

1. Agenda & Packet - Sustainability 07-13-2020

Documents:

[SUSTAINABILITY COMMISSION - 13 JUL 2020 - AGENDA - PDF \(1\).PDF](#)



AGENDA

Sustainability Commission Meeting

7:00 PM - Monday, July 13, 2020
Zoom Meeting

Page

1. CALL TO ORDER
2. ROLL CALL

Commissioner Heine
Commissioner Bayha
Commissioner Foley
Commissioner Greenwald
Commissioner Cannon
Commissioner Gibbons
Commissioner Collins
Commissioner Michalowski
Council member Wilcoxen
Director Akers
3. INTRODUCTIONS
4. PUBLIC COMMENT (3 MINUTES)
5. PRESENTATIONS
6. AGENDA APPROVAL (5 MINUTES)
7. CONSENT AGENDA (2 MINUTES)
 - 7.1. Approval of minutes from June 8, 2020 3 - 5
[Sustainability 6-8-2020 Reg Minutes](#)
8. RESOLUTIONS/MOTIONS/DISCUSSIONS
 - 8.1. SJ-EJ Resolution 7
[Ypsilanti Sustainability Commission SJ-EJResolutionDraft](#)
 - 8.2. Sustainability Plan (1 HOUR) 9 - 90

Action Plan Prioritization for Ypsilanti's Sustainability Plan

Commissioner Feedback

Ypsilanti Resilience Hubs

Support for Pollinators-Friendly Plants

Temporary Hand Washing Station for Parks
[Sustainability Plan -May 11](#)
[Prioritization Matrix - Sustainability Commission](#)

[Commissioner Feedback](#)
[Resolution 2020-002 - Support for Pollinator-Friendly Plants Feb28](#)
[Native Landscaping resolution, ordinance, recommendation](#)

8.3.	USDA Community Compost and Food Waste Reduction Grant (10 MINUTES)	91
	<u>USDA Community Compost and Waste Reduction Grant</u>	
8.4.	Ann Arbor Solarize Program	93
	<u>Solarize onePager Ypsi v2 (002)</u>	
9.	WORK SESSIONS	
9.1.	<i>Ypsilanti Resilience Hubs</i>	
10.	COMMISSIONER REPORTS (10 MINUTES)	
11.	PUBLIC COMMENT (3 MINUTES)	
12.	PROPOSED BUSINESS (5 MINUTES)	
13.	ADJOURNMENT	



MINUTES

City of Ypsilanti SUSTAINABILITY COMMISSION MEETING Virtual Meeting

Monday, June 8, 2020
7:00 P.M.

I. CALL TO ORDER: 7:04 p.m.

II. ROLL CALL

Keith Michalowski	Present	Katy Greenwald	Present
Nancy Heine	Present	Beth Gibbons	Present
Julia Bayha	Absent	Christian Cannon	Present
Bryan Foley	Present	Takunia Collins	Present

Also Present: Council Liaison Steve Wilcoxon
Staff Liaison Ronald Akers, Public Services Director
Commission Recording Secretary, Nancy Hare-Dickerson

Additional Staff Present: Andrew Hellenga, City Clerk
Sarah Stachnik, Deputy Clerk
Bonnie Wessler, Public Services Project Manager
Andy Aamodt, City Planner

III. PUBLIC COMMENT- none

IV. AGENDA APPROVAL

Commissioner Michalowski: Request to move "Approval of minutes from February 10, 2020" from the Agenda Approval section to the Consent Agenda section.

Foley (Second: Heine) moved to approve the Agenda as amended.

Roll Call Vote – Ayes: Commissioners Michalowski, Heine, Foley, Greenwald, Gibbons, Cannon, Collins

Nays: None

Absent: Commissioner Bayha

Unanimous. Motion: Carried

V. INTRODUCTIONS

Michelle Bennett, City Planner at Beckett & Rader introduced herself. Ms. Bennett stated that she has been working on the Master and Sustainability Plan.

VI. CONSENT AGENDA

1. Approval of February 10, 2020 minutes

Greenwald (Second: Cannon) moved to approve the February 10, 2020 Minutes as submitted.

Roll Call Vote – Ayes: Commissioners Michalowski, Heine, Foley, Greenwald, Gibbons, Cannon, Collins
Nays: None
Absent: Commissioner Bayha
Unanimous. Motion: Carried

VII. PRESENTATIONS- none

VIII. RESOLUTIONS/MOTIONS/DISCUSSIONS

- 1. The Sustainability Commission and its role in advocating for social, environmental and economic justice in our community during these times of COVID-19 and growing civil unrest.**
– Commissioner Beth Gibbons

Commissioner Gibbons shared her thoughts that in this current time, coming through COVID-19 and with the demonstrations and uprisings around the country speaking to police brutality, justice and equity, that it is an important time for the Sustainability Commission to be an advocate for what this holistic view of sustainability is of economics, environment and social well-being. She indicated that she would like to work with other commissioners to develop a statement of the Commission's position on the role it should play in advancing authentic sustainability for our community, which would then be brought to Council. *[Discussion ensued]* Commissioners Heine and Collins also volunteered their involvement.

IX. WORK SESSION

1. Sustainability Plan

Michelle Bennett, City Planner at Beckett & Rader provided an overview of the Draft City of Ypsilanti Sustainability Plan *[reference PDF material]*, outlining such topics as: Why is Ypsilanti Writing a Sustainability Plan, Definition of Sustainability, Greenhouse Gas Study, Environmental Challenges and Sustainability Policies, Public Input, and Action Plan.

[Commissioner query and comment occurred during the overview, with discussion following]

[Commissioner Michalowski will consolidate a list of proposed edits received from commissioners]

[Commission consensus to continue discussion at the next meeting]

X. COMMISSIONER REPORTS

Commissioners, who wished, shared updates of meetings, events and activities they have been involved with and/or are working on related to sustainability.

XI. PUBLIC COMMENT-none

XII. PROPOSED BUSINESS

Commissioner Michalowski notated items for addition to the July agenda.

XIII. NEXT MEETING DATE

Monday, July 13, 2020

XIV. ADJOURNMENT: 9:13 p.m.

Heine (Second: Gibbons) moved to adjourn the meeting of the Sustainability Commission.

Voice Vote: Unanimous

Motion: Carried

A resolution of City of Ypsilanti' Sustainability Committee affirming its commitment to the principles of environmental and social justice in the wake of the combined disparate effects of COVID-19 on our community and the long history of police violence against African Americans.

Whereas, City of Ypsilanti condemns acts of brutality, racial profiling, and the use of excessive force by law enforcement officers.

Whereas, City of Ypsilanti supports strengthening efforts to promote accountability for individual law enforcement officers and police departments.

Whereas, the global pandemic COVID-19 has impacted the health, social and economic fabric of the City of Ypsilanti community;

Whereas, the disproportionate impact of the novel coronavirus has been on communities of color;

Whereas, City of Ypsilanti is committed to equity, fairness, justice, protecting its most vulnerable residents;

Whereas, the City of Ypsilanti is preparing to pass its first Sustainability Plan;

Now, therefore, be it resolved by (City of Ypsilanti) as follows:

The Sustainability Commission supports strengthening efforts to promote accountability for individual law enforcement officers and police departments.

The Sustainability Commission supports immediate steps to analyze police department structures, policies, and budgets and to reimagine how they support local elected leaders' primary responsibility for ensuring the health and safety of their residents.

The Sustainability Commission is committed to centering our community's responses to the COVID-19 global pandemic in racial equity.

The Sustainability Commission supports the City of Ypsilanti dedicating resources, platforms, political will and authority to identifying and addressing the ways that the novel Coronavirus may exacerbate existing inequities in our communities and lifting up the medical and social needs of the most marginalized and demonstrate how centering their needs ensure the safety and health of all.

This resolution reconfirms our commission's commitment to social and environmental justice, and advancing the mission of this body to advocate, educate and promote the social, economic, and environmental health of the community now and into the future.

Passed and adopted by _____

Date: _____

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The City of Ypsilanti Sustainability Plan

"It's real. It's us. It's bad. Scientists agree. There's hope."

Anthony Leiserowitz, Director Yale Project on Climate Change Communication

Ypsilanti, in many ways, is a state leader in sustainability planning, yet these efforts had not been folded into the Master Plan until now. Inventories and strategies could be found in the City's Climate Action Plan, Energy Plan, or Alternative Fuel Policy. While these plans hold tremendous value, the recommendations within them carry considerably more enforceable weight when included in the City's primary policy document. The Master Plan is a community's most comprehensive planning document and serves as the policy basis for the Zoning Ordinance, which directly regulates land use. Zoning provisions have the legal force to protect natural resources, prioritize sustainable development, and improve the infrastructure that enables nonmotorized travel. The previous efforts were influential and integral to the City's "green" practices, and this next step officially codifies sustainability as a City priority through the compilation and advancement of sustainable strategies into a single cohesive document.

