

Application Form
Fiscal Year 2012 Northeastern Area State and Private Forestry
Great Lakes Restoration Initiative (GLRI)

Project Applicant: Wisconsin Department of Natural Resources

Project Title: “First Downs for Trees”- Season 3: Playbook for Strategic Tree Planting

Project Location: Brown County, Wisconsin

GLRI Program Area: (check only one)

- 1. Restore Urban and Community Forests (GLRI Focus Area – Near-shore Health and Nonpoint Source Pollution)
- 2. Mitigate Emerald Ash Borer Impact (GLRI Focus Area – Near-shore Health and Nonpoint Source Pollution)
- 3. Reduce Toxic Substances in Brownfield Sites (GLRI Focus Area – Toxic Substances)
- 4. Develop Ecosystem Service Markets (GLRI Focus Area – Near-shore Health and Nonpoint Source Pollution)

Project Lead: Name: Richard Rideout
Address: 101 S. Webster St., P.O. Box 7921 Madison, WI 53707-7921
Phone number: 608-267-0843
Fax number: 608-266-8576
E-mail address: Richard.Rideout@wi.gov

Federal funding requested: \$ 48,399

Recipient of funds: Name:
Address: Wisconsin Department of Natural Resources
Phone number: 608-267-0843
Fax number: 608-266-8576
E-mail address: Richard.Rideout@wi.gov

Project Duration: 24months

Abstract: See attached

Scope of Work: See attached

Partners: See attached

Timeline: See attached

Budget: (Leverage is encouraged but not required)

Table I: In column II, be sure to include (sum total) of all non-Federal cooperators.

Categories	I <i>FS Share</i>	II <i>Cooperator's Share</i>	III <i>Total</i>
1. Personnel	0	3,750	3,750
2. Fringe	0	1,472	1,472
3. Travel	0	0	0
4. Equipment	0	0	0
5. Supplies/Materials	48,000	16,500	64,500
6. Contractual	0	0	0
7. Other (identify)	0	0	0
8. Indirect Costs	399	399	798
9. Total Costs	48,399	22,121	70,520

Instructions for Table I:

Although no cooperator share (match) is required, projects should leverage State, local and private funding and other contributions (in-kind services) from both Federal and non-Federal entities.

1. Lines 1-7: Enter the dollar amount for each item.
2. Line 7: Identify charges. Additional lines can be added for budget items not listed.
3. Line 8: Charges not directly attributable to accomplishing the project such as overhead. Forest Service share of indirect charges must be kept to a minimum. Indirect rate must be documented and approved by a cognizant federal agency.
4. Line 9: Enter totals of lines 1-8.

Table II: Cooperator Contributions (if provided),

Cooperator	Cash	Materials	In-Kind Services	Total
Green Bay Packers	16,000			16,000
WI DNR			5,621**	5,621
WI Public Service		500*		500
<i>Totals</i>	16,000	500	5,621	22,121

* donated signs **donated labor

Instructions for Table II:

Excluding USDA Forest Service contributions, identify the value of all non-federal cooperator contributions. Please value in-kind contributions and materials at reasonable and acceptable rates.

Tribal Official Signature: _____
or (as appropriate)

State Forester's Signature: Paul DeLong

Abstract

“First Downs for Trees” Season 3: Playbook for Strategic Planting

First Downs for Trees (FDFT) is a unique partnership that teams-up the Green Bay Packers, Wisconsin Department of Natural Resources, Wisconsin Public Service Corporation, Oneida Nation, and Brown County and its cities, villages and towns to enhance and restore their urban ecosystems by improving the quality of water entering the bay of Green Bay, increasing the urban canopy in Brown County, mitigating climate change, and improving the social, economic and ecological well being of urban areas by planting and maintaining a healthy urban forest.

FDFT is a successful, highly visible tree planting program in its third year which has placed the act of tree planting for environmental benefits on a national platform. For each first down the Green Bay Packers earn during the regular season, a predetermined number of 1½ inch caliper, bareroot trees are planted within Brown County communities and tribe. Originally designed to off-set carbon produced by Packer organization travel, the program scope was expanded in 2011 to include Great Lakes restoration and reduction of the negative impacts of stormwater.

The program is a win-win situation for all parties involved. It helps local communities meet the goals of urban forestry management and community comprehensive plans in a time when budgets are tight, it helps to meet the goals of all five focus areas in the Great Lakes Restoration Initiative Action Plan, and it meets 3 of the 5 urban forestry goals of the WDNR, Division of Forestry Strategic Direction. Specifically, the thirteen hundred trees planted during season 3 will intercept 73 million gallons of stormwater runoff; sequester 8,873 tons of CO₂ and save \$2 million in heating and cooling costs cumulatively over a 40 year period. These benefits will have a direct impact on the water quality, species diversity, and habitat improvement in the Great Lakes Basin.

