

City of Lansing Charter Commission

Regular Meeting Agenda



Tony Benavides Lansing City Council Chambers
Lansing City Hall, 10th floor
124 W. Michigan Avenue

August 27, 2024 at 6:30 PM

1. Call to Order

2. Roll Call

3. Adopt the Agenda

4. Approval of Minutes

- A. Minutes August 13, 2024
- B. Minutes August 20, 2024

5. Public Comment

People wishing to share public comment virtually may do so. The deadline to register to comment this way is 6PM, 30 minutes before the start of the meeting. Sign up at this link: <https://events.gcc.teams.microsoft.com/event/a4f91350-f633-4296-bb68-80c0920d6b62@87509dee-095b-4ff8-ba5a-0035cdfc715d>

6. Officer Reports

- A. Chair
- B. Vice Chair
- C. Clerk

7. Old Business

8. New Business

- A. Article 5 Overview
- B. Article 6 Overview

9. Public Comment

10. Commissioner Remarks

11. Adjournment

Persons with disabilities who need an accommodation to fully participate in this meeting should contact the City Clerk's Office at (517) 483-4131 (TTY 711). 24 hour notice may be needed for certain accommodations. An attempt will be made to grant all reasonable accommodation request.

Minutes for the City of Lansing Charter Commission

Regular Meeting | Tuesday, August 13, 2024, 6:30 PM

Tony Benavides City Council Chambers,
Lansing City Hall, 10th floor, 124 W. Michigan Ave.

Present: Commissioners Adams Simon, Anderson, Bauer, Boyd, Jeffries, Lopez, Qawwee, Washington

Absent: Commissioner Dowd (excused)

Staff Present: City Clerk Swope, Deputy Clerk Drever

Call to Order

The meeting was called to order by Chair Jeffries at 6:30 PM.

Roll Call

Clerk Swope called the roll of the Commission. A quorum was present.

Adopt the Agenda

Moved by Commissioner Qawwee to adopt the agenda.

Motion Carried.

Approval of Minutes

Moved by Commissioner Qawwee to approve the July 30, 2024, meeting minutes as presented.

Motion Carried.

Public Comment

Marshall Clabeaux spoke about establishing a sustainability department in the City in Article 4. He suggested ways for sustainability to guide the Charter revision.

Officer Reports

Chair

Chair Jeffries reminded the community of the upcoming listening sessions.

Vice-Chair

Vice-Chair Adams Simon informed the public of the Commission's partnership with CATA for free rides to the upcoming listening sessions. She yielded to Chioma Lewis, Service Information Marketing Manager for CATA, who explained how to use the Transit phone app.

Clerk

Clerk Swope acknowledged written communications in the packet and provided a budget update noting the Commission has \$384,020.17 remaining in their account. He also reminded the community of the translated community meetings postcard, which is available on the Commission's website.

Old Business

Legal Counsel Deliberation and Selection

Moved by Vice-Chair Adams Simon to adopt the resolution to hire an attorney for the Charter Commission.

Moved by Vice-Chair Adams Simon to amend the resolution to select Cummings, McClorey, Davis, and Acho (CMDA) as the firm to hire.

Motion Carried.

Motion Carried.

Community Meetings Update

Moved by Commissioner Boyd to approve the expense of \$175 for space rental for the Community Meeting.

Motion Carried.

Moved by Commissioner Boyd to adopt the Community Meetings agenda.

Motion Carried.

New Business

Article 4 Overview

The Commissioners discussed Article 4 of the City Charter

Authorization for Chair to Sign Contracts

Moved by Vice-Chair Adams Simon to adopt the resolution for the chair to sign contracts.

Motion Carried.

Public Comment

Bruce Scott spoke about employment access with misdemeanors on record.

Reza Beha spoke about hiring requirements for the Mayor's staff.

Fred McLaughlin spoke about expanding the Charter for clarity and understanding, including definitions and references.

Farhan Sheikh-Omar spoke about listening to the community.

Commissioner Remarks

Commissioner Washington spoke about future community meetings.

Adjournment

The meeting was adjourned by Chair Jeffries at 7:39 PM.

Minutes for the City of Lansing Charter Commission

Special Meeting | Tuesday, August 20, 2024, 6:30 PM
Alfreda Schmidt Community Center, Community Room
5825 Wise Rd, Lansing MI 48910

Present: Commissioners Adams Simon, Anderson, Bauer, Boyd, Dowd, Jeffries, Lopez, Qawwee, Washington

Absent: None

Staff Present: Clerk Swope, Deputy Clerk Drever, Deputy Clerk Demerath-Shanti

Call to Order

The meeting was called to order by Chair Jeffries at 6:48 PM.

Roll Call

Clerk Swope called the roll of the Commission. A quorum was present.

Overview of the Lansing City Charter

Chair Jeffries gave a summary of the Commission's work so far.

Vice Chair Adams Simon introduced Donna Mullens from the League of Women Voters.

Donna Mullens of the League of Women Voters gave an overview of the City Charter.

Public Comment

Tim Poxson spoke about establishing veteran services and priority hiring in the Charter.

Mike Marriott spoke about the importance of input from young people in Lansing. He also spoke about restructuring the wards based on population, and Michigan's access to fresh water.

W Thomas Hamlin spoke about environmental policy and effective governance derived from limited overreach.

Jacques "Jay" West spoke about a City commitment to antiracism, following Resolution 406-22 in Tacoma, Washington and NYCHRL in New York City.

Fred McLaughlin spoke about expanding the Charter to be more interactive by including more definitions and references.

Mike Redding spoke about implementing checks on the Board of Water and Light, regarding rate increases.

Alexis Jones asked about City officials and employees living within the City.

Denise King spoke about keeping At-Large positions on City Council.

Commissioner Remarks

Commissioner Washington addressed the City's previous work on a Human Rights Ordinance.

Commissioner Boyd spoke about the Commission's goal to align the Charter's antidiscrimination language with State law. She thanked the League of Women Voters, the Churchill Downs Neighborhood Association, and Alfreda Schmidt.

Vice Chair Adams Simon spoke about updating Civil Rights protections and thanked everyone for coming.

Commissioner Bauer thanked the audience and commended their level of engagement.

Commissioner Qawwee talked about veteran access to jobs at the state and federal level.

Commissioner Lopez spoke about connecting with the Junior Board of Education.

Commissioner Dowd thanked the audience and encouraged them to share more comments.

Public Comment

Rita Fox spoke about the complex jurisdictions and districts in Lansing in Eaton County.

Bonnie Milton spoke about the need for increased tree maintenance.

Adjournment

The meeting was adjourned by Chair Jeffries at 7:45 PM.

Drever, Emery

From: Anna Martínez-Hume <annamartinezhume@gmail.com>
Sent: Wednesday, August 14, 2024 1:18 AM
To: Chartercommission
Subject: [EXTERNAL] Socially Responsible/Ethical Investing

Hello Charter Commissioners,

I'm writing to encourage the commission to consider including an investment clause in the revised Lansing city charter. Currently the Lansing charter has no clauses within it regarding how the city invests or what constitutes ethical or socially responsible investing. Other cities increasingly have such language in their city charters and resolutions. I think it would align with our community's values if Lansing's charter established ethical boundaries for our municipal investments (ie. city contracts, pension fund, etc) including prohibiting any investments in industries such as: fossil fuels/pipelines, weapons manufacturing, Big Tobacco, nations actively engaged in apartheid and human rights abuses, and private prisons/detention centers, among other unethical industries.

I think an ethical investment clause can be a proactive step Lansing can make to ensure we don't contribute to any industries or entities that are harmful to our natural environment and to human life here and everywhere. I urge the commission take up this important issue and opportunity.

Kindly,
Anna Martinez-Hume
Lansing Resident, Ward 2

Lansing City Charter Commission Comment Submission Form

08/10/2024 10:12 AM (EDT)

Lansing City Charter Commission Comment Submission Form

Purpose

Use this form to submit your comment to the Lansing Charter Commission about the Lansing City Charter.

Context

The Lansing Charter Commission is reviewing our city's charter, the document that outlines how our local government works.

After revisions are made to the charter, the proposed charter, will go back to the voters of Lansing, who will then determine whether to accept or reject the new charter.

The Charter Commission will have a duration of up to 3 years and may present a new charter to the electorate up to 3 times. If no new charter is accepted by the voters during that time, the charter will remain unchanged.

Citizen Involvement

In addition to speaking during the public comment sections of Charter Commission Meetings and Hearings, you can submit comments through this form. The commissioners want to hear from you!

Links

[Charter Commission Web Page](#)

[Current City of Lansing Charter](#)

Lansing City Charter Commission Comment Submission Form

First Name	Molly
Last Name	Weaver
(Optional) Contact information is optional, but providing it will make it easier for potential follow up.	
Email	mgewdancer@gmail.com
Phone	5178982984

Lansing City Charter Commission Comment Submission Form

Topic	Palestine
Comment	We want a city that refuses to invest in; nation-states engaged in illegal occupation, annexation, and apartheid (Israel), weapons manufacturing and technology systems, private prisons and detention centers, industries that are dangerous to human life and contribute to the natural destruction of our natural resources. We want a city that invests ethically and locally to uplift our community not that of apartheid states.

Lansing City Charter Commission Comment Submission Form

First Name	Josephine
Last Name	Keenan
(Optional) Contact information is optional, but providing it will make it easier for potential follow up.	
Email	josephinekeen@protonmail.com
Phone	9892952130
Street Address	2220 Fairfax road
City	Lansing
State	MI
Zip Code	48910

Lansing City Charter Commission Comment Submission Form

Topic	Sustainable Living
Comment	Hi, I'm not sure where this could/should live within the charter, but I strongly believe that someone should have the power/duty to address issues related to housing infrastructure - there are too many slumlords, rent is too high, and there aren't enough houses and apartments for people to live in. I'd like to see mixed zoning so that neighborhoods are not only single family houses but include apartments and local businesses, and developing high quality housing stock is incentivized. I would like to see creative solutions to manage our changing climate so that neighborhoods are not flooded out in the years to come. I think Lansing would become an even more attractive place to live if residents had a right to an affordable, safe place to live and rent caps/protections.

Lansing City Charter Commission Comment Submission Form

First Name Julia

Last Name Kramer

(Optional) Contact information is optional, but providing it will make it easier for potential follow up.

Lansing City Charter Commission Comment Submission Form

Topic Ethical investment clause in Lansing City Charter

Comment I support an ethical investment clause so that our city can prioritize investments that do not support nation-states engaged in illegal occupation and apartheid, weapons manufacturing, military technology, private prisons and detention centers, and industries that are dangerous to human life and contribute to the destruction of our natural resources. Thank you!

Lansing City Charter Commission Comment Submission Form

First Name Keith

Last Name Keith

(Optional) Contact information is optional, but providing it will make it easier for potential follow up.

Email keith.j.rouse@outlook.com

Phone 5176143066

Street Address 1715 Pingree St

City Lansing

State MI

Zip Code 48910

Lansing City Charter Commission Comment Submission Form

Topic Council and Mayoral Checks

Comment I would like to see the City Council move to 9 seats to avoid ties and have a 2/3 override of a mayor's veto. I prefer a Mayor to a City Manager, as I believe the Mayor and Council should serve as checks against each other. I would also like to see major appointments by the Mayor need Council approval before they are made to help ensure that these people are highly qualified.

(Optional) If your message relates to a specific article(s) in the Charter please select it here:

- ARTICLE 3 – LEGISLATIVE BRANCH
- ARTICLE 4 – EXECUTIVE BRANCH

Lansing City Charter Commission Comment Submission Form

First Name Matthew

Last Name Miller

(Optional) Contact information is optional, but providing it will make it easier for potential follow up.

Email m.r.miller@gmx.net

City Lansing

State MI

Zip Code 48933

Lansing City Charter Commission Comment Submission Form

Topic Charter revisions

Comment Dear Charter Commission, I'm a resident of the city and wanted to briefly express a few preferences for the revision of the charter.

1. I'm in favor of having an odd number of City Council members to prevent deadlock.
2. I think that odd number should be 9 and that the additional seat should be an at-large seat.
3. I don't think the city needs more wards, because we're already seeing barely competitive City Council races and it seems like it would only be harder to find willing and capable candidates from smaller wards. Also, it's not clear that smaller wards would yield a benefit for racial and economic diversity on the City Council.
4. I do think the salary of City Council members should be increased so that serving becomes more economically viable for more people.

All the best,
Matt Miller

Lansing City Charter Commission Comment Submission Form

First Name	Nancy
Last Name	Anderson
(Optional) Contact information is optional, but providing it will make it easier for potential follow up.	
Email	npanderson73@comcast.net
Street Address	733 N Magnolia Ave
City	lansing
State	MI
Zip Code	48912

Lansing City Charter Commission Comment Submission Form

Topic	contact
Comment	This entire commission is a waste of time and money for the members. The first glossy notice about meetings came today. This project is an overblown idea that will cost taxpayers money for 2 years of meetings and ideas. Surely the money could be better spent taking care of sidewalks and trees among other city needs. The persons elected submitted pie in the sky ideas and things that will probably never be completed..just ideas to get elected. Just like the gov promises to fix roads and nothing much was done until this election year and now things are partly done all over the city but not much completed ..chaos and confusion all over town. Dont bother to send more requests.

Lansing City Charter Commission Comment Submission Form

First Name W. Thomas

Last Name Hamlin

(Optional) Contact information is optional, but providing it will make it easier for potential follow up.

Email thomashamlin@hotmail.com

Phone (517)203-8063

Street Address 4621 Devonshire Ave

City Lansing

State Michigan

Zip Code 48910

Lansing City Charter Commission Comment Submission Form

Topic Deforestation

Comment Dear Lansing Charter Commission,

Let me get right to the point.

1. For several years, I have noticed that the City of Lansing has been involved in a program of Deforestation. By that I mean, since 2008 the City reorganized the Forestry Department into Parks and Recreation. While both Departments dealt with “green spaces”, the interest in the environment was confined to the previous Forestry Department. The same ideas can be applied to the Lansing Board of Water and Light.
2. I created a spreadsheet for the Deforestation in my neighborhood. I have counted over 80 trees removed and few replaced. That is, if this current trend continues my neighborhood will be “treeless” in a few short years. (attachment)
3. Lastly, in 2022 the City commissioned a canopy report from the Davey Resource Group entitled 2022 URBAN TREE CANOPY REPORT: City of Lansing, Michigan. For a quick overview please refer to pages 19 to 22. (attachment)
4. I also wish to reference two documents on your Website, R. Dykhuis 8.13 and 8.13a which propose to revise the City Charter entitled “Sustainability in the charter.pdf”. While I applaud the assumed intent of his ideas, the language to establish a dueling and superior 4-309 Sustainability and Environmental Affairs Department will handcuff the normal functioning of all city functions. This new department would supersede all other governmental departments. I do not believe we need this to occur.

I believe the simple inclusion of funds for automatic tree replacement and an expansion of tree planting efforts for both the City and its residents are sufficient to provide all the environmental benefits that can be accomplished. The reestablished on an independent Department of Forestry may suffice.

(Optional) Additional materials to be sent with your comment



Lansing Technical Report_FINAL_August 2022.pdf



2021 Tree Replacement Request.xls

(Optional) If your message relates to a specific article(s) in the Charter please select it here:

- ARTICLE 2 – OFFICERS AND ELECTIONS



Andy Schor, Mayor



AUGUST 2022

2022 URBAN TREE CANOPY REPORT:

City of Lansing, Michigan

Prepared for:

City of Lansing
124 W. Michigan Avenue
Lansing, MI 48933

Prepared by:

Davey Resource Group, Inc.
295 S. Water Street, Suite 300
Kent, Ohio 44240
800-828-8312

URBAN TREE CANOPY EXECUTIVE SUMMARY

LANSING, MICHIGAN



PROJECT OVERVIEW

In 2022, the City of Lansing commissioned an urban tree canopy assessment to characterize tree canopy cover in the city and make recommendations for future work.

LANSING'S TREE CANOPY

Lansing, Michigan, has a population of 117,000 residents and contains nearly 8,000 acres of tree canopy. In total, 31% of the city is shaded by trees. Lansing's trees provide city residents with \$21 million in annual savings. However, tree cover is not equally distributed across the city.

VISION FOR THE URBAN FOREST

Lansing's vision is to sustain the diverse urban forest on its public land by prioritizing, preserving, and growing tree canopy in public areas. It also seeks to encourage tree planting and preservation on private land and to more equally distribute tree canopy across the city so that all residents reap the full benefits of trees.

ACKNOWLEDGEMENTS

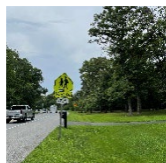
This urban tree canopy assessment was supported by funding from the City of Lansing in partnership with the Michigan Department of Natural Resources/USDA Forest Service Urban and Community Forestry Grant program.

Lansing Land Cover

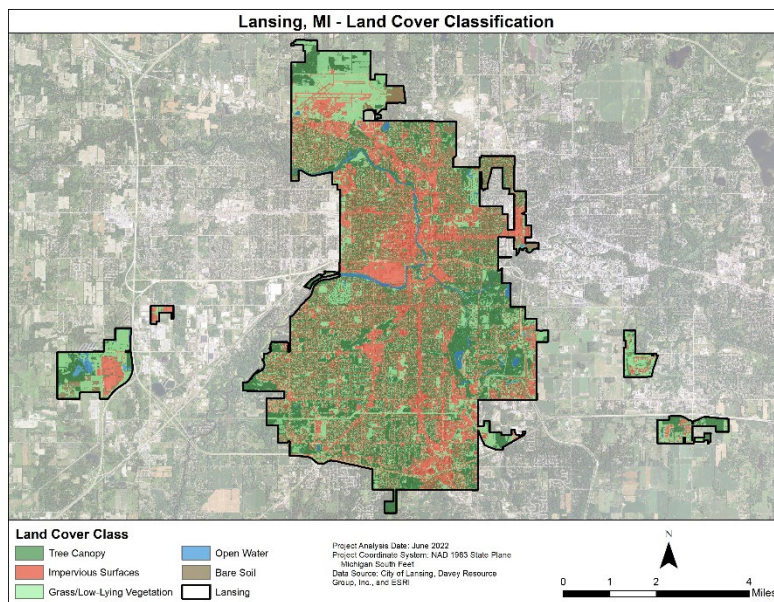


31%
Existing Tree Canopy

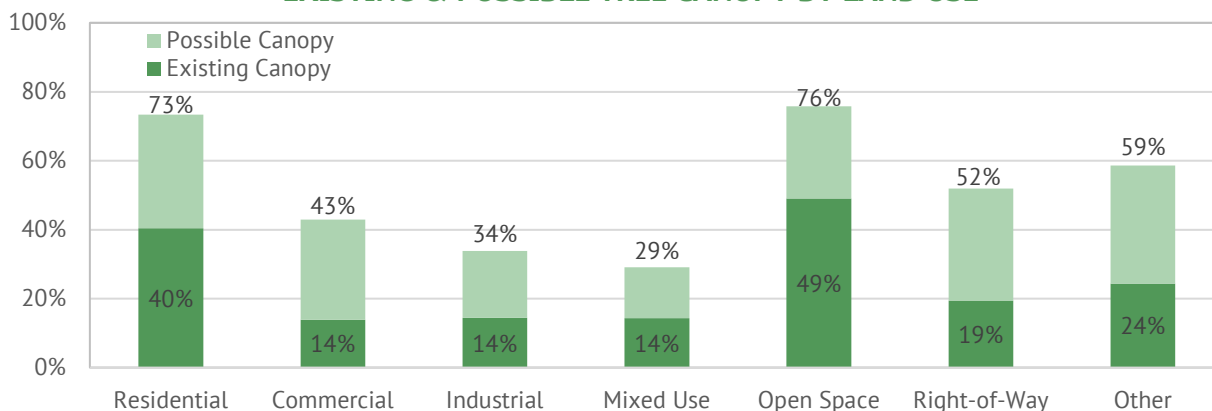
+26%
Possible Planting Area



57%
Potential Tree Cover



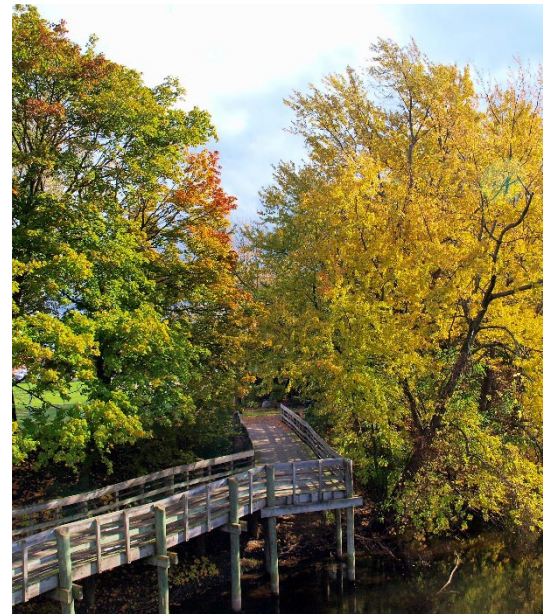
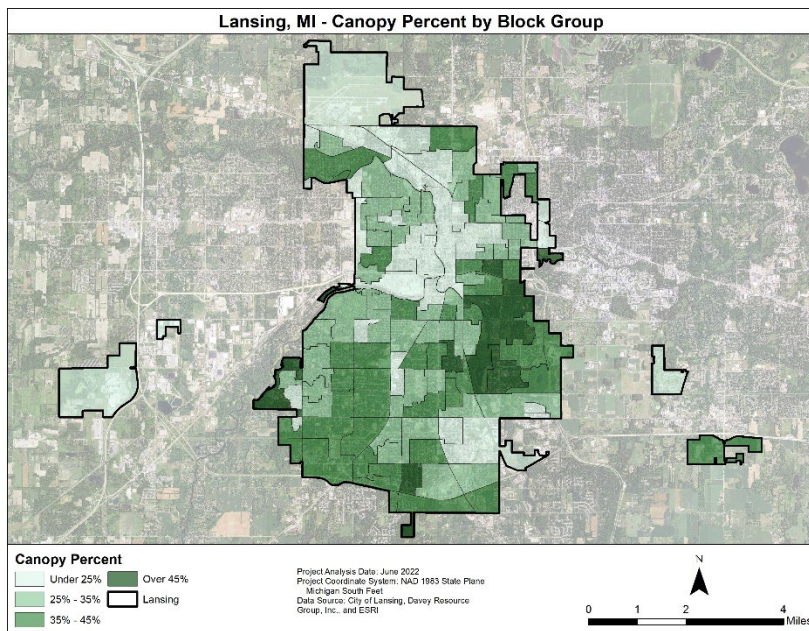
EXISTING & POSSIBLE TREE CANOPY BY LAND USE



Contact Info
 City of Lansing
 124 W. Michigan Ave
 Lansing, MI 48933



Assessment Details
 DRG completed the urban tree canopy assessment in 2022.