The Impetus

Risk analysts, including the US Department of Defense, rank climate change as one of the most serious threats to ecosystems and people around the world.^{1 2} "Climate change" refers to a broad range of global phenomena resulting predominantly from the large-scale burning of fossil fuels, which add heat-trapping gases to Earth's atmosphere. The result is a variety of challenges: extreme heat and increased cooling days, more severe winter storms, changing coastal dynamics, rising water levels, disruptions to growing seasons, pest migrations, habitat loss, temperature volatility, increasing extreme weather events and associated stress on natural ecosystems, and risk of drought that will disturb of the characteristics and functions of natural processes.³

The Great Lakes Integrated Sciences and Assessments (GLISA) Center is one of the eleven regional centers funded by the National Oceanic Atmospheric Administration. It is a partnership between the University of Michigan and Michigan State University that seeks to provide usable and useful information on climate change impacts to decision makers across the Great Lakes Region. GLISA provides both *historic information*, derived from over 200 quality-controlled weather stations located in communities across the region, and *future climate information*, derived from regional and global climate models (RCMs and GCMs), as well as dynamically downscaled climate models. Historic climate information is useful for providing locally relevant information that communities can use to assess how well their physical infrastructure and social systems are faring in the face of current climate change, whereas future climate information is useful for incorporating into capital improvement processes when decisions will affect infrastructure investments over 10, 20, or 50 years.

¹ Intergovernmental Panel on Climate Change (IPCC). Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change <http://www.ipcc.ch/report/ar5/syr>

² U.S. Department of Defense. Quadrennial Defense Review. Washington, DC. 2014.

³ Planning for Community Resilience in Michigan. 2017. <http://mirisingtide.org/wp-content/uploads/Resiliency-HandbookAPRIL-242017.pdf>

Some positive news is that this scientific awareness is reaching a critical mass of Americans (and Ypsilanti residents). Most Americans believe global warming is happening (71%) and that it will harm future generations (73%).⁴ Public opinion estimates generated by the Yale Program on Climate Change Communication and the George Mason Center for Climate Change Communication suggest that 78% of Washtenaw County residents believe climate change is happening, 76% believe climate change will harm future generations, and 83% support policies that bolster renewable energy or limit CO2 emissions.⁵

Regional and Local Changes

GLISA offers curated history climate information at two scales:

- Climate Division, which are multi-county, NOAA Designated regions,
- Quality-controlled weather stations.

Included Counties	Watersheds
Genesee	Birch-Willow
Lapeer	Cass
Lenawee	Clinton
Livingston	Detroit
Macomb	Flint
Monroe	Huron
Oakland	Lake Erie
St. Clair	Lake Huron
Wayne	Lake St Clair
Washtenaw	Ottawa Stoney
	St. Clair
	Raisin
	Shiawassee
	Tiffin
	Upper Grand

Significant increases in precipitation across the entire region can be seen in data collected over the past 70 years (1950 to present). Increased seasonal precipitation is most notable in the spring and fall: fall precipitation has increased over 28%, and spring precipitation has increased over 21%. The region is experiencing this precipitation increase within storm events that are also increasing in severity, resulting in more rain falling in more concentrated bursts.

Precipitation Change 1950 – 2019 Southeast Michigan Climate Division

	in	cm	%
Annual	5.58	14.17	18.5
Winter	0.61	1.561	11.2
Spring	1.72	4.39	21.1
Summer	1.13	2.88	12.0
Fall	1.99	5.07	28.4

Source: GLISA

Over the same period, the average annual temperature has risen across Southeast Michigan by 2.4 degrees Fahrenheit (°F), and the gap between average high and low temperatures is closing and swinging upward towards warmer temperatures. Winter and spring are considerably warmer, with rising winter lows and earlier last frost dates leaving fewer days under 32°F in the spring season.

⁴ Matthew T. Ballew, et al. 2019. Climate Change in the American Mind: Data, Tools, and Trends, Environment: Science and Policy for Sustainable Development. 61:3, 4-18, DOI: 10.1080/00139157.2019.1589300
<https://www.tandfonline.com/doi/full/10.1080/00139157.2019.1589300>

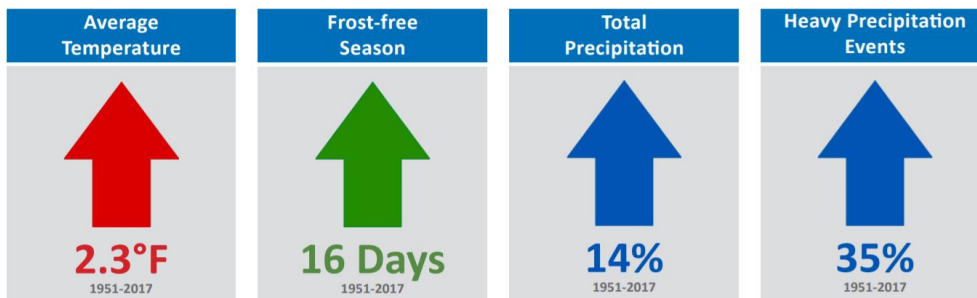
⁵ Marlon, J. Washtenaw County Michigan Public Opinion on Climate Change, 2019.
https://factsheets.yccc.tools/Michigan/Washtenaw_County

Rise in Temperature from 1950 through 2019

Season	°F	°C
Annual	2.43	1.35
Winter	2.80	1.55
Spring	2.86	1.59
Summer	1.91	1.06
Fall	1.94	1.08

Source: GLISA

Other important changes, in addition to temperature and precipitation, are occurring locally. Increases in freeze/thaw cycles create stress on built infrastructure. Extensions of the growing season, which improve agriculture, can also increase risk of vector-borne illness. Extended heat events in the summer and ice storms throughout the winter lead to more stress on the electric grid, increase the likelihood of power outages, and further exacerbate existing vulnerabilities among Ypsilanti residents.

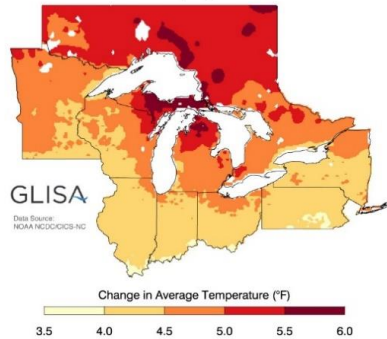


Source: GLISA

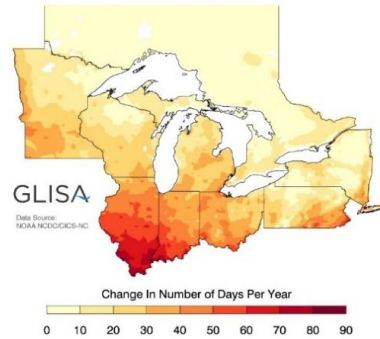
Future Climate Change

While future climate change can be more difficult to predict with the same precision historic information allows, GLISA can predict regional trends with high levels of certainty thanks to improved climate models and climate science translators. In terms of both temperature and precipitation, challenges are anticipated in the mid- to long-term. By the period of 2040-2070, southeast Michigan is expected to warm by 4.5°F annually. This average increase will be accompanied by more high heat days: in the same period, it is anticipated that there will be 30 to 40 more days over 95°F.

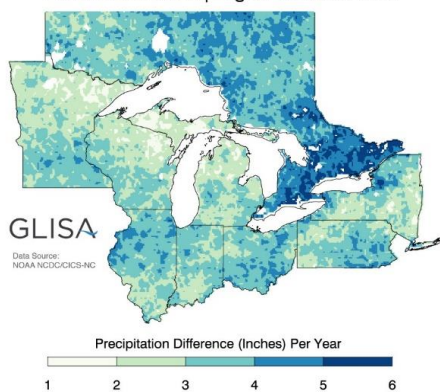
Projected Change in Average Temperature
Period: 2041-2070 | Higher Emissions: A2



Projected Change in Number of Days Over 90°F
Period: 2041-2070 | Higher Emissions: A2



Projected Change in Average Precipitation
Period: 2041-2070 | Higher Emissions: A2



Increases in overall precipitation and acute rain events are also expected for our region during the same period. Annual rainfall is expected to increase by three to four inches. By 2040-2070, the region is likely to experience up to two more days per year with heavy precipitation, defined as the 2% heaviest precipitation events in the area.⁶

It is important to remember that while understanding climate change is critical to the process of planning for Ypsilanti's future, these impacts may also open new opportunities for our community and region that set us apart from other areas. A temperate climate, an extended growing

season, an abundance of freshwater, and a legacy of innovation and production place southeast Michigan on the top of the list for "climate positive" regions of the world. To properly prepare ourselves and our community for the future, we must adequately address how climate impacts do and will exacerbate existing vulnerabilities in our community, but also be diligent to build a resilient future – one that that not only "bounces back," but "bounces forward."

Environmental Justice

In any crisis, the most vulnerable populations bear a disproportionate level of the burden. Their lack of resources and access to resources means that they will suffer greater exposure to climate change threats. Environmental justice (EJ) is the "fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with the respect to the development, implementation, and enforcements of environmental laws, regulations, and policies." This definition from the President's Executive Order in 1994 was designed to protect communities that had regularly been harmed by environmental contamination. On a broader scale than originally

⁶ GLISA. Great Lakes Regional Climate Change Maps. <http://glisa.umich.edu/resources/great-lakes-regional-climate-change-maps>

intended, the sentiment applies today to the effects that climate crisis will have on the disadvantaged. Nearly 25 years later, as climate change has inequitably descended upon us, the City of Ypsilanti understands that its populations of people of color and low-income households are more vulnerable; where possible, this plan addresses what can be done on a local level to protect these citizens from the worst of these changes. An in-depth analysis that identifies vulnerable populations and structures that are disproportionately impacted by crisis would provide greater insight in how to protect them.