In our third season, the goals of FDFT are:

- Expand from the original outcome of 1 tree per first down to 4 trees per first down allowing for planting of approximately 1333, 1½ inch caliper, bareroot trees
- Develop a strategic tree planting methodology for maximizing stormwater benefits within the Green Bay Metro area utilizing our newly developed urban tree canopy factsheets and analysis process
- Create a “playbook” supporting wide-spread marketing and replication of the FDFT model to other NFL teams.

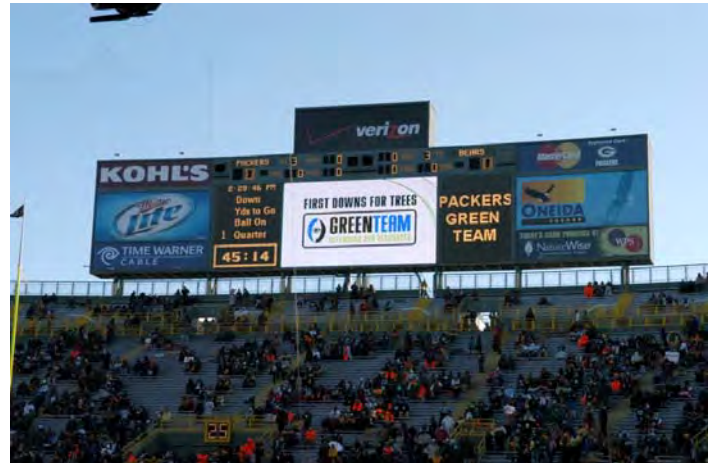
The unique partnerships within the FDFT catapults the critical issues facing the Great Lakes on to a highly visible platform which exponentially expands exposure while demonstrating how **everyone** can be part of the solution . . . by planting a tree.

“First Downs for Trees”

Season 3: Playbook for Strategic Tree Planting

Scope of Work

“First Downs for Trees” (FDFT) teams-up the Green Bay Packers, Wisconsin Department of Natural Resources, Wisconsin Public Service Corporation, Oneida Nation and Brown County and its cities, villages and towns to enhance and restore urban and community ecosystems, by leveraging the benefits trees provide in reducing the amount of stormwater runoff, improving stormwater runoff and air quality, moderating climate conditions, and harboring and protecting wildlife. FDFT expands the urban forest canopy by planting an increasing number of trees in Brown County communities based on the number of first downs the Green Bay Packers earn during the regular NFL football season.



FDFT partners plant trees at the legendary Lambeau Field with USFS Chief Tidwell.

In its third season, **FDFT** goals are:

- Expand from the original outcome of 1 tree per first down to 4 trees per first down allowing for planting of approximately 1,333, 1½ inch caliper, bareroot trees
- Develop a strategic tree planting methodology for maximizing stormwater benefits within the Green Bay Metro area utilizing our newly developed urban tree canopy factsheets and analysis process
- Create a “playbook” supporting wide-spread marketing and replication of the FDFT model to other NFL teams.

The “First Downs for Trees” project meets all 5 focus areas of the **Great Lakes Restoration Action Plan**. This unique partnership is a high profile, highly visible collaborative effort that works to protect, enhance, and restore urban ecosystems that impact the Bay of Green Bay, one of the Great Lakes Areas of Concern (AOCs) through strategic tree planting.

- 🌳 **Focus Area 1: Toxic Substances and Areas of Concern** - This project will positively impact waters flowing into the Fox River and the Bay of Green Bay, which are targeted AOCs. Strategically planted trees will not only reduce the amount of urban stormwater runoff reaching our local waterways, they will also filter and remove pollutants from the stormwater runoff which can negatively impact aquatic habitats. In addition, the trees will reduce soil erosion, the flow of stormwater runoff, air pollution and energy consumption (see Figure 3.0). Adding a strategic planting component will ensure greater efficiency in the delivery of benefits while also helping to develop an understanding and appreciation for working at the canopy model level.
- 🌳 **Focus Area 2: Invasive Species** – Brown County is quarantined for EAB and has over 30,000 publically-owned urban ash trees. FDFT will increase species diversity within the county by planting

an additional 1,333 trees of various species. This will in turn increase the resiliency and buffering capacity of the urban forest to invasive species.

Focus Area 3: Nearshore Health and Nonpoint Source Pollution – Nonpoint sources are the primary contributors of many pollutants to the Great Lakes Basin. The complexity of these pollutants are difficult to address. However, implementing the best management practice of planting trees has proven to have multiple benefits. The additional 1,333 trees will reduce soil erosion and sediment, nutrient & pollutant loading into tributaries along the Fox River which flows directly into the Bay of Green Bay. The 1,333 trees will also slow the overland flow of stormwater runoff in urban areas and help mitigate over 73 million gallons of runoff over a 40 year period (see Figure 1.0 and 2.0).

Focus Area 4: Habitat and Wildlife Protection and Restoration – The planting of additional trees in the region will also help enhance the Great Lakes habitats and wildlife. Thirteen hundred trees will take up 8,873 tons of carbon dioxide over 40 years (see Figure 3.0), helping to buffer the impacts of potential problems such as climate change. The trees will create local ecosystems that provide habitat and food for birds and animals that would otherwise be absent from urban areas. And, trees will help reduce stormwater runoff, thereby reducing sediment from entering our waterways and helping to improve fish habitats.