\$21 million

Estimated value of Lansing's tree canopy

7,740 tons

Annual CO₂ captured

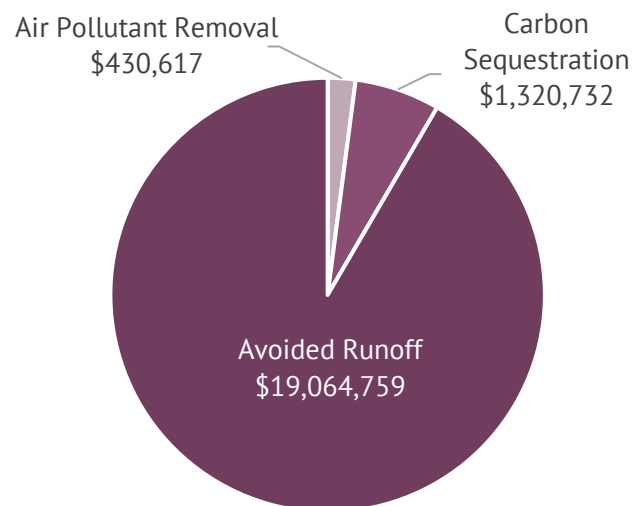
213 tons

Annual air pollutants removed

214 million gallons

Annual stormwater runoff intercepted

ANNUAL TREE BENEFITS

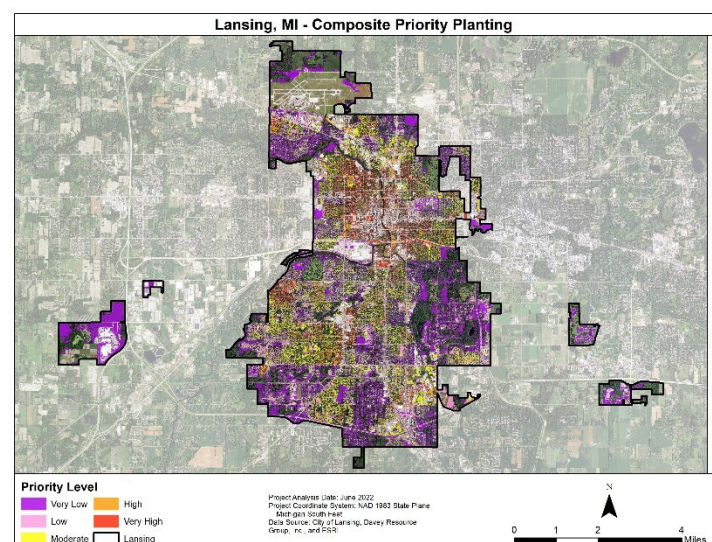


CREATING EQUITABLE CANOPY COVER

Implementation of the following action steps will significantly increase canopy cover over time, provide greater value and more benefits to Lansing residents, and help the city realize its vision and achieve its goals for the urban forest.

The Way Forward: Action Steps

1. Plant new trees in public areas, and encourage planting on private land, prioritizing areas where trees have the most impact.
2. Create policies and incentives that preserve existing tree canopy across the city.
3. Measure progress regularly through additional urban tree canopy assessments.



Contact Info

City of Lansing
 124 W. Michigan Ave
 Lansing, MI 48933



Assessment Details

DRG completed the urban tree canopy assessment in 2022.

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INTRODUCTION

Trees provide many environmental, social, and economic benefits, making them an essential part of Lansing's urban infrastructure. They have a substantial impact on water quality by capturing large amounts of water during storm events, which would otherwise quickly reach the ground and accumulate into runoff. Trees also cool the air, saving Lansing residents thousands of dollars each year in energy costs, as well as cleaning it by capturing atmospheric carbon and air pollutants.

Science is showing that trees have significant but lesser-known benefits in cities. Trees have been shown to increase property values by as much as 15%. Business districts with high levels of canopy cover can experience as much as a 12% increase in consumer spending¹. Recent studies have also linked higher levels of tree canopy to lower levels of cardiovascular and pulmonary disease². One study in California even found that tree canopy over roads was projected to save as much as \$0.66 per square foot in road repair costs over a 30-year timeframe³. In short, tree canopy is a significant asset that helps to address multiple community goals and priorities.



Because of the benefits that trees provide, inequality in tree canopy cover and threats to the health and sustainability of tree canopy are causes for concern. In Lansing, like many communities across the country, tree canopy cover is not evenly distributed across the city. This means that areas of the city with lower canopy cover receive less of the benefits that trees provide. Lansing's urban forest is also facing significant threats from invasive species such as Asian longhorned beetle, spongy moth, and spotted lanternfly, as well as from more intense storms and weather patterns. Beyond environmental concerns, new land development, in-fill development, and infrastructure repairs can impact tree canopy as trees are removed or damaged.

^[1] Wolf, K. 2007. City Trees and Property Values. *Arborist News* 16, 4: p. 34–36.

^[2] Donovan, G., et al. 2013. The relationship between trees and human health: evidence from the spread of emerald ash borer. *American Journal of Preventative Medicine* 44(2): p. 139–145.

^[3] McPherson, E.G., and J. Muchnick. 2005. Effects of street tree shade on asphalt concrete pavement performance. *Journal of Arboriculture* 31(6):303.310.

The City of Lansing recognizes that the urban forest must be properly cared for and managed so that it can continue to provide benefits to the city and its residents. In recognition of this principle, the City has embarked on a process to collect and analyze meaningful data, develop comprehensive strategies, and work together to protect, enhance, and expand Lansing's urban forest.

PROJECT BACKGROUND

In 2022, the City of Lansing undertook a study to better understand the city's urban tree canopy—where it is within the city, the benefits it provides to residents, and where potential tree planting opportunities exist. Development and support of the project was made possible by a collaboration between the [City of Lansing's Mayor's Office](#) and the departments of [Public Service](#) and [Parks & Recreation](#). Financial support came from the City of Lansing with a cost-share grant from the [Michigan Department of Natural Resources](#) and USDA Forest Service's Urban and Community Forestry Programs.

This Urban Tree Canopy Report provides details on the Urban Tree Canopy (UTC) Assessment and Priority Planting Analysis—including results, findings, maps, and metrics—along with broad recommendations for preserving and enhancing tree canopy. The UTC Report is accompanied by a web-based [Story Map](#) (URL: <https://arcg.is/1D5P0y0>), an interactive format for viewing maps and findings from the UTC Assessment.

The information derived from the assessment can:

1. Establish a UTC baseline of known accuracy (% tree canopy cover).
2. Establish classification methodology that the city can later use to track canopy gains and losses over time.
3. Allow the city to develop a sound urban forestry management plan based on the current UTC to establish priorities and objectives that will provide collective ecosystem benefits including:
 - a. Management and maintenance of the existing canopy.
 - b. Preservation of existing public and private trees.
 - c. Planning and prioritization of tree planting efforts.

Climate Action in Lansing

In 2020, the City of Lansing published its first Climate Action Plan and further committed to climate protection and environmental justice in 2022 with the adoption of resolution #2022-159. Through this resolution, the City pledges to work toward climate resilience with a focus on equitable climate protection and environmental justice.

Key Strategy 1 of the Climate Action

Plan is “Reduce carbon impact and increase energy efficiency.” Trees can help achieve this strategy by removing carbon dioxide from the air and shading/cooling home, which helps reduce air conditioning (energy) use.

The UTC data and maps are part of a suite of management tools including tree inventories and management plans that are all necessary components of a comprehensive urban forestry program. They can assist and guide community reforestation efforts to maximize ecological benefits and urban forest sustainability. As management progresses, Lansing is encouraged to reference these results, utilize the data for additional analyses, and continue to seek new tools and information to measure progress, report accomplishments, and inform management decisions.

METHODOLOGY

The Urban Tree Canopy Assessment consisted of spatial analyses of land within the city limits of Lansing, Michigan, including:

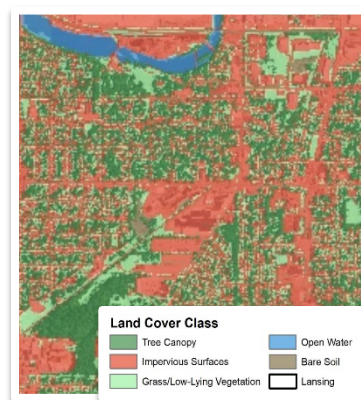
- land cover classification
- tree canopy cover by land use and geography
- ecosystem benefits analysis
- identification of priority planting locations based on social and environmental factors

Methods are outlined in the sections below. For technical details of methodology, refer to the Appendix A.

Land Cover Classification

Land cover was determined using 2020 National Agricultural Imagery Program (NAIP) leaf-on, multispectral imagery acquired and processed by the United States Department of Agriculture. Remote sensing and GIS software extensions provided the automated feature-extraction tool used to generate the baseline percentage of the final existing tree canopy and land cover layers. Land cover data was generated for five separate classifications:

1. **Tree canopy:** the area of land surface that is covered by the tree's leaf-covered branches, as seen from above
2. **Grass and low-lying vegetation:** pervious surfaces that allow rainfall to infiltrate the soil, as typically found in parks, golf courses, and residential lawns
3. **Impervious surfaces:** buildings, roads, sidewalks, and other paved/built areas that do not allow rainfall to infiltrate the soils
4. **Bare soil:** areas that lack vegetation, such as vacant lots, construction sites, and baseball infields
5. **Open water:** lakes, ponds, streams, wetlands, and other mappable water features



Tree Canopy by Land Use and Geographic Area

Land use classifications were extrapolated from the City of Lansing's form-based code data from the data field labeled "FBC_TYPE." Land cover was classified for 22 separate land use classifications; for some analyses, these were summarized into seven general land use categories.

Tree canopy cover was analyzed utilizing the following geographic boundaries as specified by the City of Lansing: city service areas, U.S. Census block groups, and wards.

Possible Planting Area

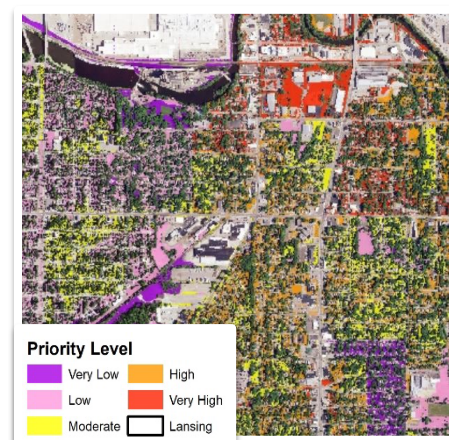
This Urban Tree Canopy Assessment considered site design and environmental factors to identify the amount of possible plantable area within the city. Both public and private property were included in the analysis. Possible plantable area can be considered analogous to "Possible UTC" as defined and utilized in the 2007 study by the University of Vermont. For this analysis, DRG considers grass, low-lying vegetation, and bare soil as possible planting areas. **However, a possible planting area does not necessarily indicate that the area is a suitable or realistic planting location, primarily due to the intended use of the site.** Examples include golf courses, cemeteries, sports fields, and fairgrounds; these are locations designed and intended to be open and free from trees and canopy cover. **Potential realistic plantable areas, referred to here as preferred plantable areas, were determined by excluding pervious areas that are unsuitable for planting.**

Priority Planting Analysis

The Priority Planting Analysis identified areas of low canopy cover that may especially benefit from trees. Such areas may have social and/or environmental concerns that trees can help with, including health and income disparities, resident populations that are especially sensitive to heat stress, and/or documented problems with flooding.

In Lansing, factors that were considered for the Priority Planting Analysis fell into three categories:

1. **Stormwater runoff potential**, indicating areas where trees might be useful for absorbing stormwater to reduce strain on the sewer/stormwater system. This category considered proximity to hardscape, soil permeability, tree canopy proximity, slope, and soil erosion factors.
2. **Housing stock information**, which relates to energy efficiency, neighborhood infrastructure, and property values. This category considered building age, the proportion of single family homes, the



proportion of rental properties, and areas that had been historically redlined.

3. **Population descriptors** that are associated with existing health and income disparities or vulnerability to heat stress, where tree benefits such as energy savings and cleaner air and water may be particularly important for community outcomes. This category included population density, income, educational attainment, age, and race/ethnicity.

The Priority Planting Analysis categorized available planting sites ranging from Very Low to Very High.



URBAN TREE CANOPY ASSESSMENT FINDINGS

Land Cover Classification

Land cover in the City of Lansing is nearly evenly divided among grass/low-lying vegetation (33%), impervious surfaces (33%), and tree cover (31%) (figure 1, table 1). Bare soil and open water comprise just 4% of city area. Impervious surface is concentrated in the central, more developed parts of the city, while tree canopy and vegetation are more common along waterways and on the periphery (figure 2).

Of the five land cover classifications, impervious surface and tree canopy have the most significant impact on the quantity and quality of stormwater runoff in a community. During storm events, water collects and runs across impervious surfaces, picking up and carrying particles and pollutants. Stormwater is then intercepted by storm drains and catch-basins throughout Lansing and ultimately end up in the Grand River.

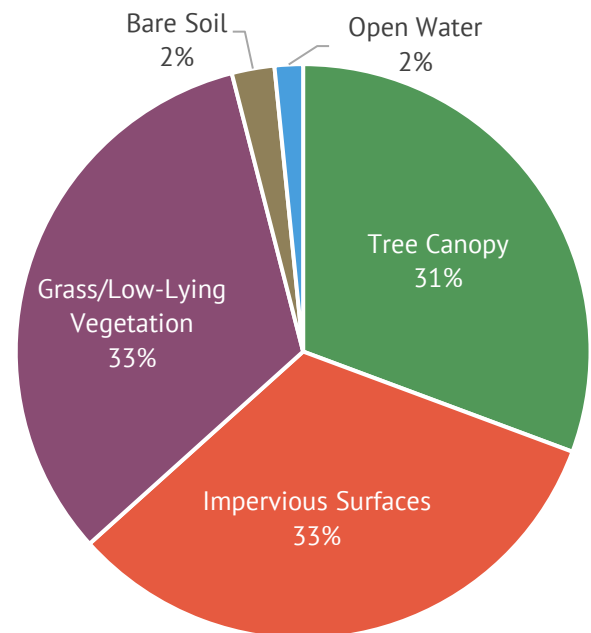


Figure 1. Land cover classification of Lansing.

Table 1. Lansing land cover by area and percentage of city total.

LAND COVER	ACRES	PERCENT
Tree Canopy	7,798	30.7%
Impervious Surfaces	8,307	32.7%
Grass/Low-Lying Vegetation	8,320	32.7%
Bare Soil	599	2.4%
Open Water	413	1.6%
TOTAL	25,436	

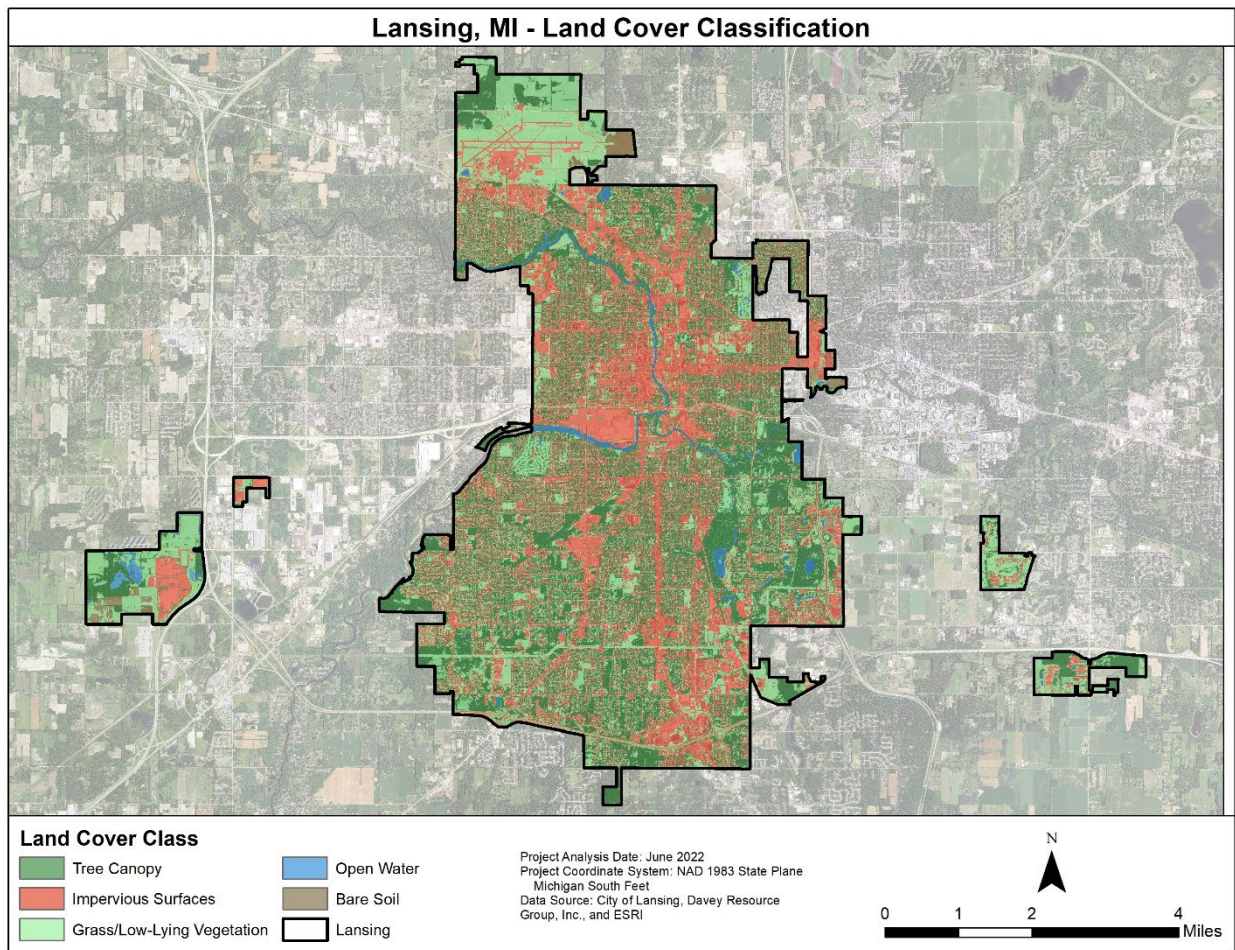


Figure 2. Lansing, Michigan, land cover by type.

The amount of impervious surface (land covered by roads, sidewalks, buildings, etc.) in Lansing is 33%. Minimizing impervious surface creates opportunities for stormwater to naturally infiltrate and filter through the soil, thereby reducing runoff and improving water quality.

While impervious surface has a negative impact on stormwater runoff, tree canopy has a positive effect. During a rainstorm, large amounts of water droplets accumulate on a tree's leaves and trunk that would otherwise quickly fall to the ground and concentrate into stormwater runoff. While it may not seem like one tree can hold or intercept a significant amount of rainwater, collectively all the trees in a community's urban forest greatly reduce the amount of water that reaches the stormwater system.

At 31% of city land area, Lansing's tree canopy cover compares similarly to other Michigan communities (figure 3).