Definition of Sustainability

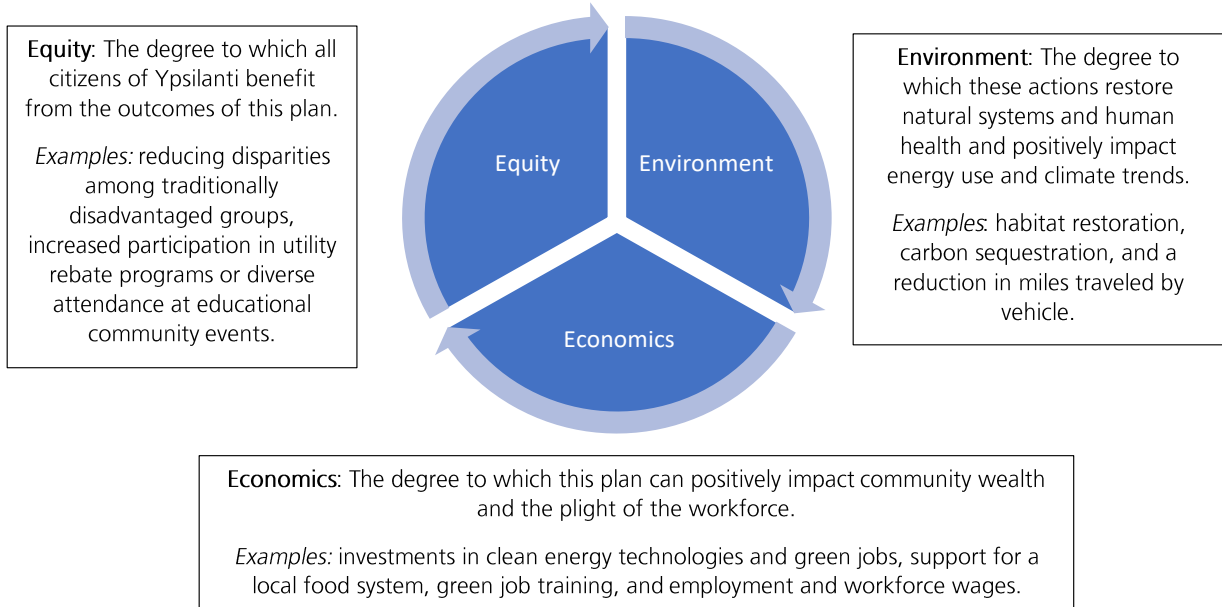
Sustainability is a tricky term to define. When the residents were asked in the community-wide survey, "What does sustainability mean to you?" the answers were unsurprisingly varied. Most of them touched on at least one aspect of the three-pronged definition using phrases like "repairing our natural environment," "having a ...diverse community without pricing people out," and "clean water, healthy citizens, easier access to public transportation." The open responses were telling; Ypsilanti residents aptly identified that becoming a more sustainable city requires all-encompassing change.

A commonly accepted definition of sustainability is "meeting the needs of the present without compromising the ability of future generations to meet their own needs." This definition comes from *Our Common Future*, a report published in 1987 by the United Nations (UN) that suggested concrete and realistic proposals for dealing with environmental and development issues. In 2017, the Ypsilanti City Council passed Resolution No. 2017-238 approving a recommendation from the Sustainability Commission that defined sustainability with a nod to the UN definition:

"Achieving a balance of ecological, social, and economic considerations to provide for an equitable path for the growth and improvement of our community in the uses of our resources, remaining conscious of the historical context, while ensuring the availability and vitality of those resources for future generations."

As such, social equity, environmental health, and the economy become the three interrelated pillars of sustainable action. This Sustainability Plan will focus primarily on the environment; the social and economic sides of planning are discussed in greater detail in the City's Master Plan. However, recommended sustainability actions call out which of the three pillars it touches to expose the interconnected nature of sustainability planning.

Three Pillars of Sustainability



Environmental Challenges and Sustainability Policies

An inventory of the City's and region's sustainability policies was conducted to determine gaps in policy coverage. To start, environmental challenges were examined to describe existing conditions, and then City and regional policies were reviewed to determine which actions, if any, specifically address those challenges. Where there is no alignment between challenge and policy, there are opportunities to tailor strategies locally or partner with organizations that have more influence, expertise, or resources for problem-solving assistance.

The Sustainability Commission was established in 2017 with a primary mission of addressing environmental issues and prioritizing sustainability policies. In this short time, the Commission has embarked upon and accomplished numerous initiatives, including:

- Passing a native plants resolution
- Partnering with the Washtenaw County Conservation District to provide support for grant for tree planting, workshops, and training for tree maintenance
- Reviewing and recommending the 2018 Energy Plan
- Partnering with the City of Ann Arbor on the Net Zero Initiative
- Passing an Energy Star Resolution to identify underperforming buildings and apply for certification
- Exploring recycling improvement grants

This Sustainability Plan is intended to serve as a data resource, community reflection, and policy guide to the Commission's future actions.

Energy

In November 2019, the City of Ypsilanti committed to carbon neutrality by 2035 in partnership with the City of Ann Arbor as a response to a “climate emergency.” The resolution calls for City Council to budget staff and resources to become carbon neutral. Achieving this goal will require the City to first measure, and then reduce, “greenhouse gas” (GHG) emissions that trap heat in the atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases.⁷

The City of Ypsilanti has focused on measuring local emissions for a decade or more. In coordination with the 2012 Climate Action Plan, 2005/2008 community and government greenhouse gas emissions were evaluated. An updated Greenhouse Gas (GHG) Study was conducted alongside this Sustainability Plan to determine if their actions were achieving reductions in carbon emissions. The 2020 City of Ypsilanti Community and Government Greenhouse Gas Inventories present 2018 emissions from the City of Ypsilanti community as a whole and emissions from the City of Ypsilanti government operations. The inventory follows the approach and methods provided by the ICLEI US Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (US Community Emissions Protocol). ICLEI is a global network of local and regional government committed to sustainable urban development. Because this protocol differs from the 2012 methodology, the results are not directly comparable, but do show movement in emissions.

Community Inventory

The City of Ypsilanti looked at community emissions through multiple frames, including “community-wide activities” and “government significant influence.” The community-wide activities frame shows the extent to which community members’ use of energy, materials, and services contribute to GHG emissions within or outside of the City boundary, regardless of whether the City has significant influence over those emissions. The findings show that the City of Ypsilanti’s total 2018 community emissions were 269,180 metric tons of CO₂e, comprised primarily of commercial energy, residential energy, and transportation sectors.⁸

Units of Measurement

CO₂ – carbon dioxide

CO₂e – carbon dioxide equivalent, a standard unit for measuring carbon footprints that conveys the impact of different greenhouse gases in terms of the functionally equivalent amount of CO₂

Transportation

I-94 passes through the City of Ypsilanti and represents a significant source of transportation related emissions which are not directly attributable to the community. The Southeast Michigan Council of Governments (SEMCOG) estimates that travel on I-94 represents 53% of all total on-road vehicle miles traveled within the City annually while non-highway vehicle miles represent 47%.

⁷ Environmental Protection Agency. “Greenhouse Gas Emissions.” <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

⁸ City of Ypsilanti 2020 Inventories of Community and Government Greenhouse Emissions. Figure 2. Pages 28-29.

Community Inventory: Significant Influence Frame

Despite its lack of direct control over major GHG contributors, the City included sources or activities in which it can exert significant influence over energy consumption. Already measured as the largest greenhouse gas contributors, the categories “residential” and “commercial-industrial” saw an increase in emissions between 2008 and 2018, making households and businesses starting points for new mitigation policy. It is possible that the uptick in commercial and residential emission is related to the legalization of marijuana for personal and commercial use, given that the time period coincides with the implementation of these notoriously high energy operations. It was estimated that through policy, Ypsilanti can influence 64% of community emissions (171,310 MT CO₂e).⁹ This figure will become the baseline for setting an emissions reduction target, against which future emissions in the “significant influence frame” will be measured.

Residential
Within the residential sector, electricity use accounted for 60% of emissions, while natural gas use in stationary combustion accounted for 40%.

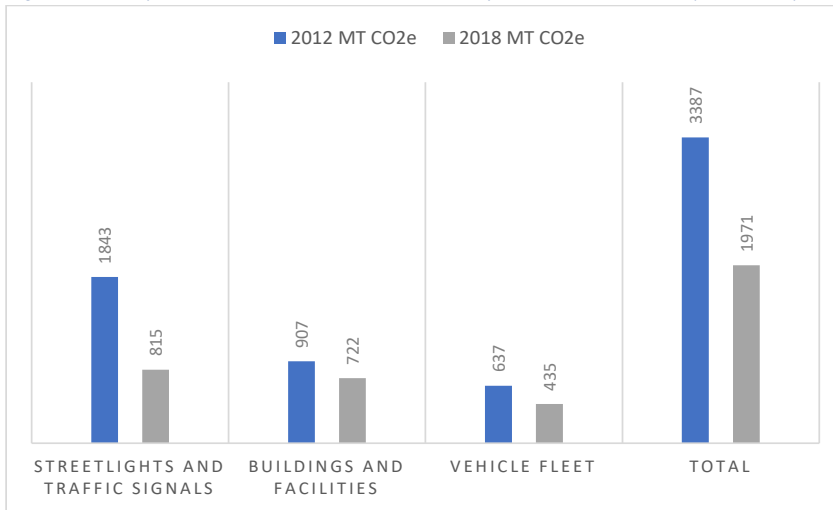
Government Operations GHG Emissions Inventory

The government operations inventory is a separate greenhouse gas emissions inventory that takes a deeper dive into emissions derived from municipal operations. The largest emitters are streetlights and traffic signals, accounting for 32% of emissions, followed by vehicle fleet emissions that comprises 17% of the total.¹⁰ Actions to reduce emissions in both sectors are substantially underway in the City and will continue to play a key part of a carbon neutrality strategy. Ypsilanti has already transitioned many of its light fixtures to LED and begun introducing hybrid and electric vehicles to its fleet. Emissions are expected to continue dropping as the City continues to address harder-to-replace streetlights and continues fleet modifications. Not including emissions from employee commutes and solid waste, government operations emissions have dropped by 42% over a decade!