Focus Area 5: Education, Communication & Partnerships – This project is the epitome of partnerships – a World Champion football team, utility company, state agency, tribal nation, county and 21 other local units of government! This is a proven project and additional dollars will allow us to develop a process to more strategically plant a greater number of trees, and also develop a “playbook” to assist in the marketing and replication of the program with additional NFL football teams in states bordering the Great Lakes. This project sets the example that will encourage other professional football teams in the Great Lakes Basin - the Chicago Bears, Detroit Lions, Cleveland Browns and Buffalo Bills - to get involved. The program could also be expanded to other professional and even collegiate sports. If this was done a plethora of teams, organizations, and other Great Lake states and Canada could become involved. The success of this project will leverage additional investment and awareness through the multi-billion dollar private sector sports industry and their fans.

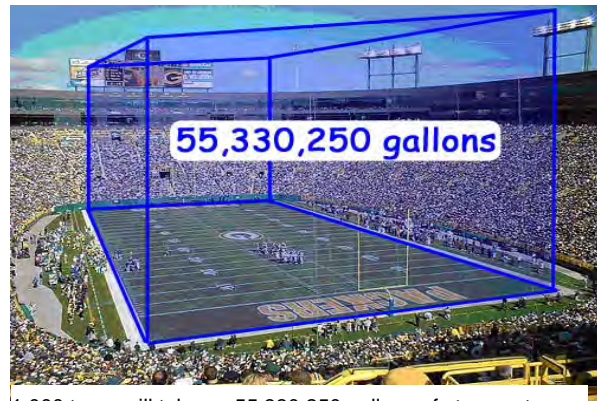
While FDFT brings awareness of Great Lakes restoration efforts to a broader and more diverse audience, it also highlights how trees help improve the general health of the Fox River and its tributaries, the bay of Green Bay, and Lake Michigan. During its first two years, FDFT has received widespread television and newspaper media coverage. One of many events featured includes USFS Chief Tidwell planting trees at the legendary Lambeau Field in Green Bay with FDFT partners.

FDFT also meets 3 out of the 5 Urban Forestry goals of the Wisconsin Department of Natural Resources Division of Forestry new Strategic Direction, which is DNR’s implementation for the statewide forestry strategy.

Focus assistance at a multi-community scale and will do less individualized local program delivery (UF-1) – This project works on a county-wide scale involving 21 local municipalities, the Oneida Nation, Brown County, Green Bay Packers, Wisconsin Public Service Corp (utility company), and WI DNR.

Focus on developing broad scale partnerships and funding methods to enable communities, regional planning commissions, tribes, foundations, non-profits and professional organizations to add value to urban forests. (UF-2) – This is a unique partnership between local units of government, a professional football team, a tribal nation, a utility company, and a state agency. The Packers donate money to purchase the trees, the municipalities and tribe plant the trees,

Figure 1.0



1,000 trees will take up 55,330,250 gallons of stormwater runoff cumulatively over a 40 year period. That is enough water to fill a pool the size of a NFL football field (360' x 160') to the depth of 128.42'.

the utility company provides educational signage, and the WI DNR provides project administration. The USFS grant will be used to purchase additional trees, support development of a strategic tree planting process and replication of the program to other NFL teams through creation of a FDFT “playbook.” The USFS will be recognized as a partner on all educational and outreach materials.



Focus on partnerships that can provide services & tools to local governments and organizations working in small communities and those without active urban forest management (UF-5)

– This project provides outreach to 9 communities that have not been engaged in past urban forestry efforts. Our goal with this project would be to continue to work with these nine municipalities and encourage 4 towns that did not participate last year. The development of a playbook will support our efforts to reach-out and expand the program to other states and NFL teams.

In summary, the planting of the urban forest in Brown County not only meets and supports the goals and objectives of the GLRC Strategy by reducing stress and helping to protect and restore the chemical, physical, and biological integrity of the Great Lakes Basin ecosystem, but also places this critical issue on a highly visible public platform.

Our third season of FDFT focuses on increasing the water related benefits tree planting provides through strategic planting and project replication.

Utilizing the urban tree planting analysis work recently completed by the WDNR for the Green Bay Metro area, we will develop a methodology for communities to identify strategically important (stormwater benefits) tree planting locations.

The creation of a “playbook” will not only share that methodology but also serve as a marketing tool to introduce and recruit participation of other professional NFL teams located within states which border the Great Lakes.

The success of the Great Lakes restoration ultimately rests in the hands and is the result of actions of a wide variety of people and organizations. . . it is the responsibility of **all** the people. The unique partnerships within the FDFT place critical issues facing the Great Lakes on a highly visible platform which exponentially expands exposure. It also demonstrates how **everyone** can be part of the solution . . . by planting a tree.