Tree Canopy Cover In Michigan Communities

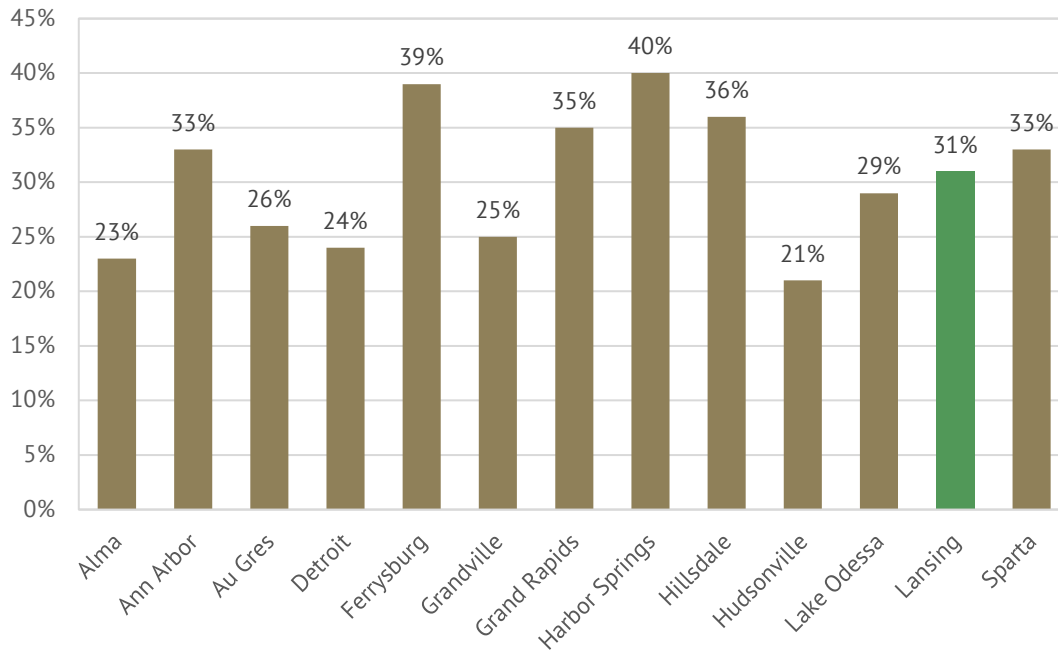


Figure 3. Existing tree canopy cover in Michigan cities and towns.

TREE CANOPY BY LAND USE

In most communities, including Lansing, tree canopy is not evenly distributed across the community or among different land uses. It is typically highest in residential areas and lowest in commercial areas, which also tend to have higher levels of impervious surfaces. This is true in Lansing, where commercial, industrial, and mixed-use areas have 14% tree cover each, while residential and open space, which account for much of the land use, contain the highest levels of tree canopy, 40% and 49%, respectively (figure 4, table 2). Uncategorized (“Other”) land uses and rights-of-way comprise 14% of the city’s land area and have 32%-46% of vegetated area where additional tree canopy might be possible.

Opportunities should be pursued to increase canopy cover in commercial and industrial areas; however, suitable planting locations may be limited by high levels of impervious surfaces (48%-70%). Careful review of these areas to identify suitable planting locations and increase tree canopy is critical, because these land uses may have the most significant impact on the quantity and quality of the community’s stormwater runoff.

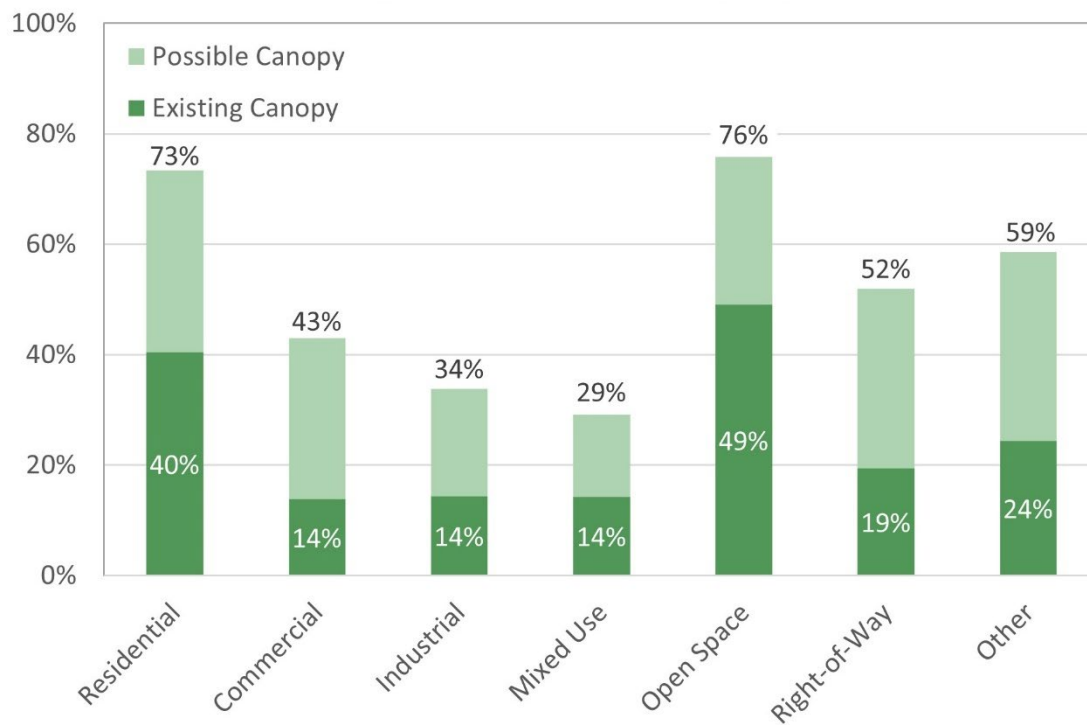


Figure 4. Existing and possible tree canopy by land use category in Lansing.

Table 2. Lansing land cover by land use type.

LAND USE TYPE	CITY LAND AREA	ACRES	LAND COVER CLASSIFICATION				
			TREE CANOPY	IMPERVIOUS	VEGETATION	BARE SOIL	OPEN WATER
Community Facility	3%	585	12%	38%	46%	5%	0%
Community Mixed Use Center	2%	371	12%	75%	9%	4%	0%
District Mixed Use Center	0%	75	22%	57%	19%	2%	0%
Industrial General	2%	447	7%	75%	13%	4%	0%
Industrial Light	6%	1,109	18%	55%	25%	2%	1%
Institutional	1%	227	11%	72%	14%	2%	0%
Mixed Use Corridor Urban	2%	354	17%	67%	15%	1%	0%
Open Space Dedicated Park	10%	2,001	51%	6%	36%	3%	4%
Open Space Public	5%	985	45%	10%	36%	6%	3%
Regional Mixed Use Center: Core	0%	95	4%	89%	7%	0%	0%
Regional Mixed Use Center: Transition	2%	326	15%	67%	17%	1%	0%
Research and Development	2%	445	13%	41%	35%	10%	1%
Residential Corridor	1%	196	32%	43%	24%	0%	0%
Residential Low-Med (S)	0%	7	43%	25%	28%	4%	1%
Residential Low-Med (U)	12%	2,426	39%	32%	29%	0%	0%
Residential Low (S)	30%	5,924	42%	20%	37%	0%	0%
Residential Low (U)	2%	417	42%	25%	32%	0%	0%
Residential Med (S)	3%	680	32%	38%	30%	0%	1%
Residential Med (U)	0%	54	26%	46%	27%	0%	0%
Right-of-Way	5%	1,060	19%	47%	32%	2%	0%
Suburban Commercial	3%	598	16%	63%	20%	1%	0%
Other	8%	1,527	24%	15%	46%	9%	5%

TREE CANOPY ACROSS COMMUNITIES

In Lansing, tree canopy is unevenly distributed across communities, ranging from 5% to 95% cover among U.S. Census block groups (figure 5). Block groups are US Census-defined geographic areas that are made up of 600–3,000 residents. Tree cover also varied among Wards, ranging from 43%–70% (figure 6), and among the 31 City of Lansing service areas ranging from 8%–49% (figure 7).

These findings suggest that emphasis should be placed on planting trees in communities with low canopy cover and on preserving trees in wards with high canopy cover. Fortunately, there are many plantable spaces in Lansing, even in densely developed neighborhoods.

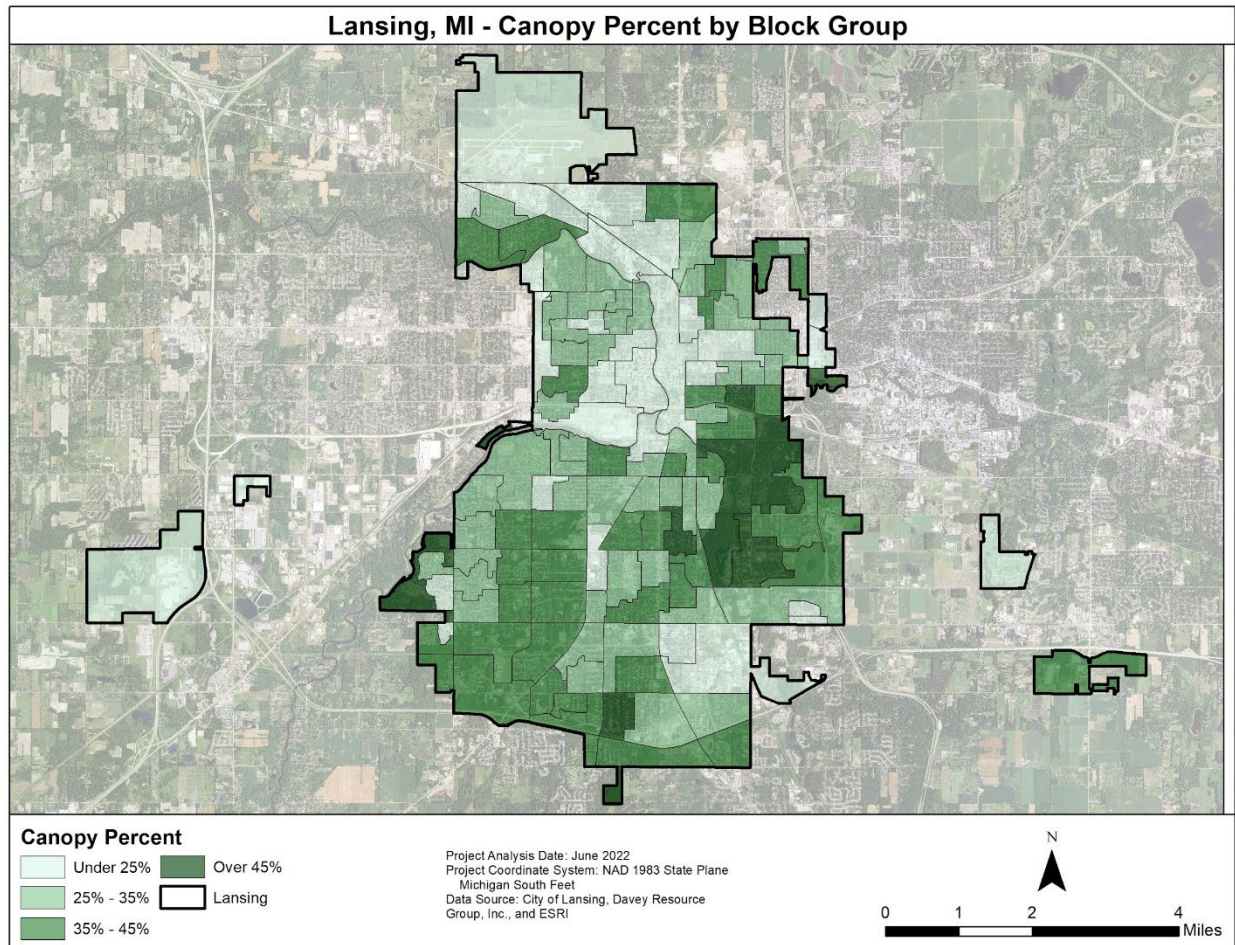


Figure 5. Tree canopy cover by U.S. Census block group.

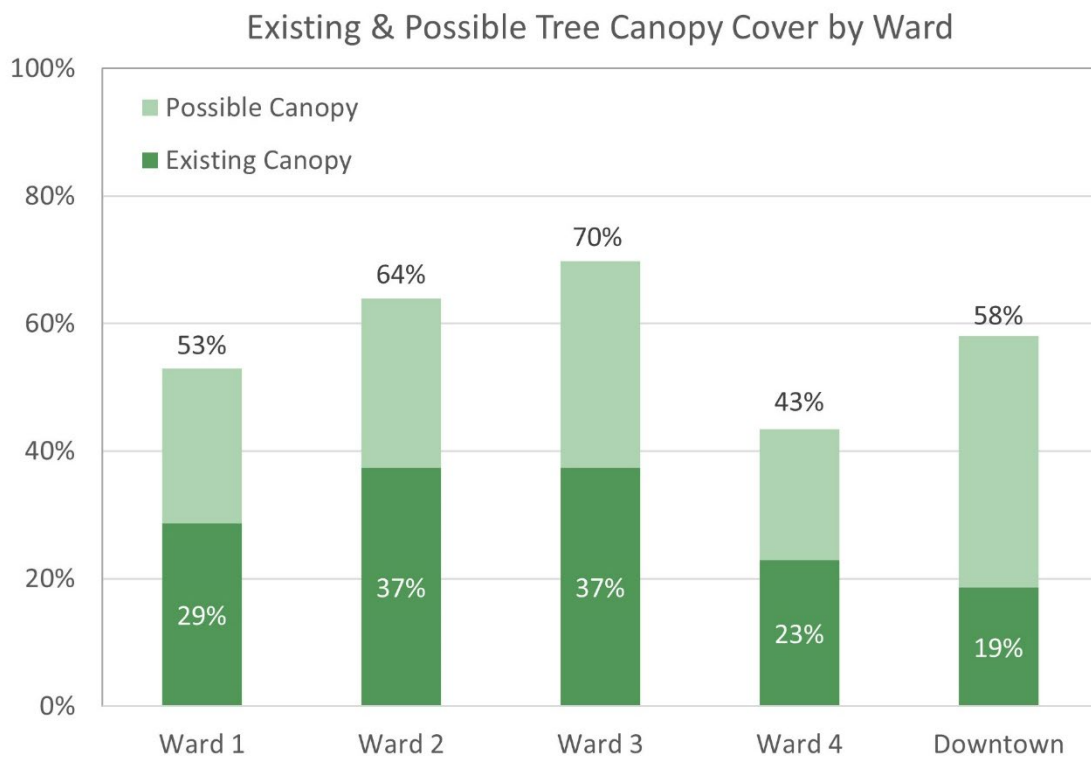
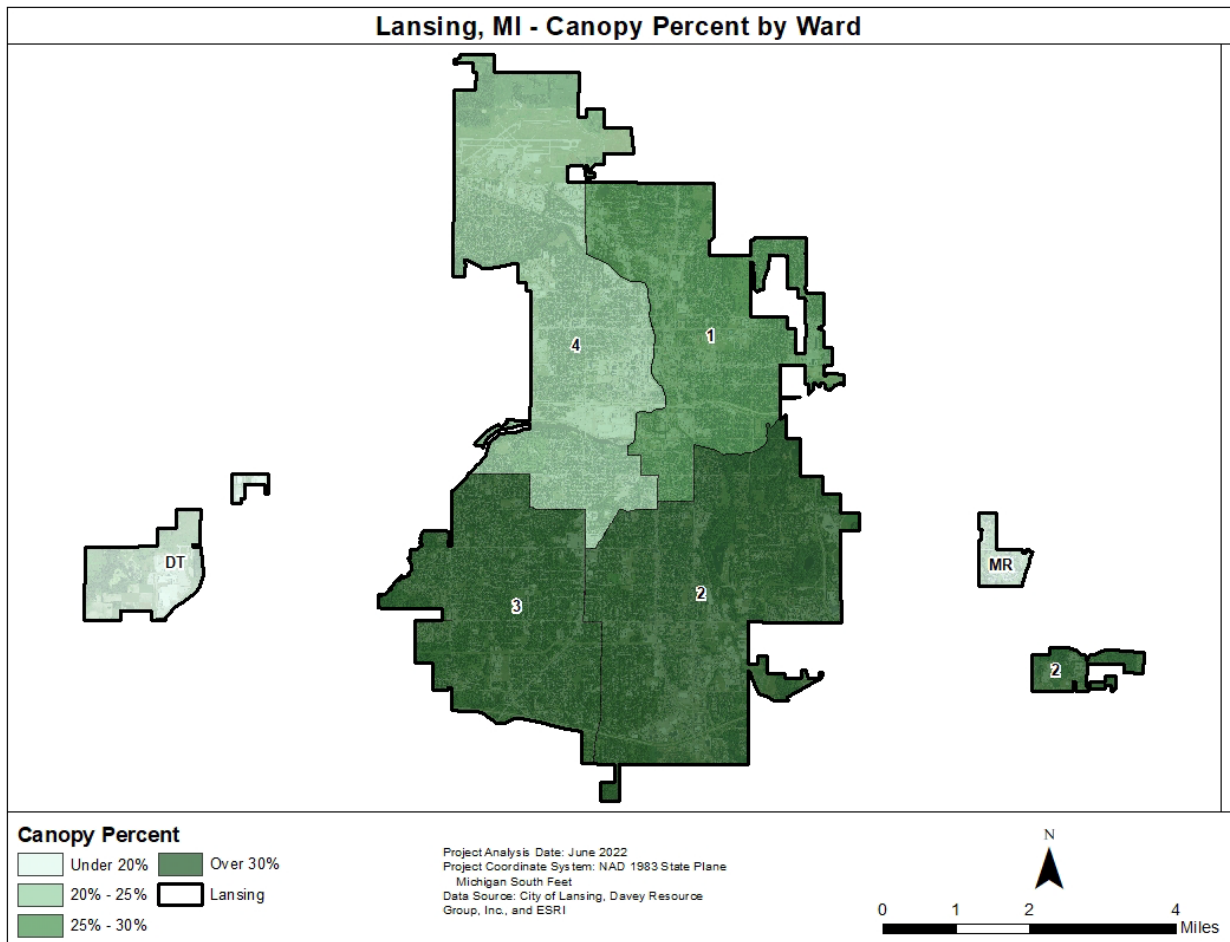


Figure 6. (Top) Tree canopy cover by ward. (Bottom) Existing and possible tree cover by ward.

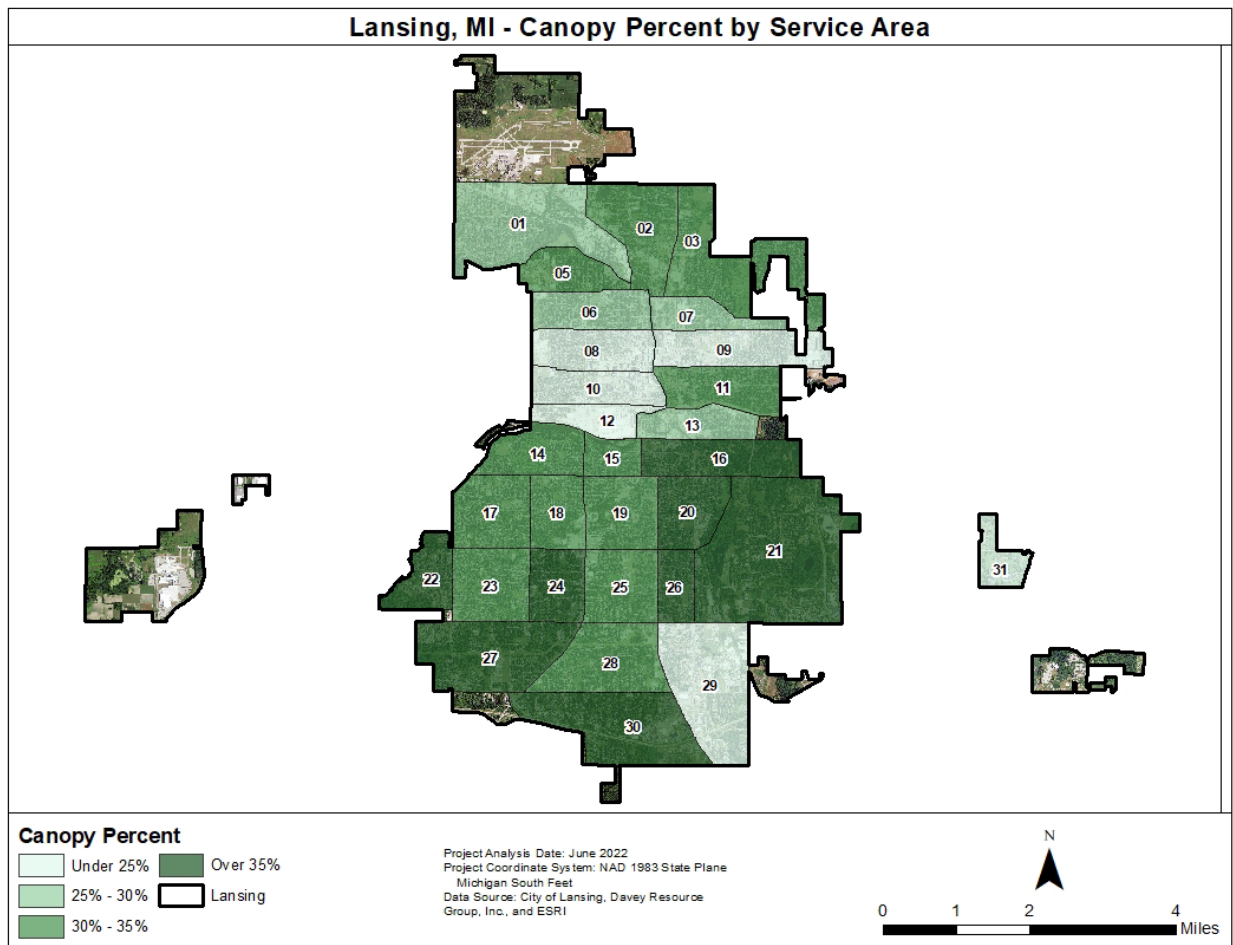


Figure 7. Tree canopy cover by city service area.