⁹ City of Ypsilanti 2020 Inventories of Community and Government Greenhouse Emissions. Figure 15. Pg 37.

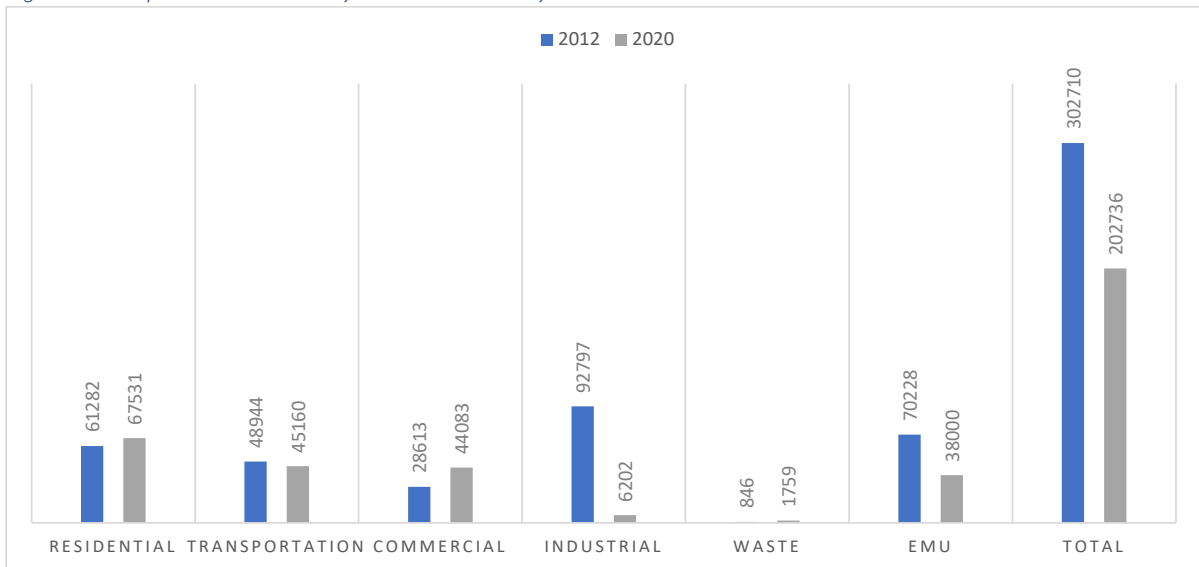
¹⁰ City of Ypsilanti 2020 Inventories of Community and Government Greenhouse Emissions. Pgs 42 and 43.

Figure X: Comparative Government Emissions by Sector 2012-2018 (MT CO₂e)



Source: EcoWorks

Figure X: Comparative Community CO₂e Emissions by Section 2012 & 2020* GHG Inventories



Source: EcoWorks

Sustainability Policy: Energy

The City has made successful strides in increasing its renewable energy portfolio. Ypsilanti continues to lead by example in its actions and in streamlining the solar permitting process to

enable property owners to follow suit. The City has enabled solar installation as far as its authority permits, stopping just short of mandating them on new construction.

Ypsilanti worked with DTE and Solar Currents to install a solar farm by Highland Cemetery. The City has also installed solar panels on most of its municipal buildings and converted most of its lighting – both building and streetlighting – to LED. It has also allotted \$250,000 from budget surpluses to be used as a revolving loan funding to make energy efficiency improvement to municipal buildings. These efforts have translated into noticeable reductions in emissions since the last inventory was conducted. Moreover, the City has pursued other best practices that include low-flow water fixtures, programmable thermostats, air sealing, staff behavior changes, and increased awareness about conservation and efficiency. Another City policy that may have contributed to emissions reduction is an increased financial contribution to expand bus service, potentially taking cars off the road. Energy efficiency measures for municipally operated facilities have resulted in significant savings.

Commercial

In 2017, EMU replaced an aging cogeneration unit with a new high efficiency unit projected to reduce annual emissions of CO2 by 21,305 tons/year and reduce NOx emissions by 112 tons annually. Emissions from Eastern Michigan University represent 46% of total commercial emissions in the City of Ypsilanti.

Source: Ecoworks

It has only fallen short on its most ambitious goal related to energy and light pollution: Resolution 2013-175 sought to place solar roofs on 1,000 properties and generate five megawatts of electricity from distributed solar by 2020.¹¹ Ypsi Solar has calculated that 55 sites have solar panels totaling about 1.26 megawatts of capacity. Based on those calculations, the City has realized 5.5% of the solar roof target and 24.8% of the megawatt target. The City should continue to address major projects at the most energy-intensive facilities and implement no- or low-cost efficiency opportunities at all facilities. Larger projects, which require more planning and money, are integrated into capital improvement plans.

¹¹ City of Ypsilanti, "Resolution for 1,000 Solar Roofs Initiative", No. 2013-175, September 3, 2013. http://www.solarypsi.org/repository/documents/cityhall/Resolution_2013-175_1000_Roofs_by_2020.pdf

Next Steps

A next step in emission reduction for Ypsilanti could be the purchase of renewable energy certificates (RECs) to expand consumers' service options and support renewable electricity development. An REC is a tradeable market-based instrument used in electricity markets. It allows organizations that purchase RECs to account for nonrenewable electricity use. REC purchasers diversify their consumption by expanding its use of low- to zero-emission energy sources and tracking its growing reliance on renewables. RECs are a flexible tool because they can be purchased separately from electricity, meaning the purchasing organization does not need to alter its existing power contract to use greener power. The two can be matched and use the same infrastructure.¹²

Making headway on properties that are not municipally owned is also an issue of equity and education. Increasing energy efficiency for residents and business owners means reducing the percentage of income spent on housing utility costs in addition to reducing the amount of energy consumed. Education programs for residents could help lower residential usage; this awareness and access may be especially promising in Ypsilanti given that residents are supportive of increased energy efficiency standards and the use of renewable energy. Promoting higher standards for new development, namely commercial and industrial, could be encouraged through incentives for developers to pursue energy-efficient standards (Energy Star, LEED, Living Building Challenge), applications for tax abatements, and promoting existing financial tools to help developers meet these standards during and prior to the site plan review process. For small businesses, Retired Engineer Technical Assistance Program (RETAP) provides pollution prevention, water conservation, and energy efficiency programs free of charge. RETAP teams review a site's operations and recommend strategies for reducing waste at a significant cost savings. Eligible businesses must be independently owned and operated, have fewer than 500 employees, and be primarily engaged in manufacturing.¹³

Another issue to tackle in Ypsilanti is residential energy consumption. Renter-occupied units are a large portion of housing stock, so energy efficiency and safety of rental properties could lead to substantial reductions in use. The up-front costs of major efficiency improvements have so far exceeded their profit potential in the estimation of the local landlord community, and so the City will be in a stronger position to implement required standards as the market strengthens. In the meantime, there are intermediary steps to take. As outlined in the 2012 Climate Action Plan, a requirement to provide information regarding utility charges allows potential tenants to choose a unit based on its energy performance. During rental inspections, a certification process that verifies which units have met energy standards would enable tenants to more easily shop and compare units. Certification criteria can be based on existing programs such as the "Energy Star Homes"

Energy Competitions

In Traverse City, the month-long "kWh Challenge" was organized. Over 50 staff members from city departments participated in weekly challenges of unplugging unused electronics, using efficient computer settings, and using daylight as opposed to artificial light. These represent simple behavior changes that have significant savings, while creating a friendly competition to train staff on energy efficiency.

Source: SEEDS

¹² EPA Green Power Partnership. "Offsets and RECs: What's the Difference?" https://www.epa.gov/sites/production/files/2018-03/documents/gpp_guide_recs_offsets.pdf

¹³ EGLE. Pollution Prevention and Energy Efficiency Assessments. <https://www.michigan.gov/egle/0,9429,7-135-3304-11899--,00.html>.

program. For eligible low-income homeowners, Washtenaw County has a weatherization program that reduces monthly energy bills by improving a home's insulation.