Figure 2.0

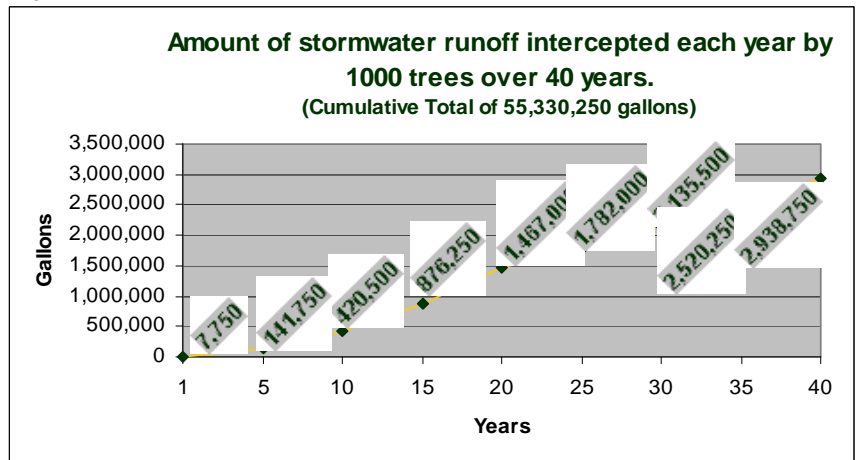


Figure 3.0

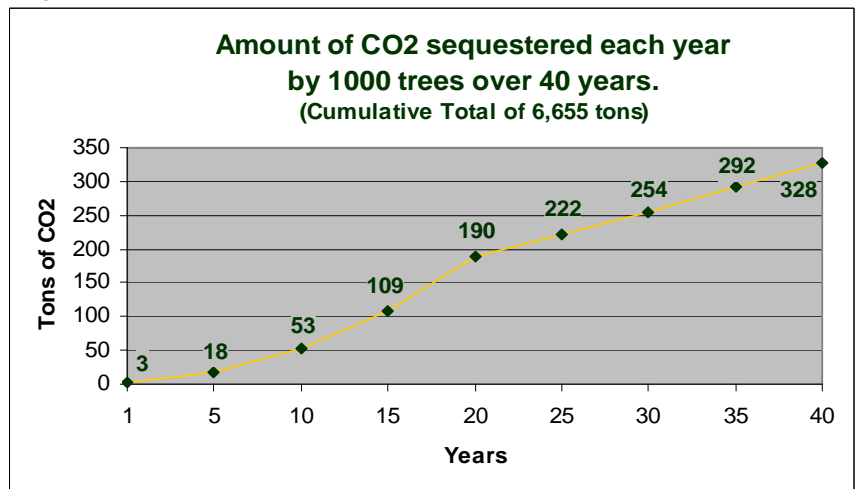
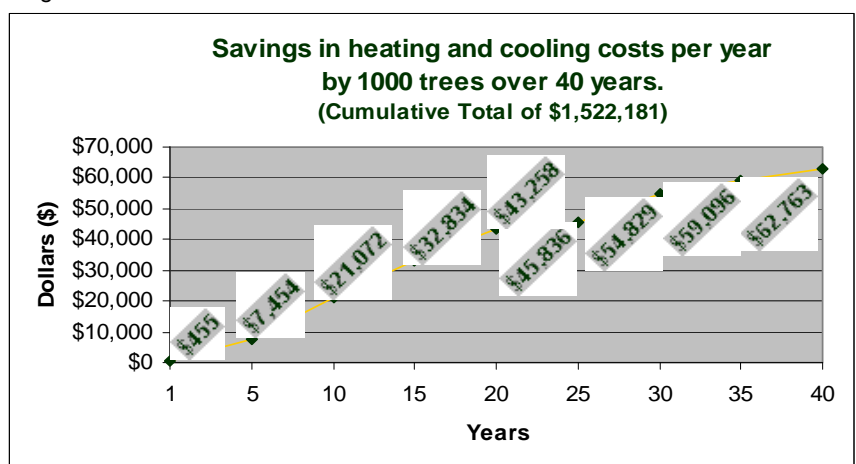


Figure 4.0



Source: Data for Figures 2.0 – 4.0 derived from the National Tree Benefit Calculator, <http://treebenefits.com/calculator/>.

Partners for Project Proposal	
Partners	
Green Bay Packers	Village of Suamico
Wisconsin Department of Natural Resources	Village of Wrightstown
Wisconsin Public Service Corporation	Town of Eaton
Local Nurseries	Town of Glenmore*
Oneida Tribe of Indians of Wisconsin	Town of Green Bay*
Brown County	Town of Holland
City of De Pere	Town of Humboldt
City of Green Bay	Town of Lawrence
Village of Allouez	Town of Ledgeview
Village of Ashwaubenon	Town of Morrison
Village of Bellevue	Town of New Denmark*
Village of Denmark	Town of Pittsfield
Village of Hobart	Town of Rockland *
Village of Howard	Town of Scott
Village of Pulaski	Town of Wrightstown

*Towns that will be encourages to participate, who didn't last year.