TREE CANOPY BENEFITS

Trees have been linked to many environmental, social, and economic benefits. In total, **Lansing's tree canopy provides nearly \$67 million each year in ecosystem benefits** (table 3). This includes removal of over 213 tons of air pollutants, interception of over 214 million gallons of stormwater, and sequestration of almost 8,000 tons of carbon every year. And these are just the benefits of trees that can be measured!

Water Quality Improvement

Trees intercept rainwater by capturing water droplets on their leaves and bark and by absorbing rainwater through their expansive root system. These processes result in reducing or slowing the amount of stormwater runoff, thereby improving water quality. Without trees, communities would have to invest significantly more in stormwater infrastructure to handle the additional water flow

that would otherwise have been captured by trees. In fact, many municipalities are utilizing trees as part of a comprehensive approach to updating their stormwater systems and achieving compliance with local and federal regulations.

Collectively, **Lansing's trees capture over 214 million gallons of stormwater annually. That's enough water to fill over 324 Olympic-sized swimming pools!**

Table 3. Ecosystem benefits provided by Lansing's urban forest.

ECOSYSTEM BENEFITS	QUANTITY	VALUE
Annual benefits		
Air quality: Carbon Monoxide (CO) removal (lb)	7,165	\$4,333
Air quality: Nitrogen Dioxide (NO ₂) removal (lb)	37,545	\$5,925
Air quality: Ozone (O ₃) removal (lb)	328,158	\$299,264
Air quality: Sulfur Dioxide (SO ₂) removal (lb)	11,177	\$620
Air quality: Particulate Matter (PM ₁₀) removal (lb)	42,373	\$120,475
Carbon sequestration (tons)	7,740	\$1,320,732
Stormwater: avoided runoff (gal)	214,210,778	\$19,064,759
TOTAL ANNUAL BENEFITS		\$20,816,108
Accrued benefits		
Carbon storage (tons)	270,500	\$46,134,418
TOTAL BENEFITS		\$66,950,526

Air Quality Improvement

Trees improve Lansing's air quality by capturing fine pollutants and particulate matter on the surfaces of their leaves. Recent studies have shown a strong correlation between total tree canopy and reduced rates of pulmonary and cardiovascular disease.

Every year, **Lansing's urban forest collectively removes over 213 tons of pollutants from the air.** These include: 7,165 pounds of carbon monoxide (CO), 37,545 pounds of nitrogen dioxide (NO₂), 328,158 pounds of ozone (O₃), 11,177 pounds of sulfur dioxide (SO₂), and 42,373 pounds of dust, soot, and other particulate matter. The value of this removal equates to \$430,617 annually in avoided costs.

Carbon Reduction

Carbon dioxide (CO₂) is a gaseous biproduct of combustion of fossil fuels, such as when cars burn gasoline. In the earth's atmosphere, carbon dioxide acts as a greenhouse gas—it traps heat and contributes to global warming. Removing CO₂ from the atmosphere is an essential piece of climate change mitigation.

Trees breathe in CO₂ and convert it into energy and materials; as such, they store a massive amount of carbon in their woody tissue. Both urban and rural forests are an important carbon sink and help mitigate climate change. In total, Lansing's urban forest stores 270,500 tons of carbon, which equates to over \$46 million in value. Each year, an additional 7,740 tons are absorbed (sequestered) for over \$1.3 million in additional value.

FUTURE PLANTING SITES IDENTIFIED AND PRIORITIZED

Land cover analysis is helpful for understanding current tree canopy distribution, its value and identifying opportunities to expand tree canopy to increase and more evenly distribute the benefits of trees. While vacant planting sites present opportunities to plant trees, not all open spaces are candidates for tree plantings—examples include roads and sports/agricultural fields. Conversely, not all impervious areas (hard surfaces like roads and sidewalks) remain impervious forever. Trees can be added in areas with impervious surfaces, for example by adding tree wells in sidewalks or landscape islands in parking lots.

Some locations are clearly better suited to meet community tree planting goals than others. To eliminate areas unsuitable for planting and prioritize planting locations based on optimizing the benefits that trees can provide to the community, a Priority Planting Analysis was conducted.

The Priority Planting Analysis categorized the 6,617 acres of available tree planting areas in Lansing from Very Low to Very High (table 4). If the city, residents, and businesses of Lansing were to **plant trees in all locations** (Very Low to Very High), **the city's tree cover would rise from 31%** (3,180 acres of the 19,910 acres total) **to 67%** (13,244 of the total acreage) **across both public and private property.**

Table 4. Available planting areas in Lansing by level of priority for stormwater runoff reduction, social equity, and combined (composite) environmental and social factors.

Priority Rank	Stormwater		Social Equity		Composite	
	Acres	Percent	Acres	Percent	Acres	Percent
Very Low	3,547	54%	2,320	35%	3,056	46%
Low	1,073	16%	1,579	24%	1,211	18%
Moderate	1,019	15%	993	15%	1,015	15%
High	562	8%	1,031	16%	758	11%
Very High	417	6%	695	11%	577	9%

Final planting decisions should be made by city forestry, but the prioritized planting areas provided in this study can serve as a starting point and guideline for determining where future plantings may have the most impact on water quality, social equity and other tree benefits.

Priority Planting for Water Quality

A Priority Planting Analysis for stormwater runoff potential shows areas where tree canopy can be expanded for stormwater management, ranging from Very Low to Very High (figure 8). This analysis characterized 6,617 acres of land suitable for future tree planting based on its contribution to water quality (table 4). Of this area, approximately **979 acres (15%) of land is prioritized as “High” or “Very High” planting areas based on projected impacts to stormwater management.**

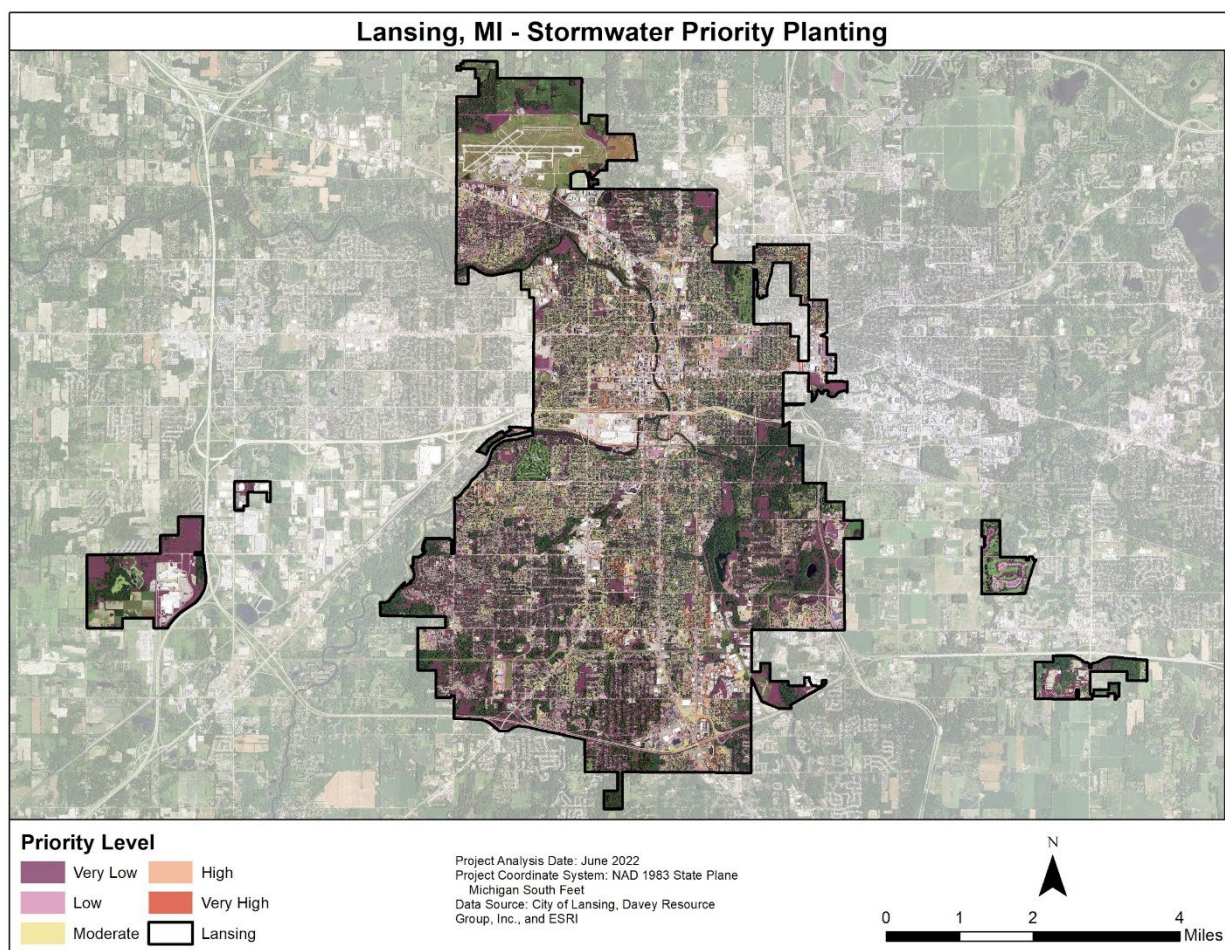


Figure 8. Priority areas for canopy expansion based on stormwater runoff potential.

Priority Planting for Social Equity

A Priority Planting Analysis for social equity shows areas where tree canopy can be expanded to maximize benefits that will have the most impact on human health, economics, and wellbeing, ranging from Very Low to Very High (figure 9; See “Methodology” above for complete list of included factors). Of 6,617 acres of tree planting area, approximately **1,725 acres (26%) of land is prioritized as “High” or “Very High” planting areas based on projected impacts to social equity factors** (table 4).

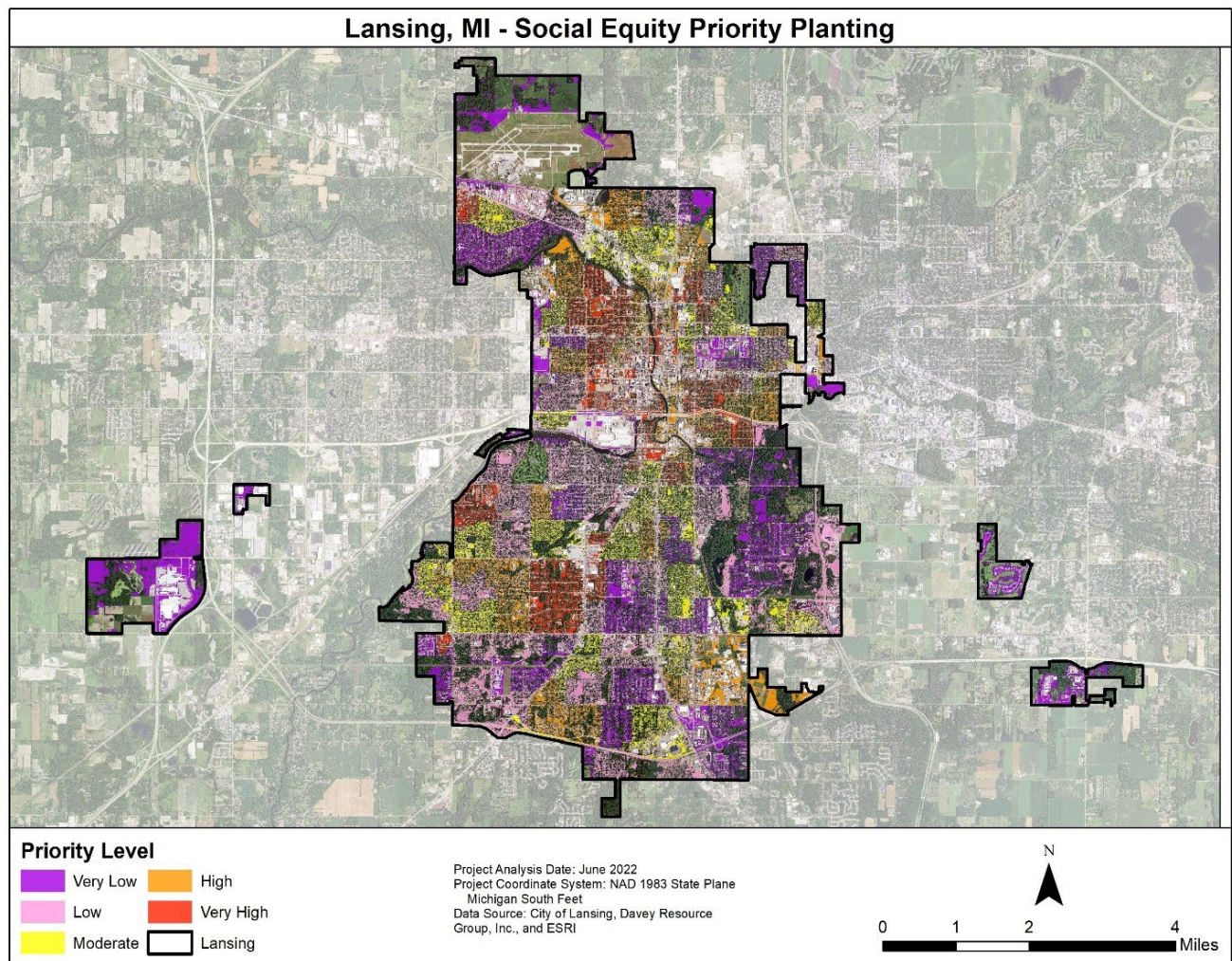


Figure 9. Priority areas for canopy expansion based on social factors that relate to equity.

Priority Planting for Social Equity and Environmental Benefit

Overlapping all environmental and social indicators produced a composite priority planting rating based on a calculated average. The resulting map identifies areas that, if planted, have the highest potential to improve both water quality and quality of life for Lansing's residents (figure 10).

In total, **1,335 acres (20%) of the 6,617 acres available land area for tree canopy expansion is categorized as High or Very High based on composite social and environmental equity** (table 4).

These areas indicate places where tree planting and preservation can have the greatest impact on quality of life for Lansing's residents.

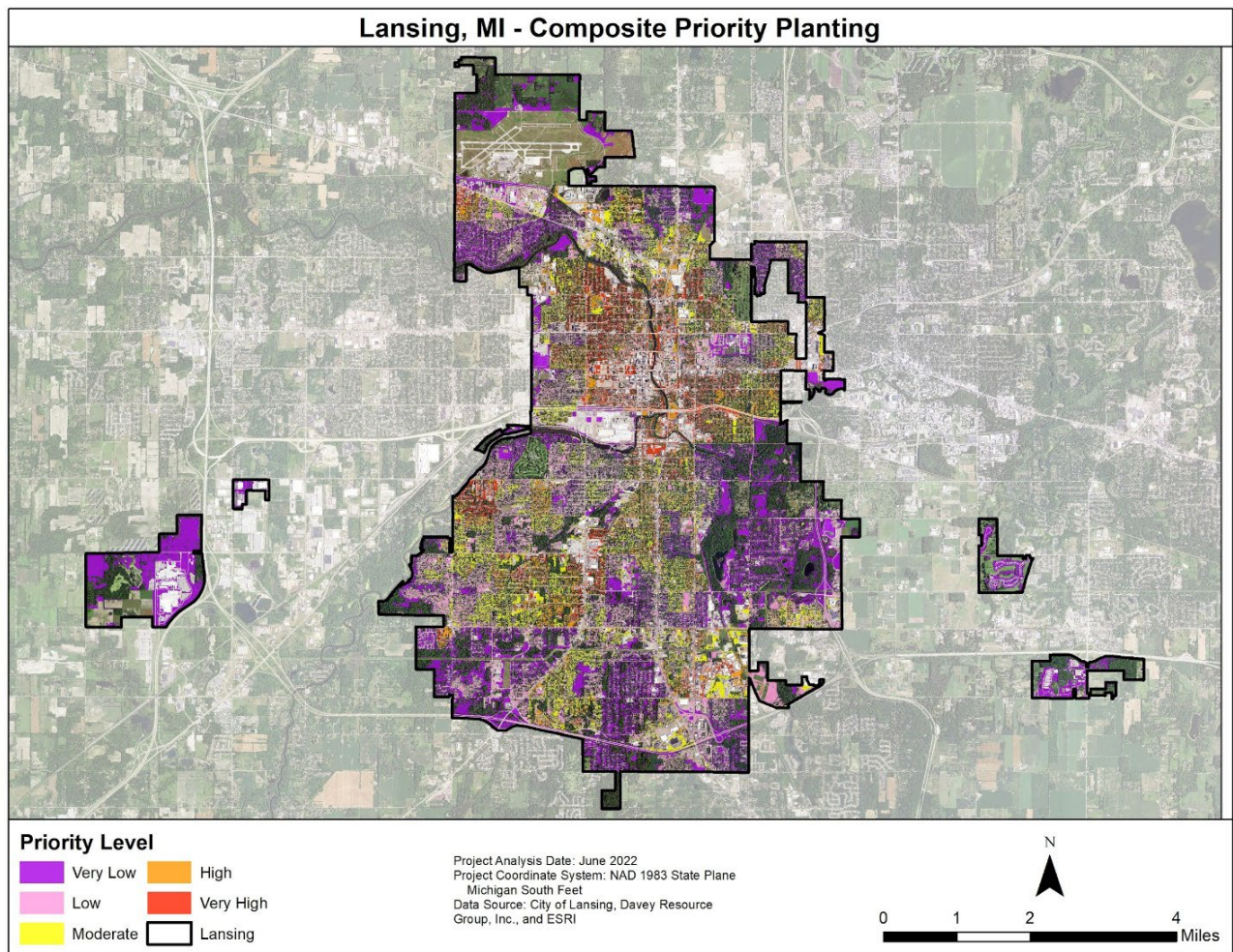


Figure 10. Priority areas for canopy expansion based on a combination of socioeconomic and environmental factors.

RECOMMENDATIONS

Lansing's urban forest is an important asset that provides innumerable social, environmental, and economic benefits. Trees may be the only community asset that appreciates in value over time. Like any asset, though, trees require proper care and attention to maximize the value and benefits that they provide. Planning and assessment efforts, such as this project, can help raise awareness about the importance of trees in Lansing and develop strategies to optimize tree canopy throughout the city.

This analysis is designed to help document the urban forest in Lansing, quantify the value and benefits that it provides, and develop recommendations for future planting and preservation efforts. This study should be considered as a starting point—a springboard for conversations and opportunities that can enhance the tree canopy across Lansing. Based on the findings of this study the following actions are recommended.

1. Plant New Trees

The study identified an additional 6,605 acres of plantable area in Lansing that could increase tree canopy cover from 31% to 67%. To identify areas where municipal tree planting efforts could begin, Lansing should use the Priority Planting Analysis to identify locations with a "High" or "Very High" priority planting rating. In addition to public tree planting, the City and its partners should also encourage private property tree planting in business and industrial areas, as well as within residential districts. Planting in these areas will help reduce stormwater runoff and build social equity.

The Priority Planting Analysis and maps provide a great guideline for finding planting locations based on community goals; however, they do not consider specific site factors, neighborhood preferences, or on-the-ground realities. Prior to planting, Lansing will need to assess these planting locations for factors that may limit a location's suitability for trees.

Tree planting should follow the "right tree in the right place" guideline ([The Arbor Day Foundation](#)). Before selecting a tree for planting, make sure it is the right tree—know how tall and wide it will be at maturity; and consider site factors such as road salt, soil conditions, or existing hardscape that might limit the suitability of a tree for a specific location.