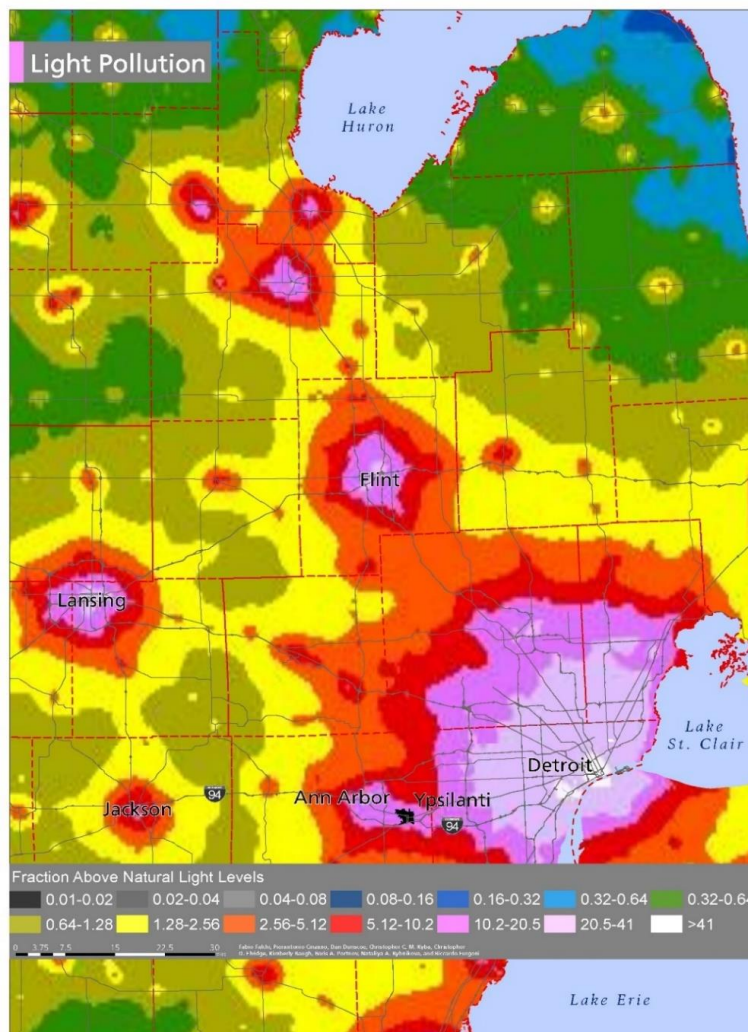
The coordination of reducing municipal and community emissions is the job for a dedicated staff position. Having an Energy Manager position that is integrated into City Hall could be responsible for making enduring progress on these goals. Many of the energy action plan items derived from the 2018 Energy Plan could fall under the Energy Manager's purview. An Energy Manager could improve data collection processes, spread knowledge of energy management among city staff, analyze trends in energy use, and develop communications with the residents and property owners. This person would lead a team to research and update available energy-saving equipment, determine how to incorporate more renewable energy in the City's portfolio, promote policies and incentives for reducing energy use, seek grants and other funding mechanisms to implement clean energy projects, liaise with the Sustainability Commission, expand outreach to commercial and industrial uses, and manage capital improvement projects related to energy efficiency. In recognition of the substantial financial commitment that a newly-created staff position represents for the City, a reasonable starting place could be to fund the position for one year and expect an early outcome of its efforts to result in savings sufficient to cover continued funding.

Importantly, development of this system will build institutional knowledge that outlasts the employment of any one dedicated staff member. A system that regularly schedules a GHG inventory update every five years using the same methods and program that forecasts reductions and benchmarks municipal utility bills to an annual goal would be a valuable organization change. The system should include internal reporting from the Sustainability Commission so positive results can be shared and celebrated with the community.

Ypsilanti has joined Ann Arbor in the carbon neutral goal by 2035. Recently, Ann Arbor has published a draft Net Zero plan with seven strategies for getting there. The strategy "Power our Electrical Grid with 100% Renewable Energy" set forth in the plan is ambitious but necessary. Estimated to cost \$4.1 million and reduce greenhouse gases by 41%, the goal is supported by four actions. Community choice aggregation, which gives cities control over procuring power for its community, is the chosen route that has one major road block. This step is not enabled by the state. Ann Arbor is working on recommendations for legislators to allow cities to bulk buy power on behalf of their residents and businesses. Through economies of scale and the right to integrate as much renewable energy as the community can manage, Ann Arbor has committed to buy 100% renewable energy by 2027 and provide it for the entire community through community choice aggregation. As a partner in this effort, Ypsilanti should support and lobby the state with Ann Arbor for legislation that has the power to convert widescale energy use into clean consumption.

Through the Net Zero community engagement sessions, microgrids were mentioned as a way to produce, convey, and store energy. Microgrids are decentralized nodes that transmit energy with the capacity to disconnect from the traditional grid. In times of crisis, for example storms that cause major power outages, an entire section of a city can lose energy if the traditional centralized grid is hit. Because microgrids can disconnect from the traditional grid, they mitigate the effects of storm on households and businesses. They can be powered by generators, batteries, or renewable sources which plugs them into renewable energy goals and adaptation goals. Still, there is little discussion of deployment as further research is needed into how they should be operated and where they should be placed to have the largest impact.

On a larger scale, the City's support for sustainability is reinforced when it participates in regional, national, and international commitments to energy, climate, and sustainability causes. Ypsilanti has formed pivotal partnerships locally with the Michigan's Suburbs Alliance, EGLE, DTE, Ann Arbor, among others but its work can be hoisted to higher heights if it were to sign on to the Paris Climate Agreement, The Sierra Club's "Ready for 100" pledge, and the Global Covenant of Mayors for Climate and Energy. Where the goals embedded in each of these organizations' core mission may seem difficult to attain, the connection to case studies, methodologies, policies, and expertise will regenerate interest and action in the pursuit of low-energy consumption.



Light Pollution

The inappropriate use of artificial light is referred to as “light pollution,” and includes excessive brightness, the brightening of the night sky, light where it is not needed, and the clustering of light sources.¹⁴ Light pollution alters the perception of many nocturnal animals by turning the night into day, inhibiting their ability to forage, hunt, and breed. Migratory birds that use the moon and stars to navigate can be pulled towards urban areas and collide with lit buildings.¹⁵ Outdoor lighting also impact insects that are attracted to the cooler white lights and less attracted to the warmer yellow lights.¹⁶ Consequently, warmer lights have less influence on insects’ lifecycles and on the greater chain of its

¹⁴ Light Pollution, International Dark Sky Association, <https://www.darksky.org/about/>

¹⁵ Wildlife and Ecosystems, International Dark Sky Association, <https://www.darksky.org/light-pollution/wildlife/>

16 Servick, Kelly, "Which Light Bulb Attracts the Fewest Bugs? Study Reveals Surprises." Science, Feb. 14, 2016. <https://www.sciencemag.org/news/2016/02/which-light-bulb-attracts-fewest-bugs-study-reveals-surprises>

predators. Regulating and reconfiguring lighting can help alleviate disruptive migratory bird patterns.

The City of Ypsilanti has an artificial-to-natural light ratio that ranges from 10.2 to 20.5, indicating that the amount of night light is 10-20 times above natural levels.¹⁷ The United States Department of Energy estimated that 35% of lighting is wasted, costing roughly \$3 billion dollars annually. With some changes, buildings can reduce lighting to solve problems of waste.

The challenges to making lighting upgrades are varied. To start, the DTE streetlights in Ypsilanti use white light that is not dark sky compliant, meaning the City could not adhere to new regulations that it would enforce on others. Another barrier is the cost of a photometric study needed to ensure that even the current standards are met, which can be prohibitive for investors. Continuous compliance with lighting standards is also an issue, as property owners may change fixtures without seeking a City permit or even verifying that the new fixture meets the code. Ypsilanti's Historic District Commission, which oversees development in one of the state's largest historic districts, only approves warmer lights that are friendlier to insects and night vision, but finds the modern fixtures that accommodate dark sky lights are not compatible with the historic aesthetic.

Sustainability Policy: Light Pollution

The policy and practice of lighting are not perfectly aligned, which often signals that changes to the ordinance are warranted. While Article VI Section 122-609 of Ypsilanti's Zoning Ordinance states that "parking and loading facilities, building entrances, and building exits used during night-time shall be artificially illuminated," some developments have been allowed to turn lights off for periods of the night. The parameters around lighting standards are based on the effect on adjacent property owners, the overall height of a lighting fixture, and the intensity of the light, but the complexity of measuring these criteria on varying properties is time-intensive. To reduce light pollution, the International Dark Sky Association created a Model Lighting Ordinance that recommends creating lighting zones permitting different intensities, applying "curfews" that turn off lighting after a given time, minimizing uplighting, and instituting performance standards indicating a maximum light measurement based on site conditions.¹⁸ Motion detectors can help achieve many of these suggestions, along with an added bonus of reducing energy waste, and could be required by ordinance. Consideration of new guidelines should be rectified with Ypsilanti's existing conditions. If a lighting curfew seems less realistic, for example, minimizing uplighting could be emphasized so that practice follows policy more closely with an emphasis on reducing energy consumption.

¹⁷ Cooperative Institute for Research in Environmental Sciences at the University of Colorado Boulder, <https://cires.colorado.edu/artificial-sky>

¹⁸ International Dark-Sky Association. "Model Lighting Ordinance." June 2011. https://www.darksky.org/wp-content/uploads/bsk-pdf-manager/16_MLO_FINAL_JUNE2011.PDF

Earth

Contamination

Ypsilanti's industrial history has left behind environmental contamination that the City must still confront. Michigan's Department of the Environment, Great Lakes, and Energy (EGLE) maintains a database of sites that have been affected by former development. The table "Contamination by Census Tract" shows the most up-to-date data available for underground storage tanks (found in the Appendix). These are tanks that have been buried underground to mitigate their risk of explosion, usually because they contain petroleum. Businesses have not consistently removed them before leaving the site, and after years of deterioration their contents leak into the soil. If left underground long enough, the contents could reach groundwater or other sources of drinking water. An estimated 47 leaking underground storage tanks (LUSTs) have been recorded in the City; the majority are closed, meaning that corrective action has been taken to stop the spread of petroleum or other hazardous substances.¹⁹

EGLE also tracks environmental contamination because of the significant impacts it can have on the drinking water supply and on residents living in proximity to these sites. This is a distinct database from LUSTs so that records are not duplicated. The main differences between the two systems are the source of the contamination, and which governmental division manages the sites. All other contamination releases, besides LUSTs, are covered under the Environmental Remediation Program (part 201). Twenty sites of environmental contamination were identified in the City.