Map of Local Units of Government in Brown County





13-Time World Champions
Super Bowl Champions
I, II, XXXI, XLV

Dear Tracy:

The Green Bay Packers are a proud partner of the *First Downs for Trees* tree planting initiative. While the initial goal of the original program was to help our organization offset carbon production through planting trees, we are equally enthusiastic for this program to have a positive impact on improving the health of watersheds servicing the Bay of Green Bay, its tributaries and even Lake Michigan.

The Packers are committed to partnering with the Oneida Tribe, Wisconsin Public Service Corporations, the Department of Natural Resources and Brown County and its local units of government to increase tree canopy cover. We have made a financial commitment of \$16,000 toward the purchase of trees. We are additionally able to assist with development of press releases and working with local media to spread the word about the impact and importance of tree planting, especially in connection to improving the health of the Great Lakes.

As Super Bowl Champions with a long tradition of community outreach and support, the Green Bay Packers are proud to have our Packers "Green Team" serve as an environmental stewardship model for other professional sports teams which share a home along our treasured Great Lakes.

Thanks again for the opportunity to partner in the effort.

Sincerely,

Aaron Popkey
Interim Director of Public Relations
Green Team Coordinator

Oneida Tribe of Indians of Wisconsin
Environmental, Health & Safety Division

Little Bear Development Office
PO Box 365
7332 Water Circle Place
Oneida, WI 54155
Phone (920) 869-4591
FAX (920) 869-1610



Conservation Field Office
PO Box 365
N8047 County Road U
Oneida, WI 54155
Phone (920) 869-1450
FAX (920) 869-2743

June 22, 2012

Tracy Salisbury
Regional Urban Forestry Coordinator
WI DNR
2984 Shawano Ave
Green Bay, WI 54313

Dear Tracy,

The Oneida Tribe of Indians of Wisconsin Environmental Health & Safety Division is an enthusiastic partner with the WI Department of Natural Resources and the Green Bay Packer Organization in the "First Down for Trees" program. This program has, and will, continue to attract attention and support for tree planting by introducing children and their families to the value of trees in our neighborhoods.

We believe this is an opportunity for local communities to reach across barriers of culture and politics to take positive action to make our neighborhoods a better place to live, to learn about trees, and to celebrate our achievements. We are confident that this innovative program will be a source of joy and spiritual renewal for our communities.

As a principle partner, the Oneida Health & Safety Division will ensure to invite the participation of children, media, and community officials to be a part of tree planting activities. We look forward to our participation in this collaborative effort and to sharing our success.

We wish to thank the WI DNR and the Green Bay Packers for this unique opportunity.

Sincerely,

Dan Brooks
Forester
Environmental Health & Safety Division
Oneida Tribe of Indians of Wisconsin

Pat Pelky
Division Director
Environmental Health & Safety Division
Oneida Tribe of Indians of Wisconsin



City of De Pere

925 South Sixth Street
DePere, WI 54115-1199
Phone: 920-339-8362
Fax: 920-339-4071

Don Melichar
City Forester
dmelichar@mail.de-pere.org
www.de-pere.org

June 25, 2012

To Whom It May Concern:

The City of De Pere would like to thank the US Forest Service, the Wisconsin Department of Natural Resources, Ms. Tracy Salisbury, Meachum Nursery, Tillman Landscape and Nursery and the Green Bay Packers for their help in securing 75 trees for the 'First Downs For Trees' program that we have participated in for the past two springs. With the help of these partners the City was able to plant 15 trees with three of our local elementary schools on Arbor Day. The children learned all about the various trees that we selected, including how and why we need to plant trees properly. The City was also able to plant trees in our parks where ash are currently or formerly located. With the impending onset of EAB (and the recent discovery of infested trees in the immediate area) we are trying to be proactive and get trees established so the impact will not be as severe.

By working with our communities on this program you are helping to offset some of our budget constraints that we are ultimately dealing with. In uncertain times many programs are seeing decreases in all areas and Forestry and Parks have seen their share of reductions. By replicating or expanding this program again next year you will help communities to continue to beautify some of their public lands and/or rectify some of the challenges we will be facing soon.

Thank you for your consideration on this matter.

Sincerely,

A handwritten signature in black ink that reads "Don Melichar". The signature is written in a cursive, flowing style.

Don Melichar
De Pere City Forester



June 22, 2012

Tracy Salisbury
Regional Urban Forestry Coordinator
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313

Re: ***First Down For Trees Program***

Dear Tracy:

The Village of Hobart wishes to fully commend and support DNR's ***First Down For Trees*** Program developed as a collaborative partnership with the Green Bay Packers, local jurisdictions and utility providers. Hobart has already benefitted from this program recently and we fully appreciate the efforts that everyone has put towards this wonderful endeavor.

Hobart has been a Tree City USA since 1998 and has consistently benefitted from the guidance, public information and urban forest planning opportunities that DNR provides to local municipalities. The ***First Down For Trees*** Program is an excellent example of productive collaboration that provides mutual benefit for the quality of life here in Brown County.

Thank you for all that you and your agency do for local jurisdictions. This program in particular adds a new dimension of community spirit and an even truer sense of "green" to the Green Bay Packers.

Sincerely,

VILLAGE OF HOBART

A handwritten signature in cursive script that reads "Elaine".