In addition to "right tree in the right place", Lansing should also consider species diversity when selecting tree species to plant. This can help develop a resilient and sustainable urban forest and help lessen significant tree loss in the event of species-specific epidemics, such as the devastating results of Dutch elm disease (*Ophiostoma novo-ulmi*), emerald ash borer (*Agrilus planipennis*), oak wilt (*Ceratocystis fagacaerum*), and Asian longhorned beetle (*Anoplophora glabripennis*).

Working with local partners or volunteer organizations can assist with increasing community canopy through tree planting. Additional strategies such as incentive and cost-share programs, grants, education and outreach, or policy changes can encourage residents and business owners to plant trees throughout the community.

2. Preserve Existing Tree Canopy

It is important to note that, while tree planting is a component of increasing and improving tree canopy, it is not the only component. Older, larger trees contribute significantly more to a community's current tree canopy than young, small trees. Caring for and preserving large trees should be an integral part of Lansing's strategy to maximize the benefits provided by trees and ensure a sustainable canopy over time.

Unfortunately, trees do not live forever. They will need to be removed for a variety of reasons, including natural mortality, invasive pest and disease outbreaks, extreme weather events, and development pressure, all of which can have a significant impact on community tree canopy. While trees that pose a risk can and should be removed, finding ways to encourage the retention and care of existing trees can have a substantial impact on expanding tree canopy.

3. Set A Citywide Tree Canopy Goal

A community tree canopy goal can provide inspiration for change. It can also be useful for establishing metrics with which to measure progress. Even with the latest data about urban tree canopy and its benefits, **setting a canopy goal can be more of an art than a science**. Ultimately, a canopy goal is a reflection of a community's unique vision about what is both inspiring and achievable in their neighborhood, town, city, or county.

In Lansing, examining four tree canopy scenarios may be useful for helping to establish a citywide canopy goal (figure 11; table 5). These four scenarios can be summarized as:

1. **No Action:** This scenario assumes an annual loss of tree canopy of 0.84% will continue into the future with no action toward tree planting or preservation. In this scenario, tree canopy will shrink by 66 acres per year, yielding a projected tree canopy cover of 25.8% by 2040.
2. **Current Trend:** This scenario assumes that the City of Lansing will maintain its current effort to plant an average of 300 trees per year with no additional tree planting or preservation in the private sector. Annual losses of tree canopy of 0.84% will continue. Under this scenario, tree canopy will shrink by 61 acres per year, yielding a projected tree canopy cover of 26.4% by 2040.
3. **No Net Loss:** This scenario assumes that Lansing will scale up planting and preservation efforts in 2023 to match annual losses, resulting in no net change to tree canopy cover over time. In this scenario, 66 acres of new tree canopy would need to be created each year to

counter losses; this is equivalent to **adding 4,406 new trees per year** across Lansing, **on both public and private land**. As a result, tree cover will hold steady at 30.7% through 2040.

4. **35% Tree Canopy Cover by 2040:** A concerted effort to preserve existing tree canopy and **add 130 acres of new canopy per year** would result in growth of Lansing’s urban forest to 35% cover by 2040. It’s estimated that this would require the addition of 10,236 new trees per year on average, beginning in 2023 and sustained over 17 years. This goal considers all planting and preservation that would take place across Lansing, not only city-owned property but also private residences, businesses, institutions, and parks. This goal could be further broken down by geography and/or land use type to build equity in tree canopy and associated benefits.

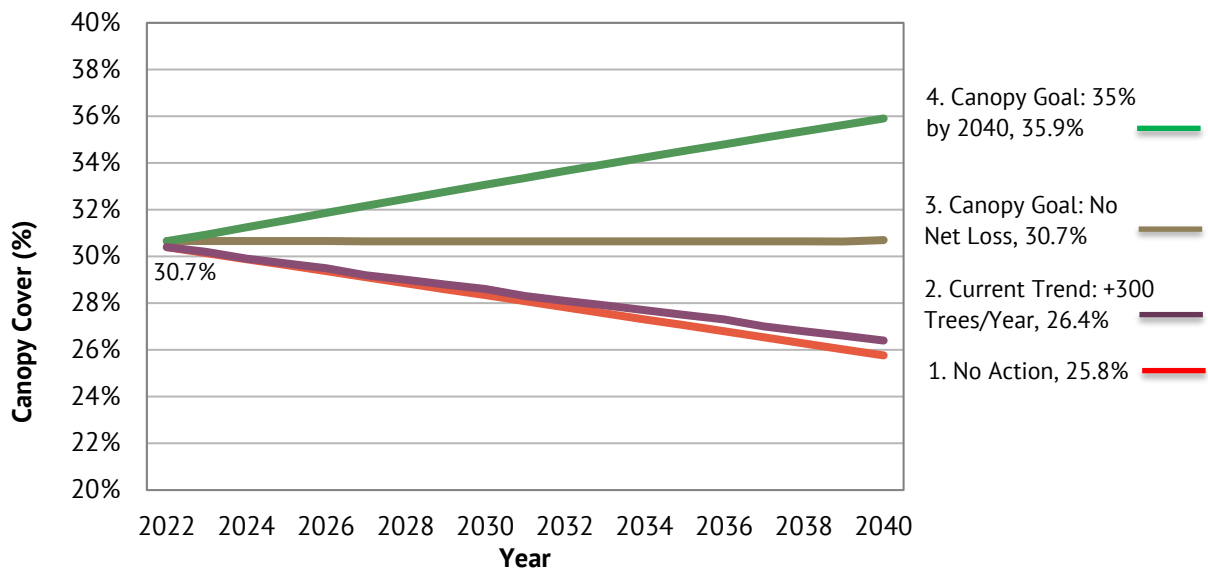


Figure 11. Lansing tree canopy cover by 2040 under three scenarios.

Table 5. Three canopy scenarios for Lansing, 2022–2040.

CANOPY GOAL SCENARIOS	CANOPY ACRES, 2022*	CANOPY ACRES, 2040	CHANGE IN CANOPY ACRES, 2022–2040	NET ANNUAL CHANGE IN CANOPY ACRES	ESTIMATED NEW TREES PER YEAR**
Current Trend	7,798	6,619	-1,179	-66	0
No Net Loss	7,798	7,798	0	0	4,604
35% Canopy Cover by 2040	7,798	8,903	2,218	+130	10,236

* Annual canopy loss due to mortality: -66 acres (-0.84%)

** Average of 66 mature trees per acre of tree canopy

4. Review Ordinances and Policies

Lansing's ordinances should be examined and revised to reduce barriers and provide incentives to protect and expand tree canopy. Review of internal policies and procedures and how City projects impact trees can also be helpful when identifying ways to preserve and protect existing canopy. Small changes in the design of public projects, including sidewalk installation, street and infrastructure improvements, can often significantly improve impacts to tree canopy.

5. Make Connections to Other City of Lansing Initiatives

As outlined in this Urban Tree Canopy Assessment Report, trees are an essential and critical part of Lansing's infrastructure. A review of City of Lansing plans should be conducted to identify ways that trees can be used to meet goals, recommendations, and targets of other City plans and initiatives.

For example, in the City's 2020 Climate Action Plan, trees are a solution to mitigate the effects of climate change and should be integrated into the implementation of the *Key Unit-Wide Strategies*. For *Key Strategy 1: Reduce Carbon Impact and Increase Energy Efficiency in Operations*, Lansing could create a policy to require the planting of trees around and near city buildings to reduce energy use. Planting an evergreen windbreak on the north side of a property can block winter winds, which can reduce heating costs, and planting at least three deciduous shade trees on the south and west sides of buildings shades windows and roofs, reducing air conditioning costs.

6. Community Outreach and Involvement

Outreach and education campaigns—including volunteer programs—can encourage citizens to care for and retain existing trees. Involving citizens in community tree initiatives is a great way to spread the word on the benefits of trees and develop a culture of tree appreciation that can have significant long-term impacts on tree canopy across Lansing. Partnering with local organizations to help spread the word is a way to help get the message out.

7. Measure Canopy Changes On A Regular Basis

This project provided a tree canopy analysis with detailed information on the current canopy cover in Lansing, as well as recommendations for supporting its growth and expansion. As initiatives are undertaken to preserve and care for existing trees and plant new ones, Lansing will want to track progress and re-evaluate efforts towards meeting community goals. While a rigorous tree canopy analysis provides useful, detailed information, Lansing can perform less rigorous self-assessments to track canopy changes using i-Tree Canopy. **Industry standards recommend assessing the tree canopy every 5-10 years.** For information on using i-Tree Canopy visit the www.itreetools.org. Lansing is encouraged to continue to use the urban tree canopy data and additional datasets to analyze relationships and connections that can help develop community objectives, understand challenges, and frame urban forest management decisions.

GLOSSARY

bare soil (land cover): Areas mapped as bare soil typically include vacant lots, construction areas, and baseball fields.

block group: A US Census-defined geographic area that is typically made up of 600–3,000 residents.

canopy: Branches and foliage that make up a tree's crown.

canopy cover: The area of land surface that is covered by tree canopy as seen from an aerial view.

carbon: An abundant chemical element that is an important building block for humans, plants, and animals; it is also found in the atmosphere, where it is part of molecules that contribute to climate change.

carbon monoxide (CO): An odorless, colorless gas in the atmosphere that results from the incomplete combustion of fuels and is toxic to humans.

carbon sequestration: Removal of carbon from the atmosphere. Trees remove carbon through a process known as photosynthesis, which converts sunlight and carbon dioxide into food.

carbon storage: Storage of carbon, such as in the wood and leaves of trees, that keeps it out of the atmosphere.

existing tree canopy: The amount of tree canopy present within the community boundary.

impervious surface (land cover): Area that does not allow rainfall to infiltrate the soil; typically includes buildings, parking lots, and roads.

i-Tree Canopy: The i-Tree Canopy tool allows users to easily photo-interpret Google aerial images of their area to produce statistical estimates of tree and other cover types, along with calculations of their estimates. This tool serves as a simple, quick, and inexpensive means for cities and forest managers to accurately estimate their tree and other cover types.

i-Tree Tools: State-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban forestry analysis and benefits assessment tools. The i-Tree Tools help communities of all sizes to strengthen their urban forest management and advocacy efforts by quantifying the structure of community trees and the environmental services that trees provide. Tree benefits were calculated using the i-Tree Vue model and TR-55 hydrologic equations. i-Tree Vue estimates carbon storage and sequestration and air pollutant removal. TR-55 hydrologic equations model stormwater runoff.

land cover: Physical features on the earth mapped from satellite or aerial imagery such as bare soils, canopy, impervious, vegetation, or open water.

nitrogen dioxide (NO₂): Nitrogen dioxide is a compound typically created during the combustion processes and is a major contributor to smog formation and acid deposition.

open water (land cover): Land cover consisting of water, including lakes, rivers, streams, and ponds.

ozone (O₃): A strong-smelling, pale blue, reactive toxic chemical gas with molecules of three oxygen atoms. It is a product of the photochemical process involving the sun's energy. Ozone exists in the upper layer of the atmosphere as well as at the Earth's surface. Ozone at the Earth's surface can cause numerous adverse human health effects. It is a major component of smog.

particulate matter (PM₁₀): A class of air pollutants consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and mists that are 10 micrometers in size.

possible tree canopy: The amount of land that is theoretically available for the establishment of tree canopy within the city boundary, including both vegetation and impervious surfaces but excluding open water and active recreational spaces (such as ball fields).

right-of-way (ROW): A strip of land generally owned by a public entity on which infrastructure such as highways, railroads, or power lines are built.

species: A category of scientific classification consisting of related organisms that are capable of interbreeding.

stormwater: rain and snow melt that have the potential to collect on land and run off into streets, rivers, and streams. Large collections of stormwater runoff can contribute to flooding and sewer overflows.

sulfur dioxide (SO₂): A strong-smelling, colorless gas that is formed by the combustion of fossil fuels. Sulfur oxides contribute to the problem of acid rain.

tree: A tree is defined as a perennial woody plant that may grow more than 20 feet tall. It usually has one main stem, although many species may have multiple stems.

tree benefit: An economic, environmental, or social improvement that benefits the community and results mostly from the presence of a tree. The benefit carries real or intrinsic value.

urban forest: All of the trees within a municipality or a community, both publicly and privately owned. This includes the trees along streets and in parks, residential yards, and other developed areas.

urban tree canopy assessment (UTC): A study of land cover to better understand where trees are currently present and where they could potentially be added. This assessment is typically performed using aerial photographs and spatial data.

vegetation (land cover): Vegetated area (grass, shrubs, etc.) that is not shaded by trees that allows rainfall to infiltrate the soil (“pervious”); typically includes parks, golf courses, and lawns.

Appendix A:

Urban Tree Canopy Assessment Methodologies

Appendix A.1: Tree benefits Methodology

1.1 Air Quality

The i-Tree Canopy v7.1 Model was used to quantify the value of ecosystem services for air quality. i-Tree Canopy is designed to give users the ability to estimate tree canopy and other land cover types within any selected geography. The model uses the estimated canopy percentage and reports air pollutant removal rates and monetary values for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), sulfur dioxide (SO₂), and particulate matter (PM) (Hirabayashi 2014).

Within the i-Tree Canopy application, the U.S. EPA's BenMAP Model estimates the incidence of adverse health effects and monetary values resulting from changes in air pollutants (Hirabayashi 2014; US EPA 2012). Different pollutant removal values were used for urban and rural areas. In i-Tree Canopy, the air pollutant amount annually removed by trees and the associated monetary value can be calculated with tree cover in areas of interest using BenMAP multipliers for each county in the United States.

To calculate ecosystem services for the study area, canopy percentage metrics from UTC land cover data performed during the assessment were transferred to i-Tree Canopy. Those canopy percentages were matched by placing random points within the i-Tree Canopy application. Benefit values were reported for each of the five listed air pollutants.

1.2 Carbon Storage and Sequestration

The i-Tree Canopy v7.1 Model was used to quantify the value of ecosystem services for carbon storage and sequestration. i-Tree Canopy is designed to give users the ability to estimate tree canopy and other land cover types within any selected geography. The model uses the estimated canopy percentage and reports carbon storage and sequestration rates and monetary values. Methods on deriving storage and sequestration can be found in Nowak et al. 2013.

To calculate ecosystem services for the study area, canopy percentage metrics from UTC land cover data performed during the assessment were transferred to i-Tree Canopy. Those canopy percentages were matched by placing random points within the i-Tree Canopy application. Benefit values were reported for carbon storage and sequestration.

1.3 Stormwater

The i-Tree Hydro v6.0 Model was used to quantify the value of ecosystem services for stormwater runoff. i-Tree Hydro is designed for users interested in analysis of vegetation and impervious cover effects on urban hydrology. This most recent version (v6.0) allows users to report hydrologic data on the city level rather than just a watershed scale giving users more flexibility. For more information about the model, please consult the i-Tree Hydro v6.0 manual (<http://www.itreetools.org>).

To calculate ecosystem services for the study area, land cover percentages derived for the project area and all municipalities that were included in the project area were used as inputs into the model. Precipitation data from 2005-2012 was modeled within the i-Tree Hydro to best represent the average conditions over an eight year time period. Model simulations were run under a Base Case as well as an Alternate Case. The

Alternative Case set tree canopy equal to 0% and assumed that impervious and vegetation cover would increase based on the removal of tree canopy. Impervious surface was increased 4.5% based on a percentage of the amount of impervious surface under tree canopy and the rest was added to the vegetation cover class. This process was completed to assess the runoff reduction volume associated with tree canopy since i-Tree Hydro does not directly report the volume of runoff reduced by tree canopy. The volume (in cubic meters) was converted to gallons to retrieve the overall volume of runoff avoided by having the current tree canopy.

Through model simulation, it was determined that tree canopy decreases the runoff volume in the project area by 214,210,778 gallons per year using precipitation data from 2005-2012. This equates to approximately 27,472 gallons per acre of tree canopy (214,210,778 gals/7797.54 acres).

To place a monetary value on storm water reduction, the cost to treat a gallon of storm/waste water was taken from McPherson et al 1999. This value was \$0.089 per gallon. Tree canopy was estimated to contribute roughly \$19,064,759 to avoided runoff annually to the project area.

References

- Hirabayashi, S. 2014. i-Tree Canopy Air Pollutant Removal and Monetary Value Model Descriptions. http://www.itreetools.org/canopy/resources/iTree_Canopy_Methodology.pdf [Accessed 25 May 2022]
- i-Tree Canopy v7.1. i-Tree Software Suite. [Accessed 25 May 2022] <http://www.itreetools.org/canopy>
- i-Tree Hydro v6.0. i-Tree Software Suite. [Accessed 25 May 2022] <http://www.itreetools.org/hydro/index.php>
- McPherson, E.G.; Simpson, J.R.; Peper, P.J.; Xiao, Q. 1999. Tree Guidelines for San Joaquin Valley Communities. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station, Center for Urban Forest Research.
- U.S. Environmental Protection Agency (US EPA). 2012. Environmental Benefits Mapping and Analysis Program (BenMAP). <http://www.epa.gov/air/benmap> [Accessed 25 May 2022]
- U.S. Forest Service. 2012. STRATUM Climate Zones. [Accessed 25 May 2022] <http://www.fs.fed.us/psw/programs/uesd/uep/stratum.shtml>

Appendix A.2: Quantifying Land Surface Temperature

Capturing land surface temperature is essential to monitoring heat islands, air quality, and overall well-being for residents in Ingham County. To establish an understanding of how urban tree canopy affects heat island, land surface temperature analysis was conducted using Landsat 8 imagery taken during the late afternoon during summer conditions. Two images were used for this analysis a year apart to and averaged together to make the land surface temperature more accurate. The image source used for this assessment was Landsat 8 OLI-TIRS 30-meter resolution. The first image was captured on August 8, 2020 at 4:22PM. Weather conditions were Fair and a high air temperature of 82 degrees. The second image was captured on July 26, 2021 at 4:22PM. Weather conditions were Fair with a high air temperature of 88 degrees. For this analysis, both thermal bands (Bands 10 and 11) were averaged to produce the final surface temperature data set.

2.1. Image Pre-Processing

Before processing the Landsat imagery, atmospheric correction was performed on the imagery to ensure that scattering due to aerosols, clouds, hazing, and other factors were removed from the imagery. This allowed for a defect-free image for the entire county for both thermal bands. After correction, the Landsat image was clipped to the county to remove area not included in the land surface temperature analysis.

2.2. Processing Steps

The following steps were implemented to transform the Landsat image from digital numbers (DN) to land surface temperature in Fahrenheit.

1. Convert Raw Band DNs to Top of Atmosphere Radiance (TOA)

$$L_{\lambda} = M_L Q_{cal} + A_L$$

where:

L_{λ} = TOA spectral radiance (Watts/(m² * srad * μm))

M_L = Band-specific multiplicative rescaling factor from the metadata (RADIANCE_MULT_BAND_x, where x is the band number)

A_L = Band-specific additive rescaling factor from the metadata (RADIANCE_ADD_BAND_x, where x is the band number)

Q_{cal} = Quantized and calibrated standard product pixel values (DN)

2. Convert TOA Radiance to Reflectance

$$\rho_{\lambda}' = M_{\rho} Q_{cal} + A_{\rho}$$

where:

ρ_{λ}' = TOA planetary reflectance, without correction for solar angle. Note that ρ_{λ}' does not contain a correction for the sun angle.

M_{ρ} = Band-specific multiplicative rescaling factor from the metadata (REFLECTANCE_MULT_BAND_x, where x is the band number)

A_{ρ} = Band-specific additive rescaling factor from the metadata (REFLECTANCE_ADD_BAND_x, where x is the band number)

Q_{cal} = Quantized and calibrated standard product pixel values (DN)

3. Convert Reflectance to At-Satellite Brightness Temperature

$$T = \frac{K_2}{\ln\left(\frac{K_1}{L_\lambda} + 1\right)}$$

where:

T = At-satellite brightness temperature (K)

L_λ = TOA spectral radiance (Watts/(m² * srad * μm))

K_1 = Band-specific thermal conversion constant from the metadata (K1_CONSTANT_BAND_x, where x is the thermal band number)

K_2 = Band-specific thermal conversion constant from the metadata (K2_CONSTANT_BAND_x, where x is the thermal band number)

Constants:

$$K1_CONSTANT_BAND_10 = 774.8853$$

$$K2_CONSTANT_BAND_10 = 1321.0789$$

$$K1_CONSTANT_BAND_11 = 480.8883$$

$$K2_CONSTANT_BAND_11 = 1201.1442$$

4. Calculate Normalized Difference Vegetation Index (NDVI)

$$NDVI = \frac{(NIR - Red)}{(NIR + Red)}$$

5. Calculate Proportion of Vegetation

$$P_v = (NDVI - NDVI_{min} / NDVI_{max} - NDVI_{min})^2$$

6. Derive Land Surface Emissivity (reference for urban areas)

<http://www.tandfonline.com/doi/full/10.1080/01431160600993421?scroll=top&needAccess=true>

$$0.004P_v + 0.963$$

Where:

P_v = proportion of vegetation

7. Land Surface Temperature

$$BT / 1 + w * (BT / p) * \ln(e)$$

where:

BT = At-satellite brightness temperature

W = wavelength of emitted radiance (~11.5 micrometers)

e = land surface emissivity

$p = h * c / s$ ($1.438 * 10^{-2}$ m K)

h = Planck's constant ($6.626 * 10^{-34}$ Js)

s = Boltzmann constant ($1.38 * 10^{-23}$ J/K)

c = velocity of light ($2.998 * 10^8$ m/s)

***p = 14380**

8. Conversion from Kelvin to Fahrenheit

$$^{\circ} F = 9/5 (K - 273) + 32$$

9. Calculate Average Land Surface Temperature from Band 10 and 11

2.3. Land Surface Temperature Finds

Surface temperatures deviated throughout the 24:1 project area, but were higher in locations with impervious surface and low amounts of tree canopy cover, as expected. The average of Bands 10 and 11 revealed the highest temperature to be 103.3 degrees Fahrenheit, while the lowest recorded value was in a forested area at 71.3 degrees. The average temperature across all cells was recorded at 81.6 degrees.