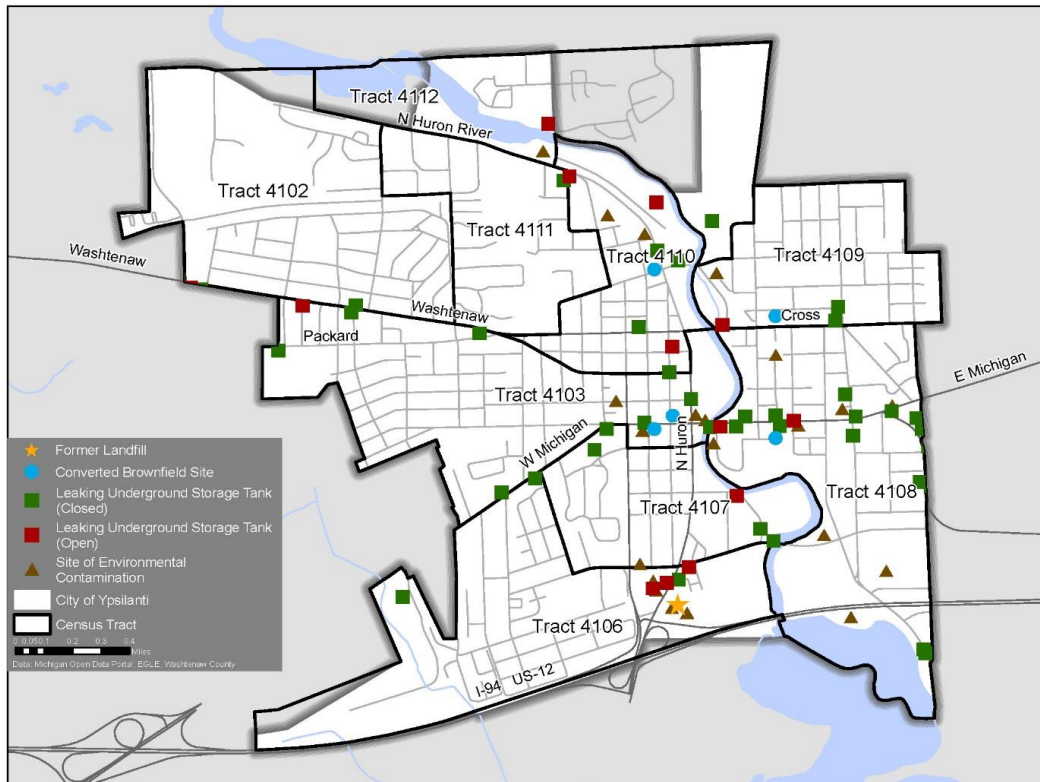
The "Contamination Map" illustrates the location of all known environmental contamination, LUSTs, and brownfields that were converted to usable sites in the City. Brownfields have the broadest definition, covering most of the contamination spectrum and therefore applies to the widest range of sites. Brownfield sites could have experienced the threat of environmental contamination, are already contaminated, contain blighted structures, or have been deemed functionally obsolete. The map shows that most of these sites are primarily clustered along commercial corridors, the rail line, the river, and less frequently in neighborhoods.

¹⁹ Underground Storage Tanks, United States Environmental Protection Agency. <https://www.epa.gov/ust/learn-about-underground-storage-tanks-usts>

The Bell Kramer Neighborhood

Home to about a dozen households, this neighborhood is immediately adjacent to a former city landfill that has not been used since 1967. The first phase of an environmental assessment was conducted in 2012-2013. Volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PNAs), metals, benzo(a)pyrene, and methane gas were detected at higher levels than the state permits. These substances produce substantial health and environmental risks. Property owners were notified because contaminations could have been migrating through the neighborhood. In 2017 and 2018, indoor air was tested in some of the Bell Kramer homes, and concentrations of contaminants were within acceptable ranges for the residents to stay.

Map X: Contamination Map



Sustainability Policy: Contamination

Contamination clean-up is often funded by higher levels of government, and specific projects are overseen by the state agency, EGLE. County-level Brownfield Redevelopment Agencies are an intermediary between these state and federal programs and the local municipalities with challenging redevelopment sites. The Washtenaw County Brownfield Redevelopment Agency (WCBRA) focuses on post-contamination efforts on a case-by-case basis as an economic and redevelopment tool, providing incentives in the form of grants, loans, and tax increment finance agreements that can be applied toward certain remediation costs in a proposed redevelopment project. The assistance is intended to make the cost to redevelop a brownfield site comparable to the cost of the same development in a “greenfield” (previously undeveloped) site on which remediation is not an issue. This helps to reduce sprawl and its associated vehicle emissions, makes use of established infrastructure, and prevents development damage such as contamination and habitat loss on previously undisturbed sites. While environmental remediation

Brownfield Criteria

One of the following:

Environmental contamination

The threat of contamination

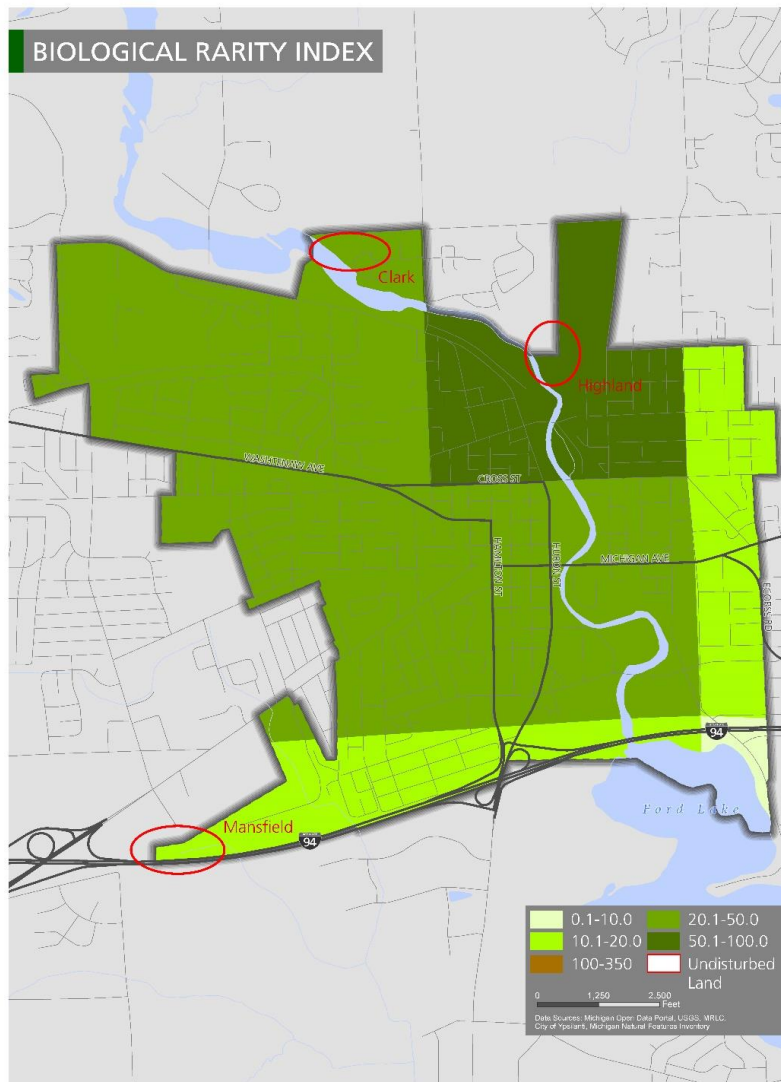
Blighted

Functionally obsolete

is a primary goal of the brownfield program, its overarching mission is redevelopment, and its tools are flexible enough to help communities fund previously restricted and generally more expensive redevelopment projects regardless of contamination level.

The Environmental Protection Agency's Brownfields program, from which state and community programs are enabled, began in 1995; WCBRA was founded in 1999. Ypsilanti is one of the 23 municipalities that partners with the WCBRA to identify, assess, remediate, and redevelop brownfield properties. The WCBRA uses Tax Increment Financing, Community Revitalization Program, grants, and loans to advance projects through the various phases of redevelopment. Five sites in Ypsilanti have received assistance from WCBRA, only two of which had environmental contamination on site (the rest were deemed functionally obsolete), and all have been successfully converted into usable space except for the Water Street property. The small number of completed remediations underscores the reactive nature of the process, and highlights that on the local level, the most effective tools are preventative measures: upfront review, inquiry, and regular inspection of the design, storage, and uses in a zoning district. Ypsilanti has used its Zoning Ordinance to prevent automotive uses in certain zones because their practices and commonly used materials have a higher likelihood of contaminating soil.

The Bell Kramer neighborhood is an example of how environmental contamination, or even the threat of it, complicates land use planning. In 2014, the City of Ypsilanti rezoned the neighborhood to an industrial-commercial use in direct response to the findings of the 2012-2013 assessment, intending to prevent future homes from being built in a potentially hazardous area. However, after the rezoning, the existing homes became non-conforming structures, which are permitted to remain but no longer legally encouraged in any way. The financial implications of this designation made it more difficult to sell or upgrade the homes, effectively and sometimes dramatically reducing household wealth. The residents' discontent, coupled with the positive vapor testing results in the homes, provided support for the City to rezone the neighborhood back to residential uses. The history of this neighborhood points to the complexity of changing land uses and monitoring the effects of environmental contamination. Rezoning is one mechanism to prevent development on contaminated sites, but such use is inherently backward-looking and risks unintended consequences. When used, the process must be accompanied by frank conversations with current property owners before the public hearing.



Biodiversity

Endangered Animals

The term “biodiversity” refers to the variety of living organisms within an ecosystem, and the plant and animal habitats of Ypsilanti and the broader region have been significantly impacted by urbanization and development. The Michigan Natural Features Inventory (MNFI) maintains a database of state and federally listed endangered and threatened species. This observational data is converted into the Biological Rarity Index. The Biological Rarity (Biorarity) Index model is based on the MNFI database of known sightings of threatened, endangered, or special concern species and high-quality natural communities. Each record is spatially joined to its habitat using land

cover data, streamlines, and rail corridors. The records are then assigned three values based on the species' global status, state status, and occurrence quality rank. These values are multiplied by a likelihood of future sightings based on the age of the database record. Finally, the scores of all the records in a geographic unit are summed to determine the Biorarity Index for that geography.²⁰ The map “Biological Rarity Index” illustrates the areas in the City by that index. The higher the index, the more likely that area has threatened and endangered species. The areas with a higher index (darker colors) should be prioritized for conservation because of the importance of the habitat to threatened and endangered species. Overlaid on this map are three sites that have remained relatively untouched since the 1940s. Each of these areas fall into zoning districts with little

²⁰ Biological Rarity Index, Michigan Natural Features Inventory – MSU Extension, <https://mnfi.anr.msu.edu/resources/biological-rarity-index>

protection from development *and* correspond to priority conservation areas on the map, creating conflict from a preservation standpoint.

Table X: Potential Conservation Areas Current Zoning Districts

Area	Zone	Description of Zone
Mansfield (adjacent to cold water trout stream) & Highland	Production, Manufacturing, Distribution	Buildings can be on large plots of contiguous land, serviced by railroad lines or major thoroughfares; uses are expected to generate waste, noise, odor, and truck traffic; however, uses should produce minimal external impacts that are detrimental to other uses in the district or to properties in adjoining districts
Clark	Multi-family dwelling	Adjacent to high traffic generators and major thoroughfares and corridors; insure sound development policies for concentrations of multifamily units; recreation, service, and retail uses are permissible as special land uses to allow residents to access everyday needs by foot, if they are not already within a quarter-mile walking distance

Due to the sensitive nature of threatened and endangered species, the MNFI does not release site specific data on threatened and endangered species, but in Washtenaw County there are 83 observed species that are listed as threatened or endangered, including the peregrine falcon, smallmouth salamander, and orange frilled orchid.²¹

Native Plants

Native plants play an essential role in ecosystems: they are the primary producers that convert the sun's energy into biological material. Secondary producers, such as insects and herbivores, rely on plants to survive, and tertiary species such as carnivores rely on the entire chain. When this chain is interrupted, it impacts every organism involved in the ecosystem. Some of the largest threats to plants are human development and invasive species. Invasive species disrupt the proliferation of native plants and can therefore throw off the balance needed for the local ecosystem. Invasive species are species from another ecosystem, usually from another area of the globe, that outcompete the native species for essential resources. Invasive species outcompete native species because there are no natural predators or processes in the native ecosystem to curb their growth. When native species disappear from the landscape, other organisms whose survival depends on the native species also disappear.

As climate change continues to elevate global temperature averages, the composition of native species is subject to change. Species that were originally held south by a temperature barrier are now able to expand farther north because of rising overall temperatures. Meanwhile, native species that are not adaptive to warmer temperatures may disappear from the landscape.

²¹ Michigan State University. MSU Extension. Michigan Natural Features Inventory. Accessed March 3, 2020. <https://mnfi.anr.msu.edu/resources/county-element-data>

Sustainability Policy: Biodiversity

Habitat Corridors

The best thing a community can do to preserve biodiversity is to concentrate development so that it does not sprawl onto and degrade natural habitat. The Mansfield and Clark sites are located on the periphery of the City, in land-use-intensive zones, making them vulnerable to larger footprints from commercial, industrial, or residential uses. Effective policy ensures that untouched land is ample and contiguous so that animal species can minimize their contact with the developed world. Because habitat corridors, like other corridor types, frequently cross municipal boundaries, they should be considered in a multijurisdictional context. Prior to the next sale of these lands, an inventory of habitat corridors and undisturbed sites should be conducted through a partnership with the City of Ypsilanti, Ypsilanti Township, Washtenaw County's Natural Areas Preservation Program (NAPP), and private property owners. NAPP can acquire natural areas once landowners have nominated their property for the program. The land is then owned and maintained by the Washtenaw County Parks and Recreation Commission with the purpose of preserving the land for plants and animals.²² Building a relationship with property owners prior to the sale of their land, and maintaining an inventory database of the plant and animal species that in need of protection, could prevent the loss of more habitat.

Wildlife-friendly Gardens

In a more controlled environment than the untouched sites, the practice of "rewilding" lawns, or planting native grasses that are more wildlife-friendly than sod and are maintained without chemicals, can help spread pockets of biodiversity. Natural lawns are often perceived as unkempt, even a "threat to public health, safety, and welfare"²³ for attracting vermin, trash, and criminal activity. To an untrained eye, "weeds" are associated with blight; in fact, the Property Maintenance Code penalizes property owners for "weeds" over 10 inches in height. However, native grasses and shrubs on private property help to create microhabitats that allow the insect population, and the species that rely on them, thrive. Training property inspectors to spot wild grasses without penalizing them could normalize life-giving "messy" gardens a chance to boost biodiversity in the City.

The Sustainability Commission adopted a resolution (No. 2020-002) that acknowledges the value of native plants and resolves to update the City ordinance to support the planting of native species (disregarding native plant blight violations in the meantime), to make reasonable efforts to use them on City property, and to educate residents about native species suitable for planting on private property.

Educational Materials

The traditional "lawn" is perceived as a matter of neighborhood interest, both in terms of property value and the public health, safety, and welfare concerns above, and the concept of "rewilding" constitutes a substantial shift in this perception. The provision of educational resources would ease tension among inspectors, the City, and private households. A list of the City's preferences for

²² Parks and Recreation Washtenaw County. Natural Areas Preservation Program. <https://www.washtenaw.org/939/Natural-Areas-Preservation-Program>

²³ Ypsilanti Property Maintenance Code. Section 110-81

native species (keeping in mind native species are changing as the climate changes²⁴), prohibited species, and a basic factsheet for property owners explaining the reasons the City supports such species, the potential benefits of planting them, and how it helps to achieve sustainability goals could clarify the motivation. For example, newly produced materials describing “lawn alternatives” encouraging property owners to re-landscape their yards should include the overlapping positive effects: reduced emissions from lawn mowers, increased biodiversity, and better stormwater absorption. Microhabitats can be constructed as part of commercial and industrial development too, although they may require different guidance considering their scale. Green roofs, for instance, are an opportunity to plant native species that provide food sources or refuge for insects and birds on a larger but less visible surface than a home. Over an entire city, these microhabitats can become effective in supporting urban wildlife, once the parameters for property owners are disseminated.²⁵



One area of the City that is an excellent candidate for focused native plantings is in the College Heights neighborhood. College Heights is situated at the headwaters of Owen Drain, an enclosed drain that runs into the Huron River after passing through the EMU campus. The drain system has required several upgrades to expand its capacity; using the neighboring properties to exhibit best practices for stormwater management with native vegetation could relieve some of the pressure on the system.

²⁴ “Climate Change Tree Atlas and Bird Atlas.” USDA, US Forest Service <https://www.fs.usda.gov/ccrc/index.php?q=tools/tree-and-bird-atlas>.

²⁵ URBANhabitats “Green Roofs and Biodiversity” December 2006 <http://www.urbanhabitats.org/v04n01/introduction.html>

Trees

Street Trees

Trees provide a suite of ecosystem services that are nearly incomparable: cleaner air,²⁶ cleaner water,²⁷ sequestered carbon,²⁸ temperature moderation,²⁹ stormwater management,³⁰ urban wildlife habitat,³¹ increased property values³², increased commercial sales,³³ lower crime rates,³⁴ faster healing,³⁵ lower prescription drug burden, lower rates of depression,³⁶ and improved academic performance.³⁷ Despite these multifaceted benefits, there are practical day-to-day issues that stall planting and maintenance. Even though trees' ecosystem services pay off in the long-run, the shorter-term operational costs are resource-intensive. A tree's root system has the strength to push up sidewalks and, to a lesser extent, interfere with sewer infrastructure. When sidewalks heave from a growing tree root, it creates trip hazards that discredit another City goal: walkability. The tension lies in determining responsibility and corrective action over tree and sidewalk maintenance – by City code, residents are responsible for maintaining their sidewalks, but not for the trees that commonly disfigure them. When residents are cited for a heaved sidewalk, they push back on the City's lack of tree maintenance, which results from lack of funding. The tension has

²⁶ United States Forest Services. "How Trees Help Clean the Air," 1977. <https://naldc.nal.usda.gov/download/CAT87209983/PDF>

²⁷ Virginia Department of Forestry. "Trees Protect Water," March 2011. http://www.dof.virginia.gov/infopubs/_forest-facts/FF-Trees-Protect-Water_pub.pdf

²⁸ United States Forest Service. "Carbon sequestration," retrieved May 2020. <https://www.fs.fed.us/ecosystems/services/carbon.shtml>

²⁹ United States Environmental Protection Agency. "Using Trees and Vegetation to Reduce Heat Islands," retrieved May 2020. <https://www.epa.gov/heat-islands/using-trees-and-vegetation-reduce-heat-islands>

³⁰ United States Environmental Protection Agency. "Soak Up the Rain: Trees Help Reduce Runoff" retrieved May 2020. <https://www.epa.gov/soakuptherain/soak-rain-trees-help-reduce-runoff>