ELAINE D. WILLMAN, Director
Community Development
2990 South Pine Tree Road
Hobart, WI 54155
920-869-3806

Green Bay Metro Area¹



Urban Tree Canopy (UTC) Analysis

What is the Urban Forest and Urban Tree Canopy?

The **Urban Forest** consists of all public and private trees and shrubs in our community. This includes trees in yards, parks, open spaces, along streets and other land where trees are present. One way to understand the value of urban forests is by envisioning the layer of leaves, branches and tree stems when viewed from above. This layer is called **Urban Tree Canopy (UTC)**.

Why is Urban Tree Canopy important?

While we may not think of city trees as a typical “forest,” these trees provide valuable services and benefits.

Trees in our community:

- Reduce storm water runoff
- Lower summer air temperatures
- Reduce air pollution
- Reduce heating and cooling costs
- Enhance property values
- Provide wildlife habitat
- Improve health and wellbeing
- Improve learning and concentration
- Provide aesthetic benefits

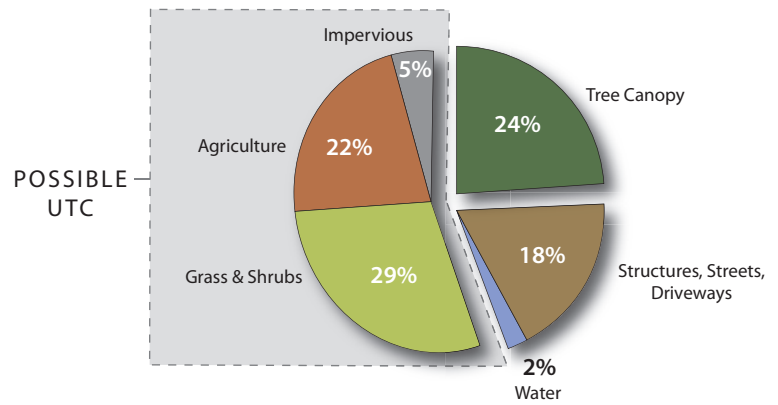
UTC benefits can be quantified. A single large tree can provide approximately \$76 in average annual net benefits, \$3,000 in benefits over a 40-year period. An increase in UTC brings an associated increase in benefits.



How much Urban Tree Canopy does the Green Bay Metro Area have?

UTC analysis for the GREEN BAY METRO AREA shows²:

- An existing tree canopy of 24% (21,663 acres).
- Trees could potentially cover an additional 56% (50,999 acres) of the Metro’s land surface. These “Possible UTC” areas include grass, agriculture land, and impervious surfaces (e.g., parking lots, paved playgrounds & ROW).
- The remaining 20% (18,271 acres) of the Metro’s area is buildings, streets, water and other permanent features and is generally unsuited to UTC improvement.



Many factors determine where best to plant urban trees. UTC analysis shows where additional trees will have the greatest positive impact.

Existing tree canopy for local communities is:

Allouez.....	28%	Green Bay	25%
Ashwaubenon	19%	Hobart	24%
Bellevue	15%	Howard.....	32%
DePere.....	21%		

¹ The Green Bay Metro Area is comprised of Allouez, Ashwaubenon, Bellevue, DePere, Green Bay, Hobart, and Howard.

² Analysis was conducted using iTree Canopy. iTree Canopy offers a quick and easy way to produce a statistically valid estimate of land cover types (e.g., tree cover) using aerial images available in Google Maps. The iTree Suite is a free state-of-the-art, peer-reviewed software suite from the USDA Forest Service. www.itreetool.org

Why should the Green Bay Metro Area set goals for UTC?

As urban development expands, it is increasingly important to balance growth with environmental wellbeing. To maximize UTC benefits, communities should set goals to protect, maintain and enhance their entire urban forest. Careful planning and goal setting are necessary to retain as much mature tree canopy as possible in areas with development pressure and to expand and sustain canopy in already urbanized areas. UTC goals can emphasize environmental quality (stormwater, air quality, carbon offsets), livability and economic vitality.

Though many communities have adopted land use strategies to mitigate sprawl, few have developed land cover strategies like UTC to mitigate urbanization effects.



Additional Resources

Urban Tree Canopy Assessment, Northern Research Station, USDA Forest Service, <http://nrs.fs.fed.us/urban/utc/>

Watershed Forestry Resource Guide, Urban Tree Canopy, <http://www.forestsforwatersheds.org/urban-tree-canopy/>

Urban Natural Resources Institute, <http://www.unri.org/webcasts/archive/march-2011a/>

Society of Municipal Arborists, Urban Forestry BMPs, <http://www.urban-forestry.com/sma-urban-forestry-bmps>

How to Set UTC Goals

Effective UTC goal setting requires involvement and commitment by municipal leaders and staff, local business community, neighborhood groups and citizens. The process generally includes four steps:

- **Assess Current UTC**
 - Can use iTree Canopy Analysis or GIS to arrive at UTC baseline.
- **Assess Possible UTC**
 - Identify opportunities on both public and private land.
- **Adopt Goals Based on Assessments**
 - If possible, institutionalize goals in appropriate ordinances, policies, or community master plan.
- **Develop Implementation Plan**
 - Identify strategies to meet goals based on available resources, political climate and stakeholder needs. Produce timeline and identify parties responsible for each strategy.