Appendix A.3: Methodology and Accuracy Assessment

Davey Resource Group utilized an object-based image analysis (OBIA) semi-automated feature extraction method to process and analyze current high-resolution color infrared (CIR) aerial imagery and remotely-sensed data to identify tree canopy cover and land cover classifications. The use of imagery analysis is cost-effective and provides a highly accurate approach to assessing your community's existing tree canopy cover. This supports responsible tree management, facilitates community forestry goal-setting, and improves urban resource planning for healthier and more sustainable urban environments.

Advanced image analysis methods were used to classify, or separate, the land cover layers from the overall imagery. The semi-automated extraction process was completed using Feature Analyst, an extension of ArcGIS®. Feature Analyst uses an object-oriented approach to cluster together objects with similar spectral (i.e., color) and spatial/contextual (e.g., texture, size, shape, pattern, and spatial association) characteristics. The land cover results of the extraction process was post-processed and clipped to each project boundary prior to the manual editing process in order to create smaller, manageable, and more efficient file sizes. Secondary source data, high-resolution aerial imagery provided by each UTC city, and custom ArcGIS® tools were used to aid in the final manual editing, quality checking, and quality assurance processes (QA/QC). The manual QA/QC process was implemented to identify, define, and correct any misclassifications or omission errors in the final land cover layer.

Classification Workflow

- 1) Prepare imagery for feature extraction (resampling, rectification, etc.), if needed.
- 2) Gather training set data for all desired land cover classes (canopy, impervious, grass, bare soil, shadows). Water samples are not always needed since hydrologic data are available for most areas. Training data for impervious features were not collected because the City maintained a completed impervious layer.
- 3) Extract canopy layer only; this decreases the amount of shadow removal from large tree canopy shadows. Fill small holes and smooth to remove rigid edges.
- 4) Edit and finalize canopy layer at 1:2000 scale. A point file is created to digitize-in small individual trees that will be missed during the extraction. These points are buffered to represent the tree canopy. This process is done to speed up editing time and improve accuracy by including smaller individual trees.
- 5) Extract remaining land cover classes using the canopy layer as a mask; this keeps canopy shadows that occur within groups of canopy while decreasing the amount of shadow along edges.
- 6) Edit the impervious layer to reflect actual impervious features, such as roads, buildings, parking lots, etc. to update features.
- 7) Using canopy and actual impervious surfaces as a mask; input the bare soils training data and extract them from the imagery. Quickly edit the layer to remove or add any features. Davey Resource Group tries to delete dry vegetation areas that are associated with lawns, grass/meadows, and agricultural fields.

- 8) Assemble any hydrological datasets, if provided. Add or remove any water features to create the hydrology class. Perform a feature extraction if no water feature datasets exist.
- 9) Use geoprocessing tools to clean, repair, and clip all edited land cover layers to remove any self-intersections or topology errors that sometimes occur during editing.
- 10) Input canopy, impervious, bare soil, and hydrology layers into Davey Resource Group's Five-Class Land Cover Model to complete the classification. This model generates the pervious (grass/low-lying vegetation) class by taking all other areas not previously classified and combining them.
- 11) Thoroughly inspect final land cover dataset for any classification errors and correct as needed.
- 12) Perform accuracy assessment. Repeat Step 11, if needed.

Automated Feature Extraction Files

The automated feature extraction (AFE) files allow other users to run the extraction process by replicating the methodology. Since Feature Analyst does not contain all geoprocessing operations that Davey Resource Group utilizes, the AFE only accounts for part of the extraction process. Using Feature Analyst, Davey Resource Group created the training set data, ran the extraction, and then smoothed the features to alleviate the blocky appearance. To complete the actual extraction process, Davey Resource Group uses additional geoprocessing tools within ArcGIS®. From the AFE file results, the following steps are taken to prepare the extracted data for manual editing.

- 1) Davey Resource Group fills all holes in the canopy that are less than 30 square meters. This eliminates small gaps that were created during the extraction process while still allowing for natural canopy gaps.
- 2) Davey Resource Group deletes all features that are less than 9 square meters for canopy (50 square meters for impervious surfaces). This process reduces the amount of small features that could result in incorrect classifications and also helps computer performance.
- 3) The Repair Geometry, Dissolve, and Multipart to Singlepart (in that order) geoprocessing tools are run to complete the extraction process.
- 4) The Multipart to Singlepart shapefile is given to GIS personnel for manual editing to add, remove, or reshape features.

Accuracy Assessment Protocol

Determining the accuracy of spatial data is of high importance to Davey Resource Group and our clients. To achieve the best possible result, Davey Resource Group manually edits and conducts thorough QA/QC checks on all urban tree canopy and land cover layers. A QA/QC process will be completed using ArcGIS® to identify, clean, and correct any misclassification or topology errors in the final land cover dataset. The initial land cover layer extractions will be edited at a 1:2000 quality control scale in the urban areas and at a 1:2500 scale for rural areas utilizing the most current high-resolution aerial imagery to aid in the quality control process.

To test for accuracy, random plot locations are generated throughout the city area of

Table 2. Classification Matrix

interest and verified to ensure that the data meet the client standards. Each point will be compared with the most current NAIP high-resolution imagery (reference image) to determine the accuracy of the final land cover layer. Points will be classified as either correct or incorrect and recorded in a classification matrix. Accuracy will be assessed using four metrics: overall accuracy, kappa, quantity disagreement, and allocation disagreement. These metrics are calculated using a custom Excel® spreadsheet.

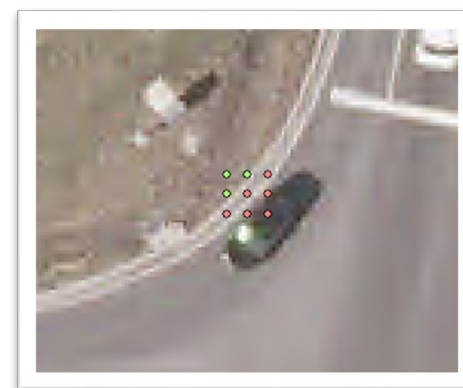
Land Cover Accuracy

The following describes Davey Resource Group's accuracy assessment techniques and outlines procedural steps used to conduct the assessment.

1. *Random Point Generation*—Using ArcGIS, 1,000 random assessment points are generated.
2. *Point Determination*—Each point is carefully assessed by the GIS analyst for likeness with the aerial photography. To record findings, two new fields, CODE and TRUTH, are added to the accuracy assessment point shapefile. CODE is a numeric value (1–5) assigned to each land cover class (Table 1) and TRUTH is the actual land cover class as identified according to the reference image. If CODE and TRUTH are the same, then the point is counted as a correct classification. Likewise, if the CODE and TRUTH are not the same, then the point is classified as incorrect. In most cases, distinguishing if a point is correct or incorrect is straightforward. Points will rarely be misclassified by an egregious classification or editing error. Often incorrect points occur where one feature stops and the other begins.
3. *Classification Matrix*—During the accuracy assessment, if a point is considered incorrect, it is given the correct classification in the TRUTH

Table 1. Land Cover Classification Code Values

Land Cover Classification	Code Value
Tree Canopy	1
Impervious	2
Pervious (Grass/Vegetation)	3
Bare Soil	4
Open Water	5



column. Points are first assessed on the NAIP imagery for their correctness using a “blind” assessment— meaning that the analyst does not know the actual classification (the GIS analyst is strictly going off the NAIP imagery to determine cover class). Any incorrect classifications found during the “blind” assessment are scrutinized further using sub-meter imagery provided by the client to determine if the point was incorrectly classified due to the fuzziness of the NAIP imagery or an actual misclassification. After all random points are assessed and recorded; a classification (or confusion) matrix is created. The classification matrix for this project is presented in Table 2. The table allows for assessment of user’s/producer’s accuracy, overall accuracy, omission/commission errors, kappa statistics, allocation/quantity disagreement, and confidence intervals (Figure 1 and Table 3).

Reference Data	Classes	Tree Canopy	Impervious Surfaces	Grass & Low-Lying Vegetation	Bare Soils	Open Water	Row Total	Producer's Accuracy	Errors of Omission
	Tree Canopy	279	3	15	0	1	298	93.62%	6.38%
	Impervious	1	310	10	0	0	321	96.57%	3.43%
	Grass/Vegetation	20	7	314	1	0	342	91.81%	8.19%
	Bare Soils	0	0	1	16	0	17	94.12%	5.88%
	Water	0	0	0	0	22	22	100.00%	0.00%
	Column Total	300	320	340	17	23	1000		
	User's Accuracy	93.00%	96.88%	92.35%	94.12%	95.65%		Overall Accuracy	94.10%
	Errors of Commission	7.00%	3.13%	7.65%	5.88%	4.35%		Kappa Coefficient	0.9146

- Following are descriptions of each statistic as well as the results from some of the accuracy assessment tests.

Overall Accuracy – Percentage of correctly classified pixels; for example, the sum of the diagonals divided by the total points ((279+310+314+16+22)/1,000 = 94.1%).

User's Accuracy – Probability that a pixel classified on the map actually represents that category on the ground (correct land cover classifications divided by the column total [279/300 = 93.0%]).

Producer's Accuracy – Probability of a reference pixel being correctly classified (correct land cover classifications divided by the row total [279/298 = 93.62%]).

Kappa Coefficient – A statistical metric used to assess the accuracy of classification data. It has been generally accepted as a better determinant of accuracy partly because it accounts for random chance agreement. A value of 0.80 or greater is regarded as “very good” agreement between the land cover classification and reference image.

Errors of Commission – A pixel reports the presence of a feature (such as trees) that, in reality, is absent (no trees are actually present). This is termed as a false positive. In the matrix below, we can determine that 7.0% of the area classified as canopy is most likely not canopy.

Errors of Omission – A pixel reports the absence of a feature (such as trees) when, in reality, they are actually there. In the matrix below, we can conclude that 6.38% of all canopy classified is actually classified as another land cover class.

Allocation Disagreement – The amount of difference between the reference image and the classified land cover map that is due to less than optimal match in the spatial allocation (or position) of the classes.

Quantity Disagreement – The amount of difference between the reference image and the classified land cover map that is due to less than perfect match in the proportions (or area) of the classes.

Confidence Intervals – A confidence interval is a type of interval estimate of a population parameter and is used to indicate the reliability of an estimate. Confidence intervals consist of a range of values (interval) that act as good estimates of the unknown population parameter based on the observed probability of successes and failures. Since all assessments have innate error, defining a lower and upper bound estimate is essential.

Confidence Intervals

Class	Acreage	Percentage	Lower Bound	Upper Bound
Tree Canopy	7,797.5	30.7%	30.4%	30.9%
Impervious Surfaces	8,307.3	32.7%	32.4%	33.0%
Grass & Low-Lying Vegetation	8,319.6	32.7%	32.4%	33.0%
Bare Soils	598.6	2.4%	2.3%	2.4%
Open Water	413.2	1.6%	1.5%	1.7%
Total	25,436.2	100.00%		

Statistical Metrics Summary

Overall Accuracy =	94.10%
Kappa Coefficient =	0.9146
Allocation Disagreement =	6%
Quantity Disagreement =	0%

Accuracy Assessment

Class	User's Accuracy	Lower Bound	Upper Bound	Producer's Accuracy	Lower Bound	Upper Bound
Tree Canopy	93.0%	91.5%	94.5%	93.6%	92.2%	95.0%
Impervious Surfaces	96.9%	95.9%	97.8%	96.6%	95.6%	97.6%
Grass & Low-Lying Vegetation	92.4%	90.9%	93.8%	91.8%	90.3%	93.3%
Bare Soils	94.1%	88.4%	99.8%	94.1%	88.4%	99.8%
Open Water	95.7%	91.4%	99.9%	100.0%	100.0%	100.0%

Appendix A.4: Priority Planting Assessment

Summary

This project was conducted to assess priority planting locations for the City of Lansing. Data sources were sought across the board to analyze a variety of factors that can contribute to accessing tree canopy needs. Analysis included data sets from the City of Lansing, The US Geological Survey and US Department of Agriculture. The resulting analysis found plantable areas in both public and private properties across the city.

Description

To help the City of Lansing increase its canopy cover, an urban tree canopy assessment was conducted by the city to assess land cover using 2020 aerial imagery. The study was completed in 2022. An analysis to identify the most suitable locations was conducted by analyzing each planting location to assign a priority ranking for stormwater and urban heat island.

Each data source utilized the most current version available and described in the subsequent sections. Stormwater uses the most recent NAIP imagery, soil data, hydrography data, and elevation data. Heat islands were derived from averaging Landsat 8 surface temperature data from August 8, 2020 and July 26, 2021 data to find hotspots at varying points in time to locate areas of potential heat mitigation.

Methodology

In order to create a priority planting plan, the locations for planting must first be determined. Planting location polygons were created by taking all grass/open space and bare ground areas and combining them into a single dataset. Non-feasible planting areas such as agricultural fields, recreational fields, major utility corridors, airports, ROWs, etc. were restricted and noted as a query-able attribute in the final GIS dataset. This layer was reviewed and approved by the City of Lansing before the analysis proceeded. The remaining planting space was consolidated into a single feature and then, exploded to multipart features creating separate, distinct polygons for each location. The final step broke polygons up again to note planting restrictions as their own feature.

Stormwater:

To identify and prioritize planting potential based on the stormwater analysis, locations were assessed with several environmental features, including proximity to hardscape, proximity to canopy, floodplain proximity, Soil permeability, Soil erosion, slope and heat islands. These factors are based on numerous historic projects completed by DRG for stormwater analysis. Each factor was assessed using data from various sources and analyzed using separate grid maps. Values between zero and four (with zero having the lowest priority) were assigned to each grid assessed. A value of zero indicates that this classified piece of information yielded little or no overall value within the dataset. The grids were overlain with the values averaged to determine the priority levels at an area on the map. A priority ranging from Very Low to Very High was assigned to areas on the map based on the calculated average of all grid maps using quantile classification breaks within ArcGIS. This step of the process was completed to statistically subset data evenly into five classes of increasing

importance. Areas of higher potential for runoff and erosion were considered higher priority due to their ability to diminish water quality within urban areas.

To identify and prioritize planting potential based on heat islands, a land surface temperature analysis was conducted. Using Landsat 8 imagery data from the United States Geological Survey (USGS), a calculation of land surface temperature by using the both Landsat 8 thermal bands. Imagery from August 8, 2020 and July 26, 2021 was used to find the radiance, at-satellite brightness temperature and proportion of vegetation, which were used to calculate the land surface temperature for each year. Surface temperatures were averaged and a priority ranking of Very Low to Very High was assigned based on the averaged temperatures using quantile classification breaks within ArcGIS. This step of the process was completed to statistically subset data evenly into five classes of increasing importance. Higher surface temperatures were considered higher priority due to the adverse effects of elevated microclimates within urban areas.

Social Equity:

To identify and prioritize planting potential based on a Social Equity, data was analyzed including census data. Census data included ethnicity, elderly population, population density, education attainment, renter percent, building age, single family homes, median income, and redlining. Each factor was separated to its own grid map. The values were broken into five classes and ranked from 0 - 4 (with zero being the lowest priority and 4 being the highest priority). These factors were classified into five final rankings from Very Low to Very High for each of the social equity and public health criteria using quantile classification breaks within ArcGIS. This step of the process was completed to statistically subset data evenly into five classes of increasing importance. Higher priorities of social equity give a focused effort of providing trees and tree canopy to all citizens regardless of social status. These priority areas are deemed to have the greatest return due to their importance of providing residents of the community equal access to nature.

Composite Priority:

Using zonal statistics, each raster data for stormwater and social equity were used to calculate a total aggregate value for each individual planting location polygon. The values for each factor were statistically binned into five classes using quantile classification within ArcGIS. This classification method distributes values into groups that have an equal number of values. The higher numbers indicate higher priority for planting when assessing all factors through the same scope. These classes ranged from Very Low to Very High to mirror the criteria group rankings. These rankings were then used to combine all criteria to create a composite ranking based on all analytical factors pertaining to the town.

Once the process of identifying priority was completed, the development of planting strategies will be the next step in the process. While available planting sites may ultimately be planted over the next several decades, the trees that are planted in the next few years, should be planned for areas in most need, and where they will provide the most benefits and return on investment given a particular set of circumstances and desires to fulfill certain obligations to the community. The town of Lansing can choose to target individual factors like heat islands for certain projects or select from the composite ranking to get the most return on investment across the board.

Group	Criteria	Data Origin	Last Update	Weighting
Stormwater	Distance to Hardscape	Lansing Urban Tree Canopy Assessment	2021	0.25
	Distance to Canopy	Lansing Urban Tree Canopy Assessment	2021	0.05
	Floodplain	National Hydrologic Dataset	2021	0.15
	Soil Permeability	Natural Resource Conservation Service	2021	0.15
	Soil Erosion	Natural Resource Conservation Service	2021	0.10
	Slope	National Elevation Dataset	2021	0.10
	Heat Islands – August 8, 2020	Earth Explorer - USGS	2020 & 2021	0.20
Census	Median Household Income	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Percent Elderly (65 and older)	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Education Attainment – No Diplomas over the age of 25	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Percent Renter	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Percent Non-White Population	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Population Density	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Building Age	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Percent Single Family	U.S. Census Bureau	5-year American Community Survey 2016-2020	
	Redlining	HOLC Redlining	2022	

Weighted Overlay Equation for stormwater priority:

$(\text{"ImperviousDistance"} * 0.25) + (\text{"Floodplain"} * 0.15) + (\text{"Soil Permeability"} * 0.15) + (\text{"Soil Erosion"} * 0.10) +$
 $(\text{"CanopyDistance"} * 0.05) + (\text{"SlopePercent"} * 0.10) + (\text{Heat Islands} * 0.20)$

Data Details – Stormwater

Distance to Hardscape

Source: Lansing Urban Tree Canopy Assessment | Data: Distance to Impervious

Distance to hardscape is derived by selecting the impervious surfaces data from the Lansing landcover layer. This impervious raster is used as an input layer into the Euclidean Distance tool within ArcGIS to create a layer that measures straight-line distance from each impervious surface location within the city. These distances are grouped into five classes from 0 - 4 with 4 being the closest to impervious surfaces and, therefore, the highest priority. The further a location is from an impervious surface, the lower the ranking it receives. A ranking of 0 is given to locations that are currently represented as impervious surfaces in the land cover data while the value of 4 indicates that the open area next to the impervious surface is available for planting trees to reduce the amount of runoff and sedimentation.

Distance to Hardscape	
Rank	Distance to Impervious (ft)
0	0
1	Over 100
2	51 - 100
3	26 - 50
4	1 - 25

Distance to Canopy

Source: Lansing Urban Tree Canopy Assessment | Data: Distance to Canopy

Distance to canopy is derived by selecting the tree canopy data from the Lansing landcover layer. This canopy raster is used as an input layer into the Euclidean Distance tool within ArcGIS to create a layer that measures straight-line distance from each canopy location within the city. These distances are grouped into five classes from 0 - 4 with 4 being the closest to Canopy and therefore the highest priority. The further a location is from the canopy, the lower the ranking it receives. A ranking of 0 is given to locations that are currently occupied by tree canopy and not plantable. Higher values in this ranking will prioritize areas that have small gaps that can be filled in order to increase tree canopy closure, which has great impact of wildlife habitat by providing larger corridors to support a variety of different species.

Distance to Canopy	
Rank	Distance to Canopy (ft)
0	0
1	Over 200
2	101 - 200
3	51 - 100
4	1 - 50

Floodplain

Source: National Hydrologic Dataset – USDS Geospatial Data Gateway | *Link:* <https://datagateway.nrcs.usda.gov/> | *Data Attribute:* Cost Distance

The floodplain is derived by using the hydrography lines from the United States Department of Agriculture (USDA) website and the Slope Percent Rise (found by calculating Slope using the Digital Elevation Model (DEM) from the USDA website). The Cost Distance tool within ArcGIS was used with these layers to create a raster dataset that shows a cost-weighted distance from the hydrography lines based on the percent rise of the land. This process identifies the first major slope break which indicates the normal stream bank channel that will fill during flooding events. The resulting data layer will show locations of where water will travel during periods of flood. These distances are grouped into five classes from 0 - 4 with 4 being in the floodplain area and therefore the highest priority. The further a location is from the floodplain, the lower the ranking it receives. A ranking of 0 is given to locations that are the furthest from the floodplain.