³¹ Yale School of Forestry and Environmental Studies. "Urban Nature: How to foster biodiversity in the world's cities," Richard Conniff. January 2014. https://e360.yale.edu/features/urban_nature_how_to_foster_biodiversity_in_worlds_cities

³² University of Washington/USDA Forest Service. "Green Cities: Good Health - Community Economics," Wolf, K.L. 2010. https://depts.washington.edu/hhwb/Print_Economics.html

³³ Journal of Forestry. "Business District Streetscapes, Trees, and Consumer Response," K.L. Wolf. 2005. <https://www.fs.usda.gov/treesearch/pubs/34952>

³⁴ Landscape and Urban Planning. "The association between urban trees and crime: evidence from the spread of the emerald ash borer in Cincinnati," M.C. Kondo et. al. July 2016. https://www.fs.fed.us/nrs/pubs/jrnl/2017/nrs_2017_kondo_001.pdf

³⁵ Science. "View through a window may influence recovery from surgery," Roger Ulrich. 1984. https://www.researchgate.net/publication/17043718_View_Through_a_Window_May_Influence_Recovery_from_Surgery

³⁶ Landscape and Urban Planning. "Urban street tree density and antidepressant prescription rates – a cross-sectional study in London, UK," M.S. Taylor et al. April 2015. <https://ore.exeter.ac.uk/repository/handle/10871/17340>

³⁷ Urban Forestry and Urban Greening. "Beyond the school grounds: Links between density of tree cover in school performance and high school academic performance," Dongying Li et. al. <https://www.sciencedirect.com/science/article/abs/pii/S1618866717307033?via%3Dihub>

brought the conversation to a standstill for now; citations for sidewalk maintenance are rarely issued.

Sustainability Policy: Street Trees

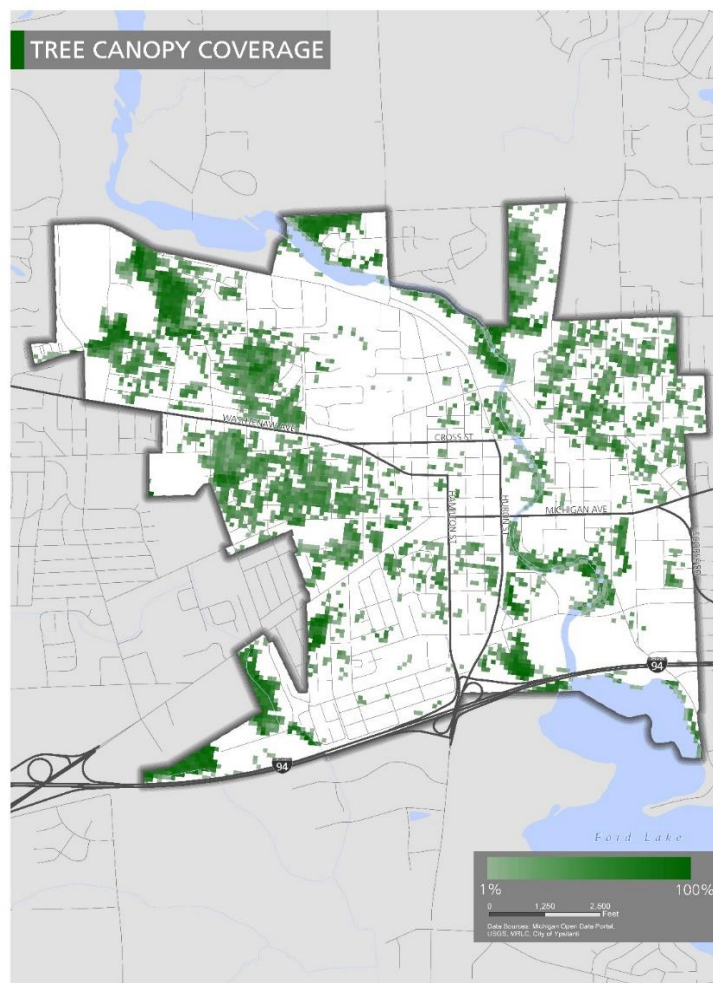
As the long and diverse list of ecosystem services identified above indicates, investment in trees pays back with dividends in the long run. In 2012, the City conducted an Urban Forestry Management Plan (UFMP) and is dedicated to fighting climate change, it is a reasonable next step to bolster the tree maintenance budget to alleviate tension with neighbors and provide better care for its stock.

To reduce sidewalk heaving, the size of the sidewalk cut out should be based on the tree species' need for water and area to grow. A uniform "one size fits all" ordinance for tree planting is easier to administer but may not yield desirable outcomes. An emphasis on species with a tap root system could alleviate infrastructure damage. Porous pavers or more malleable materials to surround trees may reduce instances of cracked surfaces. With porous surfaces, trees have greater access to water and may not have to push upward for hydration. In the meantime, citations for damage caused by public trees should continue to be sparsely issued.

Tree Species and Placement

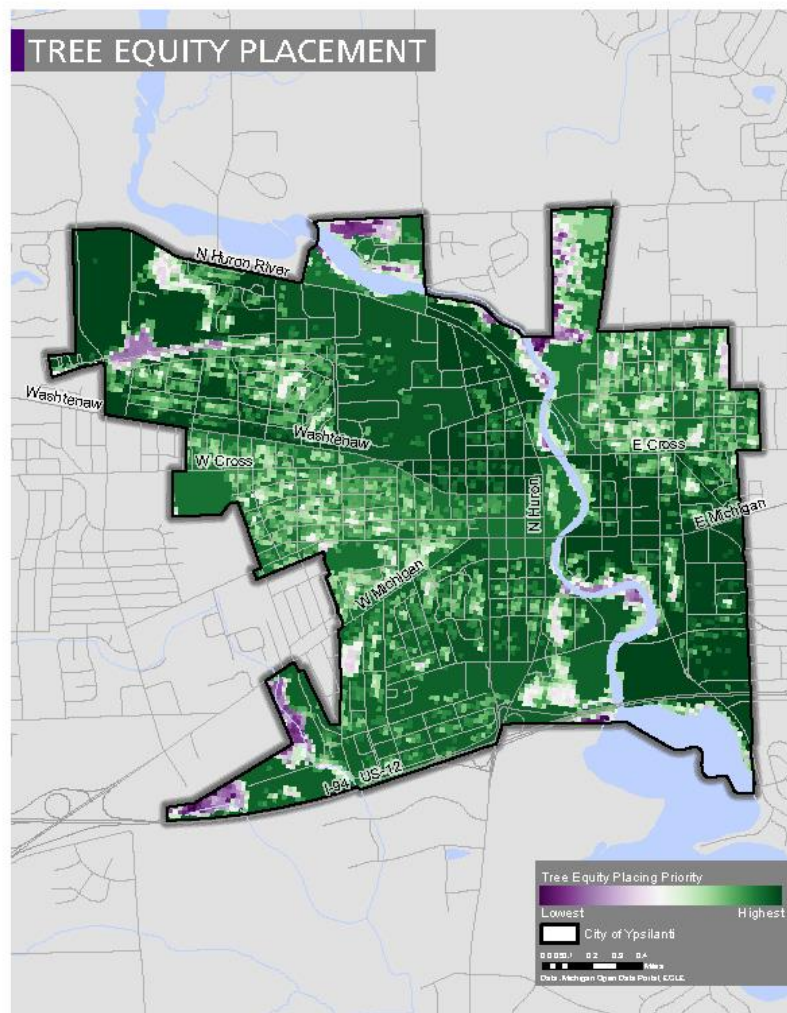
The "Tree Canopy Coverage" map shows that trees are more prominent within peripheral neighborhoods and along the river. Large white swaths on the map represent zero coverage.

In 2012, an Urban Forestry Management Plan found that Ypsilanti had 8,835 public trees, stumps, and planting sites for a total appraised value of about \$10.7 million. There are 105 distinct species, but maples account for 55% of the tree population. This represents a tree diversity shortage, leaving the City vulnerable to a disease that could wipe out half of its tree population as has happened in communities with Dutch Elm Disease and, more



recently and locally, Emerald Ash Borer. Public trees skew older and the majority are in fair condition; they would ideally be replaced with younger trees at a higher replacement rate.³⁸

Separate from the UMFP, a tree placement model was run for the entire City to determine what areas are most in need of trees based on four factors. The four factors were weighted accordingly: existing tree canopy (55%), land use (25%), and low-income population and heat vulnerability index were both weighted at 10%. The results of the tree placement model are shown in the “Tree Equity Placement Map.”



The darker green areas represent highest-need areas and the purple areas have adequate tree canopy coverage.

The challenge in tree planting is the initial funding and ongoing maintenance; the environmental challenges that result from a lacking tree canopy coverage come with high opportunity costs to human health, water quality, and aesthetics. When the City of Ann Arbor quantified the benefits that public trees provide, each tree was found to contribute \$97 in ecosystem services annually. Each tree provides annual energy savings of \$48 by shading buildings and slowing winds, which reduce the heating and cooling requirements in buildings. The aesthetic value and quality of life

³⁸ City of Ypsilanti Urban Forestry Management Plan. February 2012.

benefits each tree provides is estimated at \$29. Reducing runoff and other water quality benefits is valued at \$11 per tree, and the air benefits that tree provide is quantified at \$9 per tree.³⁹

Communities that manage and expand their urban trees can achieve status as a “Tree City,” awarded by the Arbor Day Foundation based on four standards: a tree board or department, a tree care ordinance, a community forestry program with a budget of at least \$2 per capita, and observance of the Arbor Day holiday. As of June 2019, Ypsilanti no longer qualified for Tree City