Potential Strategies to Implement UTC Goals

- **Plant New Trees**
 - Identify and prioritize planting sites community-wide.
 - Assess species diversity needs.
 - Identify how trees will be maintained.
- **Protect & Maintain Existing Trees**
 - Adopt tree protection ordinance and conservation easements.
 - Produce a tree management plan.
 - Ensure proper pruning in utility corridors.
- **Minimize & Restore UTC Lost to Age, Mortality & Land Conversion**
 - Specify strategies within Comprehensive Land Use Plan (e.g. Smart Growth).
 - Adopt subdivision, zoning, and landscaping ordinances.
 - Identify impact from EAB and potential management strategies.
- **Promote Public Education & Awareness**
 - Promote tree benefits (e.g., community website, newsletter, water bill insert)
 - Promote proper tree planting (e.g., Arbor Day, workshops)
 - Develop or participate in campaigns (e.g., First Downs for Trees, Taking Root in Oshkosh)



Wisconsin Department of Natural Resources
dnr.wi.gov



The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services, and functions under an Affirmative Action Plan. If you have any questions, please write to Equal Opportunity Office, Department of Interior, Washington, D.C. 20240.

Green Bay Metro Area¹

Street Tree Benefits

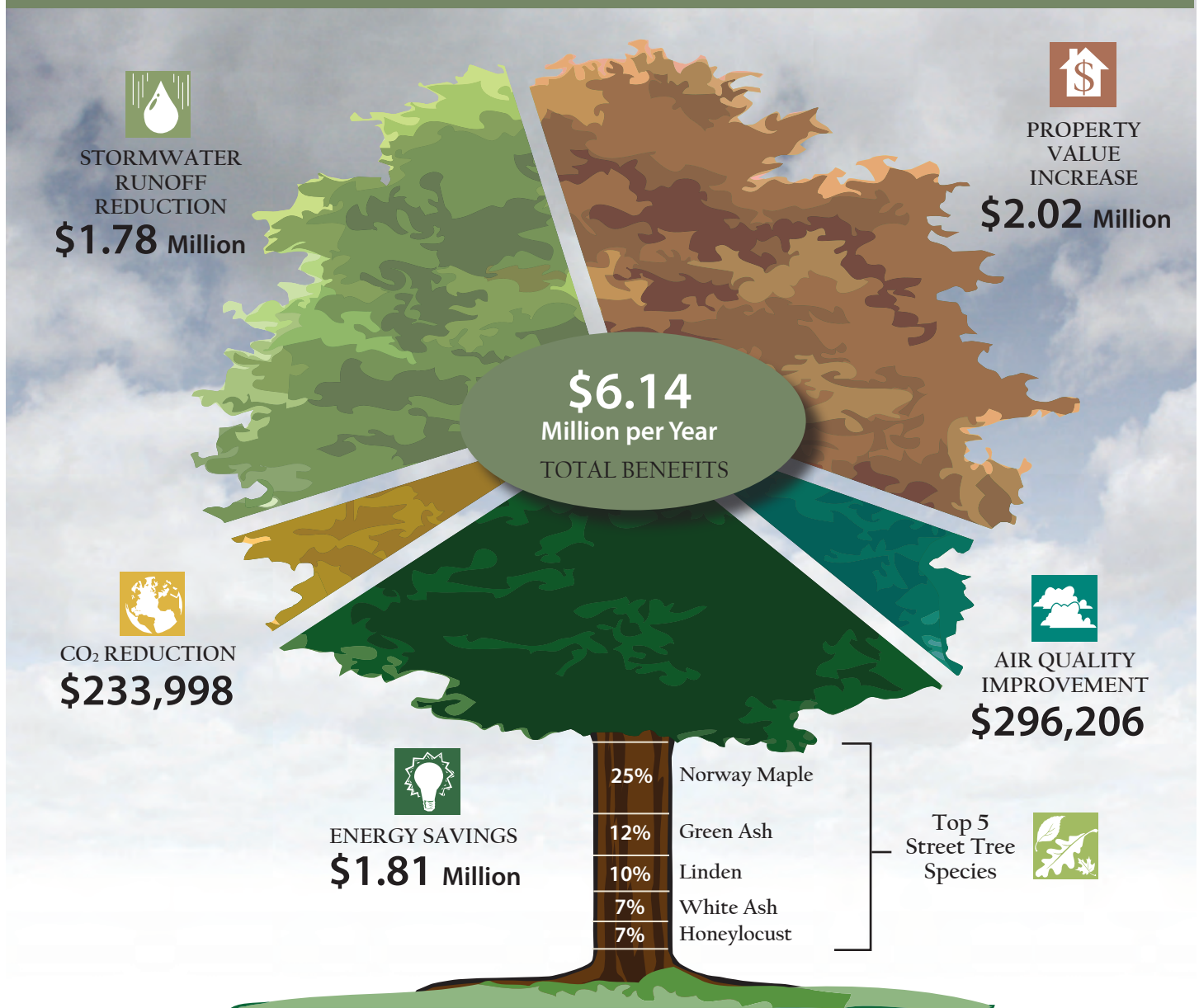


Green Bay Metro Area street trees provide millions of dollars of environmental, economic and aesthetic benefits to the community. Over their lifetime, street tree benefits exceed the costs of planting and care, representing a 300 percent return on investment. Tree benefits increase over time highlighting the importance of not only planting trees, but of providing ongoing maintenance and protection. These benefits are a reminder of the worthwhile investment in our community forestry program.

Trees:

- Reduce stormwater runoff
- Lower summer air temperatures
- Reduce air pollution
- Reduce heating and cooling costs
- Reduce atmospheric carbon dioxide (CO₂)
- Enhance property values
- Provide wildlife habitat
- Improve health and wellbeing
- Improve learning and concentration
- Provide aesthetic benefits

Annually Green Bay Metro Area public street trees provide²...





Trees Reduce Stormwater Runoff and Improve Water Quality

Trees reduce peak stormwater runoff and associated pollutants entering local water bodies. Trees reduce stormwater volumes by intercepting a portion of rainfall, which evaporates and never reaches the ground. Tree roots also increase rainfall infiltration and storage in the soil. And tree canopies reduce soil erosion by diminishing the impact of raindrops on barren surfaces.

Street trees in the Green Bay Metro Area intercept nearly 65.7 million gallons of water annually for a savings of \$1.78 million.



Trees Reduce Atmospheric Carbon Dioxide

Trees reduce atmospheric carbon by capturing and storing CO₂ as they grow. By reducing demand for heating and cooling, trees indirectly reduce CO₂ by avoiding power plant emissions associated with energy production.

Street trees in the Green Bay Metro Area capture 8,715 tons of atmospheric CO₂ per year. Annual savings including indirect costs are \$233,999. Street trees also store approximately 89,580 tons of atmospheric CO₂ for a total savings of \$1.3 million.



Trees Improve Air Quality

Trees improve air quality by trapping particulates, absorbing gaseous pollutants, and releasing oxygen. By cooling urban heat islands and shading parked cars, trees indirectly reduce ozone levels. The Environmental Protection Agency recognizes tree planting as an ozone reduction measure in state implementation plans.

Street trees in the Green Bay Metro Area remove 4,664 lbs of particulate matter, 8,603 lbs of ozone, 398 lbs of sulfur dioxide and 1,449 lbs of nitrogen oxides annually. Total annual savings including indirect cost are \$262,207.



Wisconsin Department of Natural Resources
dnr.wi.gov



The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services, and functions under an Affirmative Action Plan. If you have any questions, please write to Equal Opportunity Office, Department of Interior, Washington, D.C. 20240.



Trees Save Energy

Trees reduce the demand for energy to heat and cool buildings by providing shade, lowering summertime temperatures, and reducing windspeeds. Secondary benefits are reduced water consumption and pollutants emissions by local power plants.

Street trees in the Green Bay Metro Area save nearly 9,000 MWH of electricity and 1.2 million Therms of natural gas annually for a savings of \$1.8 million.



Trees Improve Property Values and Beautify Our Communities

Trees are the single strongest positive influence on scenic quality in our community! They increase the attractiveness of retail business areas. Studies found shoppers are willing to pay up to 11% more for goods and services in a well-landscaped business district. Trees increase property values. People will pay 3-7% more for properties with many trees. Trees foster safer and more sociable neighborhoods. Views of trees ease mental fatigue and stress, help concentration, reduce sickness, and provide settings for recreation and relaxation. Trees also help reduce noise, provide a refuge for wildlife, and help connect residents with their natural environment.

Street trees in the Green Bay Metro Area increase property values annually by \$2 million.



Diversity Improves Urban Forest Resilience

A diverse palette of trees helps guard against catastrophic loss to insects and diseases or environmental stresses. A general guideline for urban forest diversity is no more than 5% of any one species, 10% of any one genus.

Maple, Ash, and Lindens are over-represented the Green Bay Metro Area streets. This jeopardizes \$4.5 million of the city's urban forest's benefits from pests such as Emerald Ash Borer (EAB) and Asian Longhorn Beetle (ALB). Enlist the public to help increase the area's urban forest resilience by planting less common trees on their own property.

¹ The Green Bay Metro Area is comprised of Allouez, Ashwaubenon, Bellevue, DePere, Green Bay, Hobart, and Howard.

² Analysis was conducted using iTree Streets. iTree Streets is a street tree management and analysis tool for urban forest managers that uses tree inventory data to quantify the dollar value of annual environmental and aesthetic benefits. The iTree Suite is a free state-of-the-art, peer-reviewed software suite from the USDA Forest Service. www.itreetool.org.

Tree graphic concept courtesy of City of New York Department of Parks & Recreation.