Floodplain - Cost Distance	
Rank	Cost Distance (ft)
0	Over 2,500
1	1,001 - 2,500
2	501 - 1,000
3	101 - 500
4	0 - 100

Soil Permeability

Source: Natural Resource Conservation Service – USDA Web Soil Survey | *Link:* <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> | *Data Attribute:* Hydrologic Soils Group (HSG)

Soil Permeability is found by analyzing the Hydrologic Soils Group (HSG) information from the USDA Soil Surveys. This data is classified into four classes: A, B, C and D. Group A soils have a high infiltration rate, Group B has a moderate infiltration rate, Group C has a slow infiltration rate, and Group D has a very slow infiltration rate. The remaining values are classified as W denoting water. These areas are typically larger bodies of water such as ponds, lakes or rivers. The rankings range from 0 - 4 with 4 being the highest priority. A ranking of 4 is given to the D classification due to its low infiltration rate. Planting in these locations will increase stormwater uptake and therefore, reduce the amount of runoff. Lower rankings are given to the A, B and C classes as these classes have higher infiltration rates where water is able to percolate through the soil without creating surface runoff leading to an decrease in harmful pollutants and sediment into streams and stormwater infrastructure over time. The W class is given a 0 ranking because these areas are classified as water and have no bearing of runoff.

Soil Permeability - HSG	
Rank	Threat
0	W
1	A
2	B
3	C
4	D

Soil Erosion

Source: Natural Resource Conservation Service – USDA Web Soil Survey | Link: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> | Data Attribute: K-factor

Soil Erosion is found by analyzing the K-factor information from the USDA Soil Surveys. This data is classified into decimal numbers that range from 0.02 – 0.69. The higher numbers within this range mean that the area is more susceptible to sheet and rill erosion by water. Remaining values are given a value of 0 of which can represent water, quarries, pits, and other harder surface types. Water features are typically

ponds, lakes and rivers. Rankings for this data are based on the susceptibility to erosion. A 0 ranking is given to areas that have little to no risk of erosion. The ranking increases as the risk of erosion increases with the highest ranking being 4. Planting in these priority areas will help decrease erosion vulnerability.

Soil Erosion – K-factor	
Rank	K-factor (expressed as whole)
0	0 - 10
1	11 - 20
2	21 - 30
3	31 - 37
4	Over 38

Slope

Source: National Elevation Dataset – USDA Geospatial Data Gateway | Link: <https://datagateway.nrcs.usda.gov/> | Data: DEM

Slope is calculated by using the Digital Elevation Model (DEM) from the USDA and finding the slope percent rise of the DEM. The Percent Rise results were grouped into five classes from 0 - 4 with 4 being the highest priority as shown below. The rankings for this data are based on the percent rise of the area. The larger the percent rise of the land, the higher the planting priority. A ranking of 0 is given to areas of no percent rise and the rankings then increase as the percent rise increase with the highest ranking being 4. Planting trees on areas of high percent rise can help decrease stormwater runoff.

Slope – Percent Rise	
Rank	Percent Rise
0	0
1	0 - 3
2	3 - 6
3	6 - 12
4	Over 12

Land Surface Temperature (LST)

Source: Earth Explorer (USGS) Landsat 8 Thermal Imagery | Link: <https://earthexplorer.usgs.gov/> | Data Attribute: Land Surface Temperature (LST)

Land surface temperature is calculated using Landsat 8 imagery thermal bands. Using both thermal bands, a conversion from Digital Number (DN) to radiance, at-satellite brightness temperature and proportion of vegetation can be calculated. These values are used to find the land surface temperature. Imagery from August 8, 2020 and July 26, 2021 was used to create two separate surface temperature raster datasets. The two years were averaged and binned into five class from 0 - 4 based on a quantile classification with ArcGIS. Rankings are determined by the surface temperature ranges. The lowest surface temperature range received a 0 ranking.

The ranking will increase as the surface temperature increases with the high rank being 4. Planting in areas of high surface temperature helps mitigation urban heat islands by providing more shade to cool not only air temperature but heat absorbed by pavements.

Land Surface Temperature – 2 Year Average (2020)	
Rank	Temperature (Fahrenheit)
0	73.89 – 89.71
1	89.72 – 91.61
2	91.62 – 92.73
3	92.74 – 93.46
4	93.47 – 96.84

US Census

Median Household Income

Source: US Census Bureau - Median Household Income in the Past 12 Months (in 2020 Inflation-Adjusted Dollars):

Census Data Table: B19049 | Link: <https://www.nhgis.org/documentation/tabular-data> |

Data Attribute: AMSKE001 – Median household income in the past 12 months (in 2020 inflation-adjusted dollars)

Data shows the median household income in the past twelve months. The incomes are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 and based on the income level. A low ranking of 0 is given to areas with higher income. This ranking increases as the median income decreases with a ranking of 4 given to areas that have lowest median income. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature as well as possibly increase property values.

US Census – Median Household Income	
Rank	Income
0	Over 66,000
1	50,900 - 66,000
2	42,000 - 50,900
3	35,000 - 42,000
4	Under 35,000

Percent Elderly Population

Source: US Census Bureau - Sex by Age: Census Data Table B01001 | Link:

<https://www.nhgis.org/documentation/tabular-data> |

Data Attribute: AMPKE044 - AMPKE049 & AMPKE020 - AMPKE025: 65 and 66 years – 85 years and over

Data shows the percentage of people age 65 and over in each block group. Percentages are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the amount of the percentage. A low ranking of 0 is given to areas with lower percentages of people 65 and over. A higher ranking is given to areas that have lower percentages with the top rank being 4. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

US Census – Percent of 65 and over	
Rank	Percent of Elderly
0	0 – 4.7%
1	4.7 – 8.6%
2	8.6 – 13.45%
3	13.45 – 19.5%
4	Over 19.5%

Education Attainment

Source: US Census Bureau - Educational Attainment for the Population 25 Years and Over: Census Data Table B15003 | Link: <https://www.nhgis.org/documentation/tabular-data> |

Data Attribute: AMRZE002 - AMRZE016: No Schooling Completed – 12th Grade, No Diploma

Data shows the percentage of population 25 years and over in each block group that have not obtained a high school diploma or GED. Percentages are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the amount of the percentage. A low ranking of 0 is given to areas with lower percentages of people that have not obtained a high school diploma or GED. A higher ranking is given to areas that as the percentages of No Diploma increase with the top rank being 4. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

US Census – Education Attainment	
Rank	Percent of No Diploma
0	0 - 2.2%
1	2.2 – 5.1%
2	5.1 - 10%
3	10 – 16%
4	Over 16%

Population Density

Source: US Census Bureau – Total Population: Census Data Table B01003 | Link:

<https://www.nhgis.org/documentation/tabular-data>

| Data Attribute: ALUBE001 - Total

Data shows the population density for each block group. The total population was calculated for each block group and the divided by the Square miles of each group. The population density is classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the amount of income. A ranking of 0 is given to areas with high incomes. The lower the population density, the lower the ranking. A ranking of 4 is given to areas that have the highest population density. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

U.S. Census – Population Density	
Rank	Population per Square Mile
0	Under 1750
1	1750 - 3605
2	3605 - 4700
3	4700 – 6700
4	Over 6700

Non-White Population

Source: US Census Bureau - Race: Census Data Table B02001 |

Link: <https://www.nhgis.org/documentation/tabular-data> |

Data Attribute: AMPWE003 – AMPWE008 (Black or African American alone, American Indian and Alaska Native alone, Asian alone, Native Hawaiian and other Pacific Islander alone, Some other race alone, Two or more races.

US Census – Ethnicity	
Rank	Non-White Percent
0	0 - 16%
1	16- 31.5%
2	31.5 – 40.85%
3	40.85 - 53%
4	Over 53%

Data shows percentage of population that are non-white in each block group. Percentages are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the amount of the percentage. A ranking of 0 is given to areas with lower percentages of non-white population. This ranking increases as the percentage of non-white residents increases. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

Renter Population

Source: US Census Bureau – Occupied housing units: Census Data Table B25003 | Link:
<https://www.nhgis.org/documentation/tabular-data> |

Data Attribute: AMUFE003: Renter occupied

Data shows percentage of homes that are renter occupied in each block group. Percentages are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the amount of the percentage. A ranking of 0 is given to areas with lower percentages of renter. This ranking increases as the percentage of renter residents increases. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

US Census – Occupied houses	
Rank	Renter Percent
0	0 – 18.2%
1	18.2 - 31%
2	31 - 50%
3	50 – 73.5%
4	Over 73.5%

Single Family Homes

Source: US Census Bureau – Units in structure: Census Data Table B25024 | Link:
<https://www.nhgis.org/documentation/tabular-data> |

Data Attribute: AMU4E002 & AMU4E003 (1, detached and 1, attached)

Data shows percentage of homes that are single family in each block group. Percentages are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the amount of the percentage. A ranking of 0 is given to areas with higher percentages of single family homes. This ranking increases as the percentage of single family homes decreases. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

US Census – Single Family Homes	
Rank	Single Family Home Percent
0	Over 99.5%
1	90.8% - 99.5
2	82 – 90.8%
3	50 – 82%
4	0 – 50%

Building Age

Source: US Census Bureau – Year Structure Built: Census Data Table B25034 | *Link:*

<https://www.nhgis.org/documentation/tabular-data> |

Data Attribute: AMU7E011 - Built 1939 or earlier.

Data shows the percent of homes built before 1940 for each block group. Percentages are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the amount of the percentage. A ranking of 0 is given to areas with lower percentages of building built before 1940. This ranking increases as the percentage of older homes increases. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

US Census – Median Age	
Rank	Age Percent
0	0 - 1.99%
1	1.99 - 7.99%
2	8 – 26.7%
3	26.7 – 52%
4	Over 52%

Redlining

Source: Home Owners' Loan Corporation | *Link:*

https://www.arcgis.com/home/webmap/viewer.html?urls=https://services.arcgis.com/ak2bo87wLfUpMrt1/arcgis/rest/services/HOLC_Redlining_Polygons_v1/FeatureServer/0.

The data shows the redlining areas for the city of Lansing. These redlining areas are based on the Home Owners' Loan Corporation (HOLC). These areas were classified based on the risk for banks and lenders to give home loans. Class A are areas of minimal risk where class D are areas considered hazardous risk. Percentages are classified into five groups using quantile classification within ArcGIS and ranked from 0 - 4 based on the class rank. A ranking of 0 is given to areas that were outside of the ranked areas. The more hazardous the risk, the higher the rank. Planting in these high priority areas may help address social equity issues and provide residents equal access to nature.

HOLC hazard class	
Rank	Redlining Class
0	All other areas
1	A
2	B
3	C
4	D

Street Number	Street	Notes
3900	Alpha	on Pennway, corner lot
3909	Alpha	
3915	Alpha	
3919	Alpha	
4017	Alpha	
4023	Alpha	
4100	Alpha	
4206	Alpha	
4208	Alpha	Stump
4212	Alpha	
4300	Alpha	
4301	Alpha	Stump
4315	Alpha	
4319	Alpha	Stump
4401	Alpha	Stump
4407	Alpha	
4421	Alpha	
4500	Alpha	on Samantha, Corner lot
4501	Alpha	Stump
4518	Alpha	Stump
4600	Alpha	Stump
4608	Alpha	Stump
4620	Alpha	
4906	Alpha	Stump
5000	Alpha	
5013	Alpha	
5019	Alpha	
5025	Alpha	Stump
3901	Devonshire Ave	
3908	Devonshire Ave	
3918	Devonshire Ave	
3927	Devonshire Ave	
4001	Devonshire Ave	
4011	Devonshire Ave	
4020	Devonshire Ave	
4316	Devonshire Ave	
4322	Devonshire Ave	
4400	Devonshire Ave	
4401	Devonshire Ave	
4409	Devonshire Ave	
4415	Devonshire Ave	Stump
4420	Devonshire Ave	Stump
4507	Devonshire Ave	
4515	Devonshire Ave	Stump
4525	Devonshire Ave	Stump
4600	Devonshire Ave	

4614	Devonshire Ave	Stump
4627	Devonshire Ave	
4701	Devonshire Ave	
4708	Devonshire Ave	
4710	Devonshire Ave	
4800	Devonshire Ave	
4817	Devonshire Ave	
4921	Devonshire Ave	
5009	Devonshire Ave	
5012	Devonshire Ave	
5018	Devonshire Ave	
1101	East Cavanaugh	Pennway Church, several spaces along Devonshire
1021	Kendon	Stump
1101	Kendon	Stump
1116	Kendon	
1019	Maple Hill	
1101	Maple Hill	Stump plus additional long open space
1119	Maple Hill	
3913	Pennsylvania	
3919	Pennsylvania	
4733/35	Pennsylvania	Duplex
4801	Pennsylvania	
4823	Pennsylvania	
5001	Pennsylvania	
1027	Pennway	
1107	Pennway	
4719	Pennway	on Kendon, corner lot
	Devonshire X Kendon	Stop Signs
	Devonshire X Samantha	Stop Signs

Lansing City Charter

Article 5 – Boards And Commissions

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Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.13)

5-101 Citizen Involvement In Government

.1 The people of the City of Lansing have placed the basic responsibility for the management of this City in their elected officials. This Charter recognizes the important role that individual citizens play in reviewing and evaluating the needs of the City through the structure of boards and commissions. For this reason, boards, commissions and advisory committees shall be encouraged by the City of Lansing.

.2 Citizen involvement for the operation of the City shall be provided through three types of boards: an administrative board, review boards and advisory boards.

5-102 Types Of Boards

.1 The Board of Water and Light is an administrative board and has been delegated executive and policymaking responsibilities necessary to the proper operation of the agency.

.2 Review boards include those boards, which are not administrative or advisory and whose recommendations or decisions have legal significance. Examples of review boards are the Planning Board, the Board of Review and the Board of Zoning Appeals. The City may create review boards by ordinance.

.3 Advisory boards include boards, commissions and committees established by ordinance or this Charter and composed of citizens sharing the common goal of improving the general welfare through their advice and assistance to the elected and appointed full time City officials.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.13)[CTD]

5-102 Types Of Boards [CTD]

.4 The Board of Fire Commissioners and the Board of Police Commissioners shall act as advisory boards with the additional responsibilities described in this Charter.

.5 All other boards shall be advisory boards.

.6 The provisions of this Chapter shall not apply to the boards established for the purpose of managing employee retirement systems.

5-103 Appointment Of Board Members

.1 Every member of a board, commission or committee established by Charter or ordinance shall be an officer of the City and shall possess the qualifications required by this Charter for holding office, except that a felony conviction shall not render an individual ineligible for appointment or membership.

.2 Except as otherwise specifically provided in this Charter or State law, the Mayor shall appoint persons to all such boards, commissions and committees with the advice and consent of the Council. No such appointment shall be effective until the Council has confirmed it.

.3 The terms of the boards established in this Charter or by ordinance shall be four years commencing July 1, unless otherwise provided.

.4 The City Clerk shall report to the Mayor and Council, prior to the first Council meeting in March, a list of the terms on City Boards which shall end on June 30.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.13)[CTD]

5-103 Appointment Of Board Members [CTD]

.5 The Mayor shall establish and make public a procedure, which will provide for receiving either applications or recommendations of individuals for membership on City boards, commissions or committees.

.6 The Mayor shall file a list of appointments to the several boards prior to the first Council meeting in May of each year and the Council shall act on each appointment at or prior to its first meeting in June.

.7 Appointments to fill vacancies shall be made upon the occurrence of the vacancy and each person so appointed shall take office immediately upon the confirmation of the Council to serve for the remainder of the unexpired term. In the event a vacancy is not filled within 60 days after the occurrence of the vacancy, the Council shall appoint a committee of three of its members to act instead of the Mayor in the making of such appointments.

.8 Each Board established by this Charter shall be composed of eight members. Four members shall be from the City at-large and one member shall be appointed from each of the four wards of the City in the following pattern:

- (a) The First ward member shall have a term expiring in 1981 and every four years thereafter.
- (b) The Second ward member shall have a term expiring in 1982 and every four years thereafter.
- (c) The Third ward member shall have a term expiring in 1979 and every four years thereafter.
- (d) The Fourth ward member shall have a term expiring in 1980 and every four years thereafter.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.13)[CTD]

5-103 Appointment Of Board Members [CTD]

.9 The members from the City at-large shall be appointed to staggered terms, at least one of which shall expire each year.

.10 Appointments to each board, commission and committee shall be made with regard to the diversity of Lansing citizens, their variety of interests and the experience and expertise that each can contribute to the common good of the City.

.11 An ordinance creating a board, commission or committee may set forth a different size for the body or a different length of term for the members than required in this section if the Council finds that the change is appropriate.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.14)[CTD]

5-103 Appointment Of Board Members [CTD]

.12 The Board of Water and Light Board Members shall include three non-voting advisory members representing utility customer communities outside the City of Lansing. Each non-voting advisory member shall be a Board of Water and Light customer, shall reside in and be appointed by the governing body of the municipality. One member shall represent the City of East Lansing and shall serve a term of four (4) years commencing July 1. One member shall represent Delta Township and shall serve a term of four (4) years commencing July 1. One member shall be at-large and shall represent the remaining municipalities and shall serve a term of one (1) year commencing July 1. The at-large representative shall serve on a rotating annual basis and be appointed by the governing body of the following municipalities in succession: Meridian Township, Delhi Township, DeWitt Township and Lansing Township. Except as provided herein, Section 2-103, Section 5-105, or State law, the provisions of this Charter shall not apply to the nonvoting advisory members of the Board of Water and Light.

5-104 Ineligibility For Boards

No person holding another City office or activity employed by the City shall be eligible to be a voting member on any board.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.14)[CTD]

5-105 Organization Of Boards - Rules Of Procedure

- .1 Each board shall organize itself for the conduct of its business and select its own officers including a Secretary who shall take the minutes of the board meetings.
- .2 Each board shall adopt its own rules of procedure consistent with this Charter.
- .3 The rules shall state the schedule of the regular board meetings. The schedule shall not conflict with regular meetings of the City Council.
- .4 The rules shall require that public notice of all meetings shall be given in the manner provided by statute for meetings of public bodies.
- .5 The rules shall require that the public have a reasonable opportunity to be heard at all regular meetings of the board.
- .6 All board meetings shall be required to be open to the public to the same extent as meetings of the City Council.
- .7 The rules shall define the extent to which nonattendance at meetings may be grounds for removal from office.
- .8 All rules of procedure shall be submitted to the City Attorney for approval as to form. The rules shall then be submitted to the City Clerk for transmission to the City Council. The rules shall be effective at the conclusion of the Council meetings at which they are received unless the Council directs otherwise.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.14)[CTD]

5-105 Organization Of Boards - Rules Of Procedure [CTD]

.9 The Council may object to the rules in whole or in part and may return them to the board proposing their adoption with a statement of its objections and recommendations.

.10 The minutes of all board meetings; shall be filed in the office of the Clerk as a public record. No official action taken by any board at any meeting shall be valid or effective until a copy of the minutes at which the action was taken is filed with the Clerk.

.11 Members of advisory boards shall serve without compensation, but the City Council may authorize the payment of the actual and necessary expenses of board members.

5-106 Advisory Board Functions

.1 Each advisory Board shall at its regular meetings review the progress and planning of the head of the agency it serves to insure that all activities are in accordance with City policy. Each board may propose changes in agency operations for the purpose of making its program more effective.

.2 Proposed policies and programs or changes in existing policies or programs requiring Council action shall be submitted by an agency head to the appropriate advisory board prior to submission to the Mayor and Council for action. The advisory board's written recommendations concerning the proposals shall be submitted to the Mayor along with the agency's proposal. When the Mayor submits the proposal to the Council for action, the board's recommendations shall also be transmitted to the Council along with that of the Mayor.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.14)[CTD]

5-106 Advisory Board Functions [CTD]

.3 An agency's budget material, including capital improvement proposals, shall be submitted to the advisory board before submission to the Mayor and the board's written recommendations shall be submitted to the Mayor along with the agency's recommendations. The Mayor shall transmit the board's recommendations to the Council along with budget material for that agency.

.4 Each advisory board shall, prior to December 1, prepare a written report evaluating the effectiveness and analyzing the status and priorities for services and activities of the agency it advises. Copies thereof shall be filed with the Mayor, the Council and the Clerk.

.5 Each advisory board may develop its own proposals for new or altered policies and programs and transmit these to the Mayor and City Council.

.6 Each City officer who directs an agency or activity within the scope of an advisory board shall attend all of its meetings and supply necessary secretarial services.

5-107 Continuation Of Existing Boards

.1 All City Boards not established in this Charter and existing on the effective date of this Charter, whether established in the previous Charter or created by ordinance or resolution, shall continue as if created under ordinance with the status provided in this Charter.

