Department has partnered with local community-based organizations to plant more than 80,000 trees on public property. Many of the planting locations were chosen to mitigate the urban heat island effect and reduce heat related illnesses and environmental issues as a result.

## **Recommendation #5**

***Develop street tree planting master plans that balance tree functions, diversity, design and neighborhood character.***

### **Description**

The emerald ash borer had a significant impact on Ann Arbor’s urban forest. When the last public ash trees were removed in 2008, the city had lost over 10,000 publicly managed ash trees along streets and in mowed areas of parks. In response to the loss of ash and other species of city trees, an aggressive tree planting campaign was initiated. Since 2005, over 7,000 street and park trees have been planted.

**Current Practices:** Each year, the city develops a street tree planting plan for the upcoming fiscal year. This plan contains specific geographic areas where street tree planting may occur during the year. Areas in the plan are identified based on resident requests, staff input and tree inventory data. Before an area is included in the plan it is evaluated on the amount of impervious area, percent tree canopy, impact by the emerald ash borer, the age of the tree canopy and number of potential tree planting locations. Areas that meet at least two of these criteria may be included in the plan. The planting plan allows for a systematic approach to tree planting that saves time and resources.

The main focus of current tree planting activities has been on planting a diversity of tree species across the city. While diversity in planting has been achieved, the selection of tree species planted on particular streets has largely been a subjective, unplanned process with limited resident input. Residents have expressed a desire to have input in the process of selecting tree species that help to define and reinforce the character of their neighborhood.

The purpose of this recommendation is to use a community planning process to determine the desired tree species to be plant along specific streets by considering:

- tree species diversity
- use of native species and species that are adaptable to climate change, where appropriate
- right tree, right place practices for locating trees in suitable locations
- the soil in the area, specifically the quantity and quality of the soils in the planting areas.
- neighborhood character, street character, aesthetics, and planting design
- community input
- the function(s) the trees will provide within the neighborhood

The end product of the planning processes will be street tree master plans that identify the mix of trees species that will be planted along specific city streets taking into consideration the factors listed above.

### **Related Targets**

- (1) *Tree Canopy Cover Land Use Targets*
- (4) *Tree Diversity*
- (7) *Resident Requests*

### **Case Studies:**

- **Knoxville, Tennessee**  
Developed a Street Tree Master Plan in 2002. They engaged residents in the process through public workshops that discussed issues related to conservation, planting, design and species selection.
- **Santa Monica, California**  
Developed the *Urban Forest Master Plan* in 2011. The plan will guide the perpetuation and management of the urban forest for the next 50 years, acting as a living document. It is the culmination of two years of community input and planning by a task force.

**Action Task**

- A. Use a planning process to develop Street Tree Master Plans for each of the city’s Forestry Management Areas.
  - i. Use newly created management areas and city’s yearly planting plan to inventory planting areas noting existing conditions, including ROW width, road width and speed, existing trees (public and private), utilities, and soil conditions (quantity and quality); and the functions trees can perform (ex: stormwater, windbreak, shading, etc.).
  - ii. Utilize various public engagement methods to gather resident input on desired tree planting and species selection.
  - iii. Evaluate information collected in the inventory to identify a list of suitable tree species for the street that considers street character, overall tree diversity and proper site selection.
  - iv. Engage residents in selecting tree species based on the list of suitable tree species.
  - v. Finalize recommendations into the Street Tree Master Plan. Use the master plan as a basis for conducting tree planting projects.



**Implementation Idea:**

- *Identify areas where infrastructure and tree conflicts may create opportunities for establishing alternative vegetation communities (ex: grassland, shrubland, prairies).*

## **Recommendation # 6**

***Increase the preservation and protection of landmark/special trees on public and private lands.***

### **Description**

Many municipalities around the United States have ordinances that protect landmark or special trees within their community. Landmark trees meet specific species related size requirements while; special trees have a unique or intrinsic value to the community (see sidebar).

Ann Arbor currently regulates landmark trees growing on private property except single family and two-family parcels zoned solely for residential purposes. If a property is located in a city-designated historic district, the Historic District Commission regulates the removal of landmark trees on all private property in the historic district, including residential parcels. Regulations for landmark trees are found in City Code under Chapter 57, Subdivision and Land Use Controls.

While protective measures exist for landmark trees on some private property, there is a gap in programs, policies, and practices that address landmark trees on publicly owned lands, including the right-of-way and on single/two-family residential parcels outside of historic districts. The purpose of this recommendation is to develop policies and best management practices (BMPs) to address landmark trees and special trees on public property; and to develop voluntary and incentive programs for the protection and care of landmark or special trees on private property, including, single/two-family residential properties.

### **Action Tasks**

#### **Public Tree Protection**

A. Develop policies and best management practices (BMPs) for publicly managed landmark/special trees. BMPs would be included in a forestry BMP manual.



#### **Implementation Idea:**

- Investigate opportunities to fund care/maintenance activities, such as pruning or cabling, for landmark trees on public property.
- Policies/BMPs for publicly managed landmark trees can include: designation criteria; care; public safety; removal process.

#### **Private Tree Protection**

B. Develop educational program and use BMPs (see A) to improve the protection of privately owned landmark/special trees.



#### **Implementation Idea:**

- Develop education program on the benefits of trees and importance of protecting and maintaining landmark/special trees.
- Revive City's voluntary Champion Tree Program, which identified the largest tree of a particular species (Champion) within the City.
- Create incentives program to promote the protection of landmark/special trees on private property (ex: stormwater utility credit for landmark trees).

### **Related Targets:**

(1) Tree Canopy Cover Targets

(4) Tree Health

**Landmark Tree:** Any tree 24-inch DBH (diameter at breast height) or greater, or that is a type and DBH equal to or greater than shown on the landmark tree list in the Land Development Regulations of Chapter 57 of Ann Arbor city code. The definition of landmark tree does not include any tree identified as an invasive species on the city's invasive species list. (Source: Chapter 57-Ann Arbor City Code)

**Special Tree:** A tree that has unique and intrinsic value to the community because of its age, size, historical significance or ecological value.

### **Case Studies:**

- **Portland, Oregon:**  
The city manages a "Heritage Tree" program where property owners voluntarily designate special trees for heritage status for the life of the tree. Property owners receive incentives and discounts on the maintenance of heritage trees.
- **Manhattan Beach, California**  
The city requires property owners to sign an acknowledgement form prior to issuance of any permit when a protected tree is on the property.
- **Fair Lawn, New Jersey**  
The City of Fair Lawn restricts the number of trees that can be removed from a private property each year by requiring a city permit to remove any tree greater than 8 inches.



## **Recommendation #7**

***Strengthen and refine city ordinances to support the implementation of the Urban and Community Forest Management Plan.***

### **Description**

City of Ann Arbor ordinances provide enforceable regulations over how property can be utilized, developed, and managed across the city. Existing city ordinances contain a number of regulations pertinent to the urban forest, including:

- **Chapter 40: Trees and Other Vegetation** – provides tree maintenance guidelines for public safety, and visual clearance requirements.
- **Chapter 57: Subdivision and Land Use Controls** – addresses development regulations, site plan approval, and outlines protections for landmark trees, woodlands, and other natural features related to site development.
- **Chapter 62: Landscape and Screening Ordinance** – addresses landscape, screening and buffer requirements for commercial development.

Ordinances provide an important backbone for protecting and managing trees on private property. Refinements to and consolidation of these core ordinances, can help strengthen their presence and effectiveness. Development of new ordinances can assist in supporting the goals and recommendations of the UCFMP.

### **Action Tasks**

- A. Revise existing ordinances, where appropriate, to better support the goals and recommendations of the UCFMP. Topics that may be considered include, but are not limited to, the following:
  - i. Voluntary and incentivized programs to designate and protect special/landmark trees on private property
  - ii. Expand tree planting requirements, requiring better growing conditions, long-term tree protections, and tree diversity requirements for construction projects.
  - iii. Woodland protection for areas with high quality natural features.
  - iv. Require site planned projects to plant street trees in the street right-of-way frontage, if none exist.
  - v. Conflicts that arise between solar/wind/alternative energy and trees
- B. Review and consider revising/consolidating existing urban forest related ordinances into a single urban forest ordinance.
- C. Initiate a planning process to investigate the development of additional ordinances to enhance Ann Arbor's tree canopy.



#### **Implementation Idea:**

- *Develop a canopy preservation ordinance that protects existing trees and woodlands and encourages replacement of damaged or removed trees to provide a continuation of canopy cover in the community.*

### **Related Targets**

- (1) *Tree Canopy Cover Land Use Targets*
- (2) *Tree Health*
- (3) *Tree Pruning*
- (4) *Tree Diversity*
- (7) *Resident Requests*

### **Case Studies:**

- **Novi, Michigan**  
The City of Novi adopted a woodland protection ordinance that restricts the clearing of wooded areas and outlines mitigation requirements for all properties in the city.
- **Toledo, Ohio**  
The City of Toledo's tree preservation ordinance requires that trees in excess of 12" be protected, if practical, during development. Construction ordinance details requirements for tree protection and activities prohibited around trees during construction.
- **Manhattan Beach, California**  
All front yard trees and street trees greater than 12" DBH are protected in Manhattan Beach (with the exception of invasive species).
- **Denver, Colorado**  
Tree care companies that operate in the City of Denver on public and private property must be licensed by the city.

## **Recommendation #8**

***Develop, communicate and follow an urban forest best management practices manual for use by city staff, partners, other entities, and the community.***

### **Description**

Urban forestry best management practices (BMPs), for the purposes of this plan, refer to methods, techniques, operations and technologies that have been found to be the most effective and practical to manage and maintain a sustainable urban forest and the meet the goals of the UCFMP. A consolidated set of BMPs will better inform city staff, outside entities, and the community on decisions related to urban forestry policies, practices and operations.

The purposes of this recommendation are to identify and develop BMPs that address the management of the urban forest and to communicate and institutionalize these BMPs by compiling them into a manual. The BMPs will be designed to improve Ann Arbor’s urban forest by providing guidelines and standards to be used when planting, maintaining, working around and planning for trees.

### **Action Tasks**

- A. Identify urban forestry activities that need best management practices (BMPs), including, but not limited to, the following:
- i. Species selection and tree diversity
  - ii. Site selection and planting guidelines
  - iii. Resident notification of upcoming activities
  - iv. Resident outreach and engagement regarding forestry activities
  - v. Post-planting care procedures and requirements
  - vi. Improving soil quality and increasing soil quantity
  - vii. Tree planting pit design and use of structural soil
  - viii. Pruning and maintenance practices
  - ix. Tree removal decision processes
  - x. Hazard tree identification-- assessment and investigation standards
  - xi. Tree preservation
  - xii. Stormwater management
  - xiii. Publicly managed landmark/special trees (criteria for designation, maintenance and care, public safety concerns, removal process).
  - xiv. Inventory update procedures and standards
  - xv. Tree protection and construction impact practices
  - xvi. Coordination practices between city units
  - xvii. Coordination between external entities and organizations
  - xviii. Construction activities: tree root zone protection and enhancement
  - xix. Sidewalk and root conflicts



#### **Implementation Ideas:**

- *Develop a comprehensive program for all urban trees to assess: soil compaction and soil volume. Enhance where deficiencies are present using structural soils, soil amendments and proper planting methods.*

### **Related Targets**

- (1) Tree Canopy Cover Land Use Targets
- (2) Tree Health
- (3) Tree Pruning
- (7) Resident Requests

### **Case Studies**

- **Manhattan Beach, CA**  
Tree protection requirements must be posted on site of a construction project.
- **Tacoma, Washington**  
Created a technical urban forest manual, focused on landscaping as part of development. This highlights general tree landscaping standards, as well as tree protection requirements during construction.
- **Riverside, California**  
The city maintains an urban forestry policy manual providing guidelines for tree care, pruning, preservation, removal, and tree plantings. Tree/utility conflict guidelines are also provided to offer best practices.
- **Charlottesville, Virginia**  
The city developed a Best Management Practice manual for homeowners and developers focused on tree preservation, transplanting and removal.

- *Include tree canopy cover of the area when assessing a tree for removal. If canopy cover is low, effort should be made to look into ways to preserve a non-hazardous tree, if prudent and feasible.*
- *Quantify the value and benefits of a tree versus the risk it poses and cost of maintenance when deciding on whether or not to remove a tree.*
- *Put up “permanent” chain link fencing around trees during duration of construction projects with a permit notice attached to the fencing that details who and where to call to report a violation.*
- *Require tree protection deposits from developers and hold for 3 years after construction is complete. It may take up to 3-5 years for construction damage to become evident in a tree.*

B. Review published research to identify BMPs that support ecological functions of the urban forest, and incorporate when relevant.



**Implementation Ideas:**

- *Develop guidelines for establishing a layered understory below tree canopies on public and private lands.*
- *Develop guidelines for species selection that provide critical habitat functions for native fauna, particularly for rare, threatened or endangered species.*
- *Identify and promote urban forest management activities that can have a positive impact on stormwater and air quality management.*

C. Interview staff to identify and document current practices.

D. Review research and publications on generally accepted industry and community BMPs related to urban forestry management activities.

E. Refine and expand existing BMP documents and establish new practices where none currently exist.

F. Compile BMPs into a single source manual for all forestry related operations.

G. Align BMPs with ordinance requirements.

H. Educate city staff across city units on BMPs and forestry policies.

I. Develop mechanisms to communicate BMPs to outside contractors, other entities that are working in the City of Ann Arbor (on both public and private projects) and the community as a whole.

J. Develop and implement monitoring program to ensure that BMPs are followed by staff and contractors and that an enforcement system is in place to ensure compliance.



**Implementation Ideas:**

- *Explore partnerships with research institutions to test or develop beneficial management practices*

## **Recommendation #9**

***Create city staff working groups to coordinate activities and projects that impact the urban forest within and amongst city units.***

### **Description**

Issues involving city trees often span several city units including Project Management, Field Operations, Systems Planning, Planning & Development and Emergency Management. With these Units simultaneously working on projects, they should all understand and follow current best management practices (BMPs) and policies in order to eliminate potential risks to the urban forest and to provide opportunities for collaboration between city units.

The purpose of this recommendation is to allow for consistent and thoughtful management of the urban and community forest. Coordinating projects and communicating BMPs within and amongst city units will resolve conflicting policies and practices, as well as, present opportunities for coordination.

Staff working groups will allow for more cohesive management of the urban and community forest. Collaborative working groups will also ensure that trees are adequately planned for and protected and that opportunities to enhance the health of the urban forest are considered across city units.

### **Action Tasks**

- A. Identify a point of contact within each city unit that has activities that impact trees.
- B. Utilize Capital Improvements Plan process to identify projects that will impact city trees.
- C. Develop working groups around specific projects.
- D. Work with Field Operations to identify daily operation activities that impact city trees and how they can reduce their impacts on the urban forest.
- E. Educate city staff on forestry policies and BMPs that need to be communicated and followed internally and by contractors and other entities.



#### **Implementation Idea:**

- *Utilize city project inspectors already on a construction site to monitor activities that may harm existing trees.*
- *Work with Emergency Management to fully integrate tree operations into emergency plans.*

### **Related Targets**

- (1) *Tree Canopy Cover Land Use Targets*
- (2) *Tree Health*
- (3) *Tree Pruning*
- (6) *Sustainable Funding*

### **Case Studies:**

#### **San Francisco, California**

- Created an urban forestry council composed of city staff or relevant organizations that advise city departments. They are tasked with developing a comprehensive forestry plan, educating the public, developing tree-care standards, identifying needs and opportunities, facilitating coordination among agencies, and reporting on the state of the urban forest.

#### **Seattle, Washington**

- Developed the Seattle Urban Forest Coalition, an interdepartmental partnership whose mission is to coordinate the overlapping urban forestry functions of the city departments and related programs/activities. The working group is composed exclusively of city staff members and has produced the Urban Forest Management Plan for Seattle.

## **Recommendation #10**

***Strengthen working relationships and partnerships with businesses, organizations and contractors whose activities impact city trees by instituting regular dialogue and project coordination.***

### **Description**

The city's urban forest is not only impacted by the activities of city crews, but also by those of other entities, including the University of Michigan, DTE Energy, Ann Arbor Downtown Development Authority (DDA) and contractors. Some of their activities can have a positive impact on the urban forest, while others can have a negative impact, especially if there is no coordination among the parties. If done without coordination and oversight, certain activities, such as cutting tree roots during excavation, trimming for utility line clearance and tree removal for development, can negatively affect the urban forest.

The purpose of this recommendation is to provide effective methods of communication with outside entities that will allow for improved coordination and management of the urban forest. The creation of working relationships with key personnel within businesses, organizations and contractors whose activities impact city trees will improve relationships, provide opportunities for collaboration and reduce the negative impacts that their work can have on the urban forest.

### **Action Tasks**

- A. Identify businesses, organizations and contractors whose activities impact city trees.
- B. Identify contacts within these groups to develop working relationships.
- C. Educate businesses, organizations and contractors on city BMPs and tree related policies.
- D. Investigate opportunities for partnerships and collaboration.
- E. Ensure staff communication with outside organizations regarding projects that affect or may affect trees.
- F. Develop a policy to ensure that all tree issues have been addressed by city staff before any construction or right-of-way permits are issued.
- G. Establish a process for communication between residents and city staff about forestry activities conducted by businesses, organizations or contractors in their neighborhood.



#### **Implementation Idea:**

- *Organizations to strengthen and develop working relationships include:*
  - *The University of Michigan*
  - *DTE Energy*
  - *Michigan Department of Transportation*
  - *Ann Arbor Downtown Development Authority*
  - *Ann Arbor Public Schools*
  - *Sidewalk and roadway contractors*
  - *Utility contractors*

### **Related Targets**

- (1) *Tree Canopy Cover Land Use Targets*
- (2) *Tree Health*
- (3) *Tree Pruning*
- (6) *Sustainable Funding*

### **City of Ann Arbor Partnership Examples:**

- In 2011, the City partnered with the Michigan Department of Transportation (MDOT) who removed dead trees along Jackson Ave., Huron St. and Washtenaw Ave (state trunklines). Trees were then replanted along these roads in partnership with MDOT, the Michigan Department of Natural Resources and the Greening of Detroit with funding from the USDA Forest Service Urban & Community Forestry Program.
- The City collaborated with DTE Energy during their 2011 utility line clearance tree trimming program. Forestry marked the trunks of dead and dying trees under DTE utility lines that could be removed. When cost effective for DTE, their crews removed these trees rather than pruning them. This collaboration saved both the city and DTE Energy time and resources.

## **Recommendation #11**

***Obtain the highest and best use of wood from trees removed by the City.***

### **Description**

In the development of a sustainable urban forest it is important to consider all aspects of a tree's life cycle from tree planting and maintenance to proper use and/or disposal of the wood generated when a tree is removed. Each year the city generates over 200 tons of wood waste from tree removal and tree trimming activities, including, tree branches and tree trunks. This recommendation helps to address the end of a tree's living life cycle and to identify strategies to extend its usefulness after it is removed from the landscape.

Currently, all city-generated wood waste is chipped. While most of the wood chips are used as mulch for tree planting activities and park paths, logs too large for the chipper are disposed of, for a fee, at the city's compost facility.

The purpose of this recommendation is to investigate alternative strategies for large logs that are generated during tree removal. The strategies would identify ways for the city to obtain the highest and best use of the wood from removed trees. Alternative uses can range from mulch and compost to pictures frames, furniture, flooring or other wood products created by local wood workers. In order to be sustainable, the strategies must not cost the city any more that it currently pays for the disposal of its wood waste.

Strategies would be focused on city trees that are slated for removal because of poor/ hazardous condition. The harvesting of healthy, structurally sound trees for the creation of wood products will not be considered.

### **Action Tasks**

- A. From the inventory of trees that are slated for removal establish criteria for determining which trees have a potential higher end-of-life use than mulch/compost.
- B. Develop partnerships with the generators of wood waste (city, University of Michigan, tree services), local wood users/ workers and interested residents.
  - i. Develop focus groups.
  - ii. Identify wood utilization issues & opportunities from focus groups
  - iii. Develop potential cost-neutral strategies to obtain the highest and best use of wood removed from city trees.
- C. Based on "Action Tasks" A and B, investigate feasibility of implementing potential strategies.
- D. Develop program(s) to pilot select strategies.



#### **Implementation Ideas:**

- Partner with woodworkers to make products from city trees (ex: pens, picture frames) to be sold as a fundraiser for the Forestry program.
- Develop a woodworking studio at an unused city building and hold woodworking and art classes.

#### **Related Targets:**

- (5) Engage Volunteers
- (6) Sustainable Funding

#### **Case Studies:**

- **Urbanwood Project--Southeast, MI**  
A partnership of sawyers, sawmills, tree services and local wood workers in Southeast Michigan that supplies or utilizes wood from urban trees that have been cut down. Project members provide high-quality sustainable wood products in Southeast Michigan.
- **City of Monroe, MI**  
The City of Monroe has developed a partnership with a local wood sawyer to mill wood from city trees. The city collects logs from removed trees that are suitable for lumber at their public works yard. The sawyer comes to the city periodically to mill the logs. The city receives any milled wood that it needs and the sawyer takes whatever remains. No money exchanges hands.
- **Trees for Habitat- Flint, MI**  
A partnership was developed with the Genesee Conservation District and Habitat for Humanity to utilize 254 street trees removed from the City of Flint for Habitat for Humanity building projects. Trees were milled into trim, railings, cabinets, flooring and sheds for Habitat buildings.



## **Recommendation # 12**

***Review Urban and Community Forest Management Plan periodically and update as needed.***

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### **Description**

The urban forest is a dynamic system and the Urban and Community Forest Management Plan (UCFMP) must be flexible and adaptive to these changes. Periodic review of the plan will provide an opportunity to ensure that the plan goals, recommendations and action tasks are responsive to the changing urban forest.

### **Action Tasks**

- A. Monitor plan action tasks and report out annually on progress of plan
- B. Identify process for review.
  - i. Timetable for review and refinement
  - ii. Process for approval of changes/refinements

### **Related Targets**

- (1) Tree Canopy Cover Land Use Targets
- (2) Tree Health
- (3) Tree Pruning
- (4) Tree Diversity
- (5) Engage Volunteers
- (6) Sustainable Funding
- (7) Resident Requests

### **Case Studies:**

#### **Santa Monica, California**

- The City of Santa Monica’s 2011 Urban Forest Master Plan will be periodically updated to ensure the plan is being implemented and to react to changes in the urban forest.



## **Recommendation #13**

***Implement an outreach program to inform and educate residents about the urban forest, forestry operations and ways to support the implementation of the Urban and Community Forest Management Plan.***

### **Description**

To accomplish the recommendations in the Urban and Community Forest Management Plan, a sustained community outreach effort is needed. This recommendation focuses on educating, informing and engaging the broader community in the stewardship of the urban forest.

Outreach efforts can focus on a number of important tasks, including:

- Development of a comprehensive program to notify residents of upcoming forestry activities in their neighborhood. Program elements include identifying ways the city will communicate with residents and ways residents can communicate and engage with the city regarding forestry activities.
- Creation and distribution of urban forest related educational materials.
- City-wide outreach to raise awareness of the urban forest and its benefits.
- Volunteer recruitment, organization of volunteer activities, and providing information about ways residents can help the urban forest (ex: watering and mulching newly planted street trees).
- Establish and strengthen partnerships between the city and community members, businesses, and institutions.

These outreach tasks are important for building community awareness and support for the urban forest and for promoting action. To be effective, the outreach program should be responsive, emphasize good public relations and identify unique ways to reach and target different stakeholder groups, including the use of traditional and new media tools.

### **Action Tasks**

- A. Develop best management practices related to the communication of forestry policies, practices, and future activities.
- B. Develop and implement a strategy for regular dialogue with the community about the urban forest, using a mix of traditional and social media tools.
  - i. Survey residents to identify the best communication methods and utilize multiple methods.
- C. Review current urban forestry outreach and educational materials. Revise and develop materials to cover relevant topics. Topics may include:
  - Benefits and costs of managing the urban forest
  - City forestry practices and operations
  - Resources and guidelines for private property owners on plant selection, planting techniques, and maintenance best practices, including right tree, right place guidelines

### **Related Targets**

(7) Resident Requests

(5) Engage volunteers

### **Case Studies:**

- **Meridian, Mississippi**  
Conducted tree care and maintenance workshops, funded by the Mississippi Forestry Commission, for homeowners and residents in the City.
- **Seattle, Washington**  
The City of Seattle’s Tree Stewards program offers classes in tree biology and landscape maintenance, as well as tree inventory opportunities, and neighborhood tree planting projects.





- Invasive species management
  - Threats to the urban forest, including climate change, pests and invasive species
  - Approaches for resolving issues that arise between property owners
- D. Identify and contact organizations and groups (public, private, and non-profit) that can assist with implementing the UCFMP through outreach and educational programming.
- E. Develop an Urban Forest Annual Report that provides quantitative and qualitative information on forestry activities, successes, threats and on-going needs during the fiscal year.



**Implementation Ideas:**

- *Develop relationships with homeowners associations and neighborhoods to help publicize upcoming neighborhood tree work.*
- *Provide a contact number and person “on-call” to hear complaints, address issues and prevent violations of city policies and BMPs.*
- *Create a standard presentation about city forestry program that can be presented at homeowner and neighborhood association meetings.*
- *Post public announcements/outreach on interior AATA bus placards.*
- *Engage schools in bringing outreach activities and environmental education programs covering urban forest issues to classrooms, teaching students about the value and benefits of the urban forest.*
- *Partner with schools and faith-based organizations with large parcels of land to implement urban forest projects.*
- *Initiate a call for action by implementing a challenge program, encouraging residents, businesses, and institutions to participate in improving the urban forest.*
- *Work with local green industries (nurseries, suppliers, landscapers,) to support the management plan.*
- *Make approved street tree planting list more readily available (ex: city utility bills, local/on-line publications)*

## **Recommendation #14**

***Enhance and develop programs that encourage active participation by volunteers in the development and promotion of a sustainable urban forest.***

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### **Description**

With limited available resources, and a large urban forest to manage, the city cannot perform all activities (ex: young tree pruning) needed to sustain the urban forest. In 2009, based on the interest of residents in improving the urban forest, the city developed several volunteer programs. These volunteer programs provide additional resources to invest in the urban and community forest.

- **Neighborhood Volunteer Street Tree Planting Program**
  - Over 200 trees have been planted by neighborhood volunteers
  - Since the pilot program in the Virginia Park neighborhood in 2009, the city has continued to coordinate neighborhood volunteer street tree plantings.
  - Rotary Club of Ann Arbor has provided financial support and volunteers for several of the neighborhood street tree plantings.
- **Citizen Pruner Program**
  - Piloted program in 2011 to educate and train residents on how to prune and care for young street trees.
  - Trees pruned while they are young develop proper form and structure and require less pruning as they mature. It also reduces the likelihood that they will be damaged during storms.
  - Volunteers have pruned 319 young trees in two pruning seasons to date.

The purpose of this recommendation is to expand and enhance the city volunteer programs, as well as encourage volunteer efforts by non-profit organizations, businesses, and environmental groups to increase Ann Arbor's canopy through planting and maintenance efforts.

### **Action Tasks**

- A. Identify activities appropriate for volunteers, qualifications needed to perform activities and the amount of supervision and resources required of city staff.
- B. Evaluate, improve and expand upon current forestry volunteer programs
- C. Further develop volunteer programs that utilize groups from local corporations/businesses.
- D. Develop procedures to handle requests for private sponsorship of city- owned open space, park lands and trees.
- E. Integrate forestry into city-wide volunteer programs (ex: Adopt-a-Park, Natural Area Preservation, Give 365 programs).



#### **Implementation Idea:**

- *Develop a volunteer program to water trees during prolonged dry periods and droughts.*

### **Related Targets**

- (2) Tree Health
- (3) Tree Pruning
- (5) Engage Volunteers

- *The City's Natural Area Preservation program sponsors stewardship work days that include native plantings and hand-pulling invasive species.*
- *Adopt-a-Park program works within Ann Arbor's 162 parks. Park adopters volunteer for tree planting, maintaining landscape beds and other activities to beautify and improve the park.*

### **Case Studies:**

- **Frankfort, Kentucky**  
Volunteers play a role in accomplishing the city's urban forestry goals. Activities include planting, pruning and mulching, tree inventory, youth work projects, control of invasive plants, and computer data entry.
- **Vancouver, Washington**  
The City's volunteers participate in tree activities including Saturday volunteer planting events, neighborhood tree planting projects, maintaining and watering shrubs, invasive species removal, outreach activities, and event assistance.



**Recommendation #15**

***Engage the Environmental Commission in urban and community forestry management.***

**Description**

The city’s Environmental Commission develops and advises City Council on comprehensive, integrated environmental goals and policies to protect and enhance Ann Arbor’s air, water, land and public health. Within the Environmental Commission are resource committees (ex: Water Committee) which address specific issues and concerns related to that resource. A void in the Environmental Commission resource committees is a committee that addresses urban and community forestry issues.

An Environmental Commission Urban and Community Forestry Committee can:

- advise the Environmental Commission on urban and community forestry issues.
- assist with the implementation of recommendations from the UCFMP.
- ensure that the implementation of other environmental goals and policies do not adversely impact the urban forest.

The purpose of this recommendation is to engage the Environmental Commission through the creation of an Urban and Community Forestry Committee.

**Action Tasks**

- A. Identify steps with staff and the Chair of the Environmental Commission to create an Urban and Community Forestry Committee.
- B. Develop structure of the Committee, including number of members and representation. Committee should include both members who have technical knowledge of trees/arboriculture and those that have other skills and knowledge.
- C. Identify/advertise for candidates to be considered for the Urban and Community Forestry Committee. Include residents who have been involved in city urban forest activities on candidate list.

**Related Targets**

- (1) Tree Canopy Cover Land Use Targets
- (2) Tree Health
- (3) Tree Pruning
- (4) Tree Diversity
- (5) Engage Volunteers

**Case Studies:**

- **Vancouver, Washington**  
The City of Vancouver has a seven member, city council appointed Urban Forestry Commission. The commission is responsible for coordinating the city’s heritage tree program, planning events (ex: Arbor Day celebration and the Old Apple Tree Festival), informing planning commissioners on urban forestry issues and conducting outreach and education.
- **Portland, Oregon**  
The City of Portland has a ten member, volunteer urban forestry commission appointed by the mayor in consultation with the parks commissioner. The commission is an advisory group to the city on tree related issues.



**Recommendation #16**

***Secure adequate and sustainable city-generated funding to support an increased level of service for core urban forestry operations and programs.***

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**Description**

In fiscal year 2012, Ann Arbor’s street tree forestry operations budget moved from being funded through the city’s General Fund to being funded through the city’s Stormwater Utility. Trees play an important role in the stormwater system by improving the quantity and quality of the stormwater entering the system. It is estimated that each year the city’s publicly managed trees intercept 65 million gallons of stormwater. Trees do this by:

- intercepting rainfall on their leaves and keeping it from reaching the ground and becoming stormwater runoff
- absorbing stormwater through their roots
- reducing soil compaction- tree roots can break up hard soil to allow infiltration
- slowing down and reducing the flow of stormwater through interception, infiltration and absorption
- improving water quality by intercepting air pollution particulate matter, solvents, fertilizers and oils that would otherwise become part of stormwater runoff and be discharged into nearby streams, rivers and lakes.

Of all the available funding sources, city-generated funds are the most predictable and sustainable source. However, current city-generated funding in the budget does not support all of the work that needs to be completed. A growing backlog of maintenance and management increases every year. For example, there are insufficient funds to remove all of the trees that die each year or to cover stump removal following tree removal. Likewise, more trees are added to the priority prune list each year than the city is able to prune. This issue is causing a gradual decline in the quality and condition of the urban forest.

The planning process for the Urban and Community Forest Management Plan identified core activities that are crucial for protecting the health and safety of the urban forest, reducing long-term maintenance costs, and increasing the benefits of the urban forest. City-generated funds should be directed towards these core activities to ensure they are adequately funded.

**Proposed Core Services**

- a) Administration-planning and management activities
  - i. Site plan review
  - ii. Ordinance revisions
  - iii. Contract management
  - iv. Facilitate internal and external working groups
  - v. Development and implement best management practices
  - vi. Grant/philanthropic support

**Related Targets**

- (1) Tree Canopy and Land Use Targets
- (2) Tree Health
- (3) Tree Pruning
- (4) Tree Diversity
- (5) Engage Volunteers
- (6) Sustainable Funding
- (7) Resident Requests

**Case Studies:**

- **Austin, Texas**  
TreeFolks, an Austin tree nonprofit organization, sells carbon offsets to raise funds to plant trees, funding approximately 10,000 trees in Central Texas. A local partnership has developed between TreeFolks and the City of Austin.
- **Philadelphia, Pennsylvania**  
The City of Philadelphia created the program ‘Erase Your Trace’ that allows individuals or businesses to offset their carbon emissions (house, car travel, and air travel) by making a tax deductible financial contribution to help plant trees in Philadelphia through a local park conservancy.



- b) Field Work- work completed by the city Forestry crews on city trees
  - i. Tree Trimming - shift to proactive maintenance
  - ii. Tree planting
  - iii. Post planting care (new tree care)
  - iv. Tree removal
  - v. Stump removal
  - vi. Storm damage
  - vii. Emergency tree work (tree failure)
- c) Assessment/Appraisals
  - i. Field investigations
  - ii. Tree inventory
  - iii. Tree appraisals
  - iv. Tree assessments
  - v. Construction oversight/inspection/preparation
  - vi. Tree canopy analysis
- d) Outreach
  - i. Resident notification
  - ii. Resident concerns/inquiries response
  - iii. Website updates/maintenance
  - iv. Volunteer programs
  - v. Development of partnerships
  - vi. Communication of best management practices
  - vii. Development and implementation of Street Tree Master Plans
  - viii. Annual forestry reporting
  - ix. Resident outreach and education on forestry issues

## Action Tasks

- A. Determine cost gap between current funding for forestry operations and needed funding for core city-funded activities.
- B. Identify additional funding opportunities to expand city-generated funding levels.



### **Implementation Ideas:**

- *Identify special cost sharing, efficiencies, or synergies between city units.*
  - *Explore establishing a carbon off-set program where people can off-set their carbon footprint through city tree planting activities.*
- C. Ensure adequate staff resources are available to support core urban forestry services.

**Recommendation #17**

***Develop and implement a grant, loan and philanthropic funding program to support additional forestry services, special urban forestry initiatives and programs beyond the core level of service.***

**Description**

A funding gap exists between city-generated funding sources and the urban forestry services and programs that residents' desire. Grants, loans and philanthropic support can provide an important source of funding to supplement city-generated funding by supporting special capital improvements, catalyzing a project or developing a new program. These sources of funding are typically provided to achieve a specific outcome, such as improvements to water quality, tree planting, carbon sequestration or volunteer support, rather than to fund on-going program costs or maintenance.

For the Urban and Community Forest Management Plan, grant and philanthropic funding could be used to support specific tree planting projects, assessment/monitoring studies, or development of an outreach program and materials, in addition to other possibilities.

These programs take time to develop, but have the potential to fund activities and plan recommendations that may otherwise be difficult to fund through city-generated resources alone.

**Action Tasks**

- A. Ensure that adequate city staff resources are available to pursue grant, loan and philanthropic opportunities and to oversee program management.
- B. Develop a system to better track grant funding opportunities and cycles, allowing for quicker turnaround in pursuing grants when opportunities arise.
- C. Pursue partnerships with public agencies, public institutions and non-profit organizations to help with grant-writing and provision of needed matching funds.
- D. Determine philanthropic resources that currently exist within the city and determine whether they can be expanded to support the urban forest or if new philanthropic resources might be needed.
- E. If appropriate, partner with an organization (ex: Ann Arbor Community Foundation) to assist in the oversight and management of an urban forest philanthropy program, including the coordination of needed outreach fundraising efforts.
- F. Develop policy for long-term philanthropic/donor involvement.

**Related Targets**

- (1) Tree Canopy and Land Use Targets
- (2) Tree Health
- (3) Tree Pruning
- (4) Tree Diversity
- (5) Engage Volunteers
- (6) Sustainable Funding
- (7) Resident Requests

**Examples of Potential Grant Opportunities:**

- Global ReLeaf Project through American Forests
- Environmental Solutions for Community Grant Programs through Wells Fargo and the National Fish and Wildlife Foundation
- National Urban and Community Forestry Advisory Council Challenge Cost-Share Grant Program through the U.S. Forest Service
- Siemens Sustainable Community Award through U.S. Chamber of Commerce's Business Civic Leadership Center.

**City Example of Philanthropic support:**

- **Elizabeth R. Dean Trust Fund**  
In 1964, Ms. Elizabeth Dean bequeathed nearly \$2 million to the public trees of Ann Arbor. Her Will states "...the interest income thereof be used to repair, maintain, and replace trees on City property, perpetually."