Chapter 1. GENERAL PROVISIONS FOR BOARDS (p.15)[CTD]

5-107 Continuation Of Existing Boards [CTD]

.2 The terms of all persons serving on boards on the effective date of this Charter shall continue in accordance with law.

5-108 Limitation On Powers Of Boards

.1 The Board of Water and Light shall exercise administrative, executive and policy-making authority over the operation of those City utility services assigned to it in accordance with the provisions of this Charter.

.2 No other board, commission or committee shall exercise any administrative, appointive or policy making authority except as permitted by this Charter or required by State law.

.3 Notwithstanding any other provision of this Charter, the Board of Water and Light shall be subject to the emergency powers provided the Mayor by city ordinance and state law and shall include administrative and executive authority.

Chapter 2. BOARD OF WATER AND LIGHT (p.15)

5-201 Board Of Water And Light

The Board of Water and Light, hereinafter known as the Board, shall have the full and exclusive management of the water, heat, steam and electric services and such additional utility services of the City of Lansing as may be agreed upon by the Board and City Council. The board shall be responsible to the Mayor and the City Council for the provision of these services in a manner consistent with the best practices.

5-202 Director, Internal Auditor, Secretary

.1 The Board shall appoint a Director who shall be responsible to the Board for carrying out the duties assigned by the Board and shall serve at its pleasure.

.2 The Board shall appoint an Internal Auditor who shall report directly to the Board. The Internal Auditor shall serve at the pleasure of the Board.

.3 The Board shall appoint its own Secretary who shall be responsible to the Board and shall serve at its pleasure.

5-203 Powers Of The Board

.1 The Board shall make all contracts pertaining to the conduct of the Board of Water and Light business and shall have the authority to settle litigation involving the Board of Water and Light.

Chapter 2. BOARD OF WATER AND LIGHT (p.15) [CTD]

5-203 Powers Of The Board [CTD]

.2 The Board shall have the power to acquire property, both real and personal, and interests in property in the name of the City for purposes of the Board of Water and Light.

.3 The Board shall have the power to sell real property and interests in real property not needed for the operation of the Board of Water and Light, subject to the approval of six City Council Members and subject to the limitations on the sale of real property by the City contained in this Charter.

.4 The Board shall adopt policies and procedures to assure fairness in procuring personal property and services and disposing of personal property. These policies and procedures of the Board shall parallel the policies and procedures adopted by the Council for the purchase and sale of personal property and services unless the Board makes a specific finding that a City policy or procedure is not consistent with the best practices for public utility operation.

.5 The Board shall prepare and adopt its annual budget by June 1 of each year, and implement it with whatever modifications the Board may adopt from time to time. The budget and any amendments shall be filed with the City Clerk within 10 days after adoption.

.6 The Board shall submit to the Mayor, prior to October 1 of each year, its capital improvements plan for the next six years pursuant to Section 7-109.

.7 In the best interest of the City, the Board and other agencies of the City are encouraged to cooperate on projects deemed to be beneficial and to utilize each other's services.

Chapter 2. BOARD OF WATER AND LIGHT (p.15) [CTD]

5-203 Powers Of The Board [CTD]

.8 The Board of Water and Light may utilize the streets, alleys, bridges and other public places of the City for the furnishing of public utility services. In the exercise of this right, the Board of Water and Light shall furnish timely information about proposed uses to the officials of the City and to the agencies which will be most directly affected by the use.

.9 The Board may conduct whatever audits of the activities it deems appropriate and shall compensate the City for the cost of that portion of the annual audit of the City which covers the Board of Water and Light.

.10 The Board may provide for the pensioning of any employee of the Board of Water and Light or the surviving spouse or dependent of any deceased employee.

.11 The Board, except as otherwise provided in this Charter, shall be responsible for and have authority over the compensation, benefits, bonding, conditions of employment, and labor management activities for all employees of the Board of Water and Light.

5-204 Withdrawal Of Funds

.1 The funds and revenues of the Board of Water and Light shall be deposited in the City Treasury and shall be credited only to the funds and accounts of the Board of Water and Light. They shall not be withdrawn or used for any other purpose whatsoever. The Board shall have and exercise full control over all of the funds of the Board of Water and Light in the City Treasury.

Chapter 2. BOARD OF WATER AND LIGHT (p.15-16) [CTD]

5-204 Withdrawal Of Funds [CTD]

.2 All warrants drawn for the payment of money under the authority of the Board shall be signed by the Secretary of the Board and countersigned by the City Controller.

.3 Whenever warrants are issued and there is no money for the payment of the warrant, the City Treasurer shall, upon presentation of the, warrant, stamp the date of presentation on the face of the warrant, together with a statement that the warrant will bear interest thereafter at the rate of 6 percent per year. The interest shall cease after notice has been given to the holder, in the manner determined by the Board, that there is sufficient money of the Board of Water and Light on hand to pay the warrant with interest. Warrants of the Board of Water and Light are not general obligations of the City.

.4 The Council may provide by ordinance procedures for the disbursement of monies of the Board of Water and Light by check issued by the Secretary of the Board in accordance with the ordinance.

5-205 Rates

.1 The Board may fix just and reasonable rates and other charges as it may deem advisable for services furnished by the Board of Water and Light.

Chapter 2. BOARD OF WATER AND LIGHT (p.16) [CTD]

5-205 Rates [CTD]

.2 The Board shall conduct a public hearing at least 30 days prior to the effective date of any changes in rate structure. At least 45 days before the public hearing, the Board shall file with the City Clerk a statement explaining the new rates and charges together with a notice of the public hearing. Notice to the public shall be given in the same manner as is required for proposed ordinances.

5-206 Collection And Hearing Procedure

.1 Upon the request of the Board, the City Council shall provide by ordinance for the collection of unpaid charges for public utility services furnished by the Board of Water and Light and for the imposition and enforcement of liens upon property served by the Board of Water and Light.

.2 When any person fails or refuses to pay any sums due on utility bills, the service upon which the delinquency exists may be discontinued and suit may be brought for the collection of the money owed.

Chapter 2. BOARD OF WATER AND LIGHT (p.16) [CTD]

5-206 Collection And Hearing Procedure [CTD]

.3 The Board shall establish a procedure for the resolution of disputes between the Board of Water and Light and any of its customers concerning services or billing for services furnished in accordance with filed rates, rules and regulations, and established Board policies and procedures. The procedure shall incorporate the designation of an independent hearing officer. The hearing officer shall report to the Board and the Mayor the results of each hearing conducted and shall make recommendations to the Board on any hearing, which has not been resolved. The Mayor may make recommendations to the Board on each unresolved hearing. The Board shall report its final action on any unresolved dispute, together with the hearing officer's report and recommendations to the Mayor and the City Council.

5-207 Sale Or Exchange Of Facilities

The Board shall not, unless approved by the affirmative vote of three - fifths of the electors voting thereon at a regular or special City election, sell, exchange, lease, or in any way dispose of any property, easement, equipment, privilege, or asset needed to continue the operation of the Board of Water and Light. The restrictions of this section shall not apply to the sale or exchange of articles of machinery or equipment of the Board of Water and Light, which are no longer useful or which are replaced by new machinery for the operation of the Board of Water and Light, or to the exchange of property or easements for other needed property or easements.

Chapter 3. BOARD OF POLICE COMMISSIONERS (p.16)

5-301 Duties

.1 The Board of Police Commissioners, hereinafter known as the Board, is established pursuant to Article 5, Chapter I of this Charter and shall have all the powers, duties and responsibilities of advisory boards in addition to the following duties:

.2 The Board shall establish administrative rules for the organization and overall administration of the department including promotional and training procedures in consultation with the Chief of Police and Mayor. These administrative rules shall not be effectuated in accordance with Section 5-105. 8 of this Charter but shall become effective upon filing with the City Clerk.

.3 The Board shall approve rules and regulations for the conduct of the members of the Department, in consultation with the Chief of Police and the Mayor.

.4 The Board in their rules shall establish a procedure for receiving and resolving any complaint concerning the operation of the department.

.5 The Board shall review and approve the departmental budget before its submission to the Mayor.

.6 The Board shall act as the final authority of the City in imposing or reviewing discipline of the department employees consistent with the terms of State law and applicable collective bargaining contracts.

.7 The Board shall render an annual report to the Mayor and City Council, which shall include a description and evaluation of the department's activities during the previous year, including the handling of crime and complaints, if any, and proposals for future plans.

Chapter 3. BOARD OF POLICE COMMISSIONERS (p.16) [CTD]

5-302 Investigatory Power

Whenever necessary to carry out its assigned duties, the Board of Police Commissioners shall have the same power to subpoena witnesses, administer oaths and require the production of evidence as the City Council.

Chapter 4. BOARD OF FIRE COMMISSIONERS (p.16-17)

5-401 Duties

- .1 The Board of Fire Commissioners, hereinafter known as the Board, is established pursuant to Article 5, Chapter 1, of this Charter and shall have all the powers duties and responsibilities of advisory boards in addition to the following duties.
- .2 The board shall establish administrative rules for the organization and overall administration of the Department, in consultation with the Chief of the Fire Department and the Mayor. These administrative rules shall not be effectuated in accordance with Section 5105.8 of this Charter but shall become effective upon the filing with the City Clerk.
- .3 The Board shall approve rules and regulations for the conduct of the members of the Department, in consultation with the Chief of the Fire Department and the Mayor.
- .4 The Board, in their rules, shall establish a procedure for receiving and resolving any complaint concerning the operation of the department.
- .5 The Board shall review and approve the departmental budget before its submission to the Mayor.
- .6 The Board shall act as final authority of the City in imposing or reviewing discipline of the department employees consistent with the terms of the State law and applicable collective bargaining contracts.
- .7 The Board shall render an annual report to the Mayor and City Council, which shall include a description and evaluation of the department's activities during the previous year, including the handling of complaints, if any, and proposals for future plans.

CHAPTER 5. BOARD OF ETHICS (p.17)

5-501 Standards Of Conduct

.1 The people of this City recognize that the continuation of the proper operation of the City requires that public officers and employees be independent, impartial and responsible to the people; that decisions and policy be made in the proper channels of governmental structure; that members of the public have access to information upon which decisions affecting their City are made; that public office and employment not be used for personal gain; that the integrity and operation of City government to be subject to scrutiny of the public; and that acts or actions not compatible with the best interests of the City be defined and prohibited.

.2 In order to provide an orderly procedure for consideration and review of the issues, which may arise concerning questions of standards of conduct for public officers and employees, a Board of Ethics is created.

5-502 Membership

.1 The Board of Ethics shall be a review board and shall consist of eight members; four members shall be appointed by the City Council, one from each city ward, and four shall be appointed by the Mayor. The City Attorney shall assist and advise the Board and the City Clerk shall serve as Recording Secretary to the Board and provide such administrative services to the Board as may be necessary; however, neither shall be eligible for appointment as board members.

CHAPTER 5. BOARD OF ETHICS (p.17) [CTD]

5-502 Membership [CTD]

.2 Of the members appointed to the initial Board, the Mayor and the City Council shall each appoint members for a one-year, a two-year, a three year, and a four-year term. A member shall hold office until a member's successor is appointed. Thereafter each Mayoral-appointed member and each Council-appointed member shall serve for a term of four years. An appointment to fill a vacancy shall be made by the Mayor to fill a vacant Mayoral appointed member position and by the City Council to fill a vacant Council-appointed member position. Persons serving as members of the Board of Ethics on the effective date of this section shall continue as members until the expiration of their original terms.

.3 Members of the Board of Ethics shall be residents of the City and shall hold no elected public office and no other City office or employment.

.4 The Board shall adopt rules governing its procedure and the holding of regular meetings, subject to the approval of City Council. Special meetings may be held when called in the manner provided in the rules of the Board. The Board shall select its own presiding officer from among its members.

.5 If any issue before the Board involves any member of the Board, such member may not participate in Board deliberations pertaining to the member's issue nor shall such involved member be eligible to vote on any actions concerning the issue.

CHAPTER 5. BOARD OF ETHICS (p.17) [CTD]

5-502 Membership [CTD]

.6 All City employees and elected or appointed officials of the City shall cooperate with any investigations by the Board; such cooperation shall include the compilation and production of any information requested by the Board during an investigation unless the information requested is exempt from disclosure under the applicable state law.

.7 If any issue before the Board involves the office of the City Attorney, the Board may engage the services of outside counsel upon terms and arrangements approved by City Council.

5-503 Duties

.1 At the request of a person, the Board of Ethics may render an informal opinion with respect to the prospective conduct of such person. An informal opinion need not be written and may be provided directly to the requestor of such opinion. All written opinions of the Board of Ethics shall be filed with the City Clerk and are open to public inspection. Written informal opinions shall be drafted in such a way as not to reveal information exempt from public disclosure under the applicable state law.

.2 The Board of Ethics on its own initiative or upon request may render and publish a formal opinion on any matter within the scope of the Board's authority which it may deem appropriate.

CHAPTER 5. BOARD OF ETHICS (p.17-18) [CTD]

5-503 Duties [CTD]

.3 The Board of Ethics does not have the authority to reverse or modify a prior action of the Mayor, City Council, or an officer or employee of the City. If the Board finds a prior action of the Mayor, Council, officer, or employee to have been ethically improper, the Board may advise the appropriate party or parties that the action should be reconsidered. Upon such advice by the Board, the action shall be reconsidered by the appropriate person or public body. If the Board determines an existing City contract to be ethically improper, after such determination and advice from the Board the City may void or seek termination of the contract if legally permissible. The Board may refer a matter to the City Attorney for review and consideration for appropriate action. Upon completion of review and consideration, the City Attorney shall report its findings to the Board.

.4 The Board of Ethics may recommend to the Council standards of conduct for officers and employees of the City and changes in the procedures related to the administration and enforcement of those standards.

.5 The Board of Ethics shall review, at least annually, any documents required to be filed under ordinances adopted by the City for the purpose of establishing standards of conduct for officers and employees.

.6 The Board, when it deems it appropriate, may request the City Attorney's Office for assistance in compelling the production of documents and witnesses to assist the Board in the conduct of any investigation.

CHAPTER 5. BOARD OF ETHICS (p.18) [CTD]

5-503 Duties [CTD]

.7 Within one year from the effective date of this section the City shall provide an ethics manual for the use of all City officers and employees. Such manual shall first be approved by the Board of Ethics before distribution. Each City officer and employee shall acknowledge receipt of said manual.

.8 Proceedings before the Board are subject to the applicable state law regarding the conduct of public meetings. Records of the Board shall be filed with the City Clerk and are available for public review as required by state law.

CHAPTER 5. BOARD OF ETHICS (p.18) [CTD]

5-504 Protection Of Public Interest

.1 The City shall adopt, by ordinance, such standards for the conduct of public affairs as may be deemed necessary to protect the public, including the ordinances referred to in this section.

.2 The City shall adopt, by ordinance, no later than one year after the effective date of this section, restrictions similar to those enacted by the State of Michigan by statute, prescribing standards of conduct for City officers and employees. To the extent permitted by law, the ordinance shall generally include, but not be limited to, prohibiting the use of City office or employment for the private benefit of any person; prohibiting the divulging of confidential information in advance of the time prescribed for its authorized release to the public; prohibiting the use of City personnel resources for private gain; prohibiting the profit from an official position and acceptance of things of value by City officers or employees; requiring the financial disclosure by City officers and employees; and requiring lobbyist disclosure for all City officers and employees.

.3 Any violations of ordinances dealing with matters in this section shall be punishable to the maximum extent permitted by law and may be made punishable by forfeiture of office or position.

CHAPTER 5. BOARD OF ETHICS (p.18) [CTD]

5-505 Conflict Of Interest

.1 At least ten (10) days prior to the first of any of the events set forth in (A), (B), (C), (D), and (E) below, a City officer or employee who may derive any income or benefit, directly or indirectly, from a contract with the City or from any City action, shall file an affidavit with the City Clerk detailing such income and benefit to be derived:

(A) The bidding of the contract;

(B) The negotiation of the contract;

(C) The solicitation of the contract;

(D) The entry into the contract;

(E) Any City action by which the City officer or employee may derive any income or benefit, directly or indirectly.

The above provisions shall not apply to individual or collective bargaining agreements pursuant to which a City officer or employee directly or indirectly receives income or benefits in the form of official remuneration as an officer or employee, or any City action pursuant to which a City officer or employee directly or indirectly receives income or benefit as a member of the public at large or any class thereof. At the first regularly scheduled City Council meeting following the filing of an affidavit pursuant to this section, the City Clerk shall notify the City Council of such filing. In particular cases and for good cause shown, the Board may waive the ten (10) day prior notice requirement contained herein.

CHAPTER 5. BOARD OF ETHICS (p.18) [CTD]

5-505 Conflict Of Interest [CTD]

.2 An officer or employee who has any other conflict between a personal interest and the public interest as defined by State law, this Charter, or ordinance shall fully disclose to the City Attorney the nature of the conflict.

.3 Except as provided by law, no elective officer, appointee or employee of the City may participate in, vote upon or act upon any matter if a conflict exists.

Chapter 6. PLANNING BOARD (p.18)

5-601 Planning Board

.1 There shall be a Planning Board.

.2 The members of the Planning Board shall be appointed and confirmed in the manner set forth in Section 5-103 of this Charter.

.3 In addition to the regular members of the Planning Board, the City Council shall nominate and appoint two Council members who shall serve as ex-officio members of the Board, without a vote, for a one-year term commencing on July 1 of each year.

Chapter 6. PLANNING BOARD (p.18-19) [CTD]

5-602 Powers And Duties

- .1 The Planning Board shall have all of the powers and duties granted to municipal planning commissions by statute and all the powers and duties of advisory boards provided by this Charter, together with such additional powers and duties as may be provided by this Charter or ordinance.
- .2 The Planning Board is entitled to assistance from the staff of the Planning Department in evaluating or preparing any proposal relating to planning or development. All elective and appointive officers shall furnish to the Planning Board, within a reasonable time, available information required by the Planning Board.
- .3 The Planning Board shall review and make recommendations on the Planning Department draft of the Capitol Improvement Plan prior to its submission to the Mayor and Council.
- .4 The Board shall develop and maintain a master plan for the orderly development of the City. The plan shall include the consideration of the impact of social, physical, and economic factors.

Lansing City Charter

Article 6 – City Employees

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Chapter 1. MERIT SYSTEM (p.19)

6-101 Personnel Merit System

- .1 The City shall, by ordinance, establish a personnel merit system that meets the social, economic and program needs of the City of Lansing.
- .2 The personnel merit system ordinance shall provide procedures to recruit, select, develop and maintain an effective work force.

6-102 Administration Of Personnel Merit System

- .1 The Personnel Merit System shall not cover any employees of the Board of Water and Light, or appointees of the Mayor, the City Council and the Internal Auditor.
- .2 The chief personnel officer shall determine by competitive examination, exclusively on the basis of merit, efficiency and ability, the qualifications of all candidates for positions within the Personnel Merit System; make, promulgate and distribute rules and regulations covering all personnel transactions; and administer all conditions of employment within the Personnel Merit System.
- .3 All persons hired by the City. other than those stated in .1 of the section shall be processed through the office of personnel and the chief personnel officer shall evaluate the level of competency of each candidate against standards established prior to the evaluation.

Chapter 2. LABOR RELATIONS (p.19)

6-201 Labor Management Activities

- .1 The Mayor shall have the overall responsibility for all of the labor relations of the City.
- .2 The Mayor shall designate the chief labor negotiator for the City with the advice and consent of the City Council. The chief labor negotiator shall serve at the pleasure of the Mayor and shall have charge of the role of the City in collective bargaining contract negotiations.
- .3 Collective bargaining contracts shall become effective when ratified by the City Council in accord with State law.
- .4 The chief personnel officer shall be responsible for the implementation of collective bargaining contracts.

Chapter 3. PROHIBITION AGAINST DISCRIMINATION (p.19)

6-301 Non-Discrimination

No City employee or applicant for employment shall be discriminated against because of race, religion, national origin, age, political orientation, marital status, sex, handicap, or for any cause not reasonably related to the accomplishment of a legitimate governmental purpose. The City shall take affirmative action for the recruitment and advancement of members of groups under represented on any level of City employment as compared to the minority and sex composition of the City.

Chapter 4 EMPLOYMENT CONTRACTS (p.19)

6-401 Limitation on Employment Contracts

All employment contracts for all at-will employees, including Mayoral appointees, City department directors, and at-will employees of any and all agencies, boards, and commissions of the City, shall be limited to a maximum term of one year. Furthermore, no such employment contract shall include terms that provide for a payment at the time of separation from employment in excess of any compensation derived from vested or accrued benefits, or payments required by law. If a department, agency, board, or commission cannot reasonably fill a position with a qualified individual under these limitations, a position may be exempted from one or more of these limitations upon written recommendation of the Mayor and the approval of City Council by resolution. These limitations shall not apply to contracts established prior to January 1, 2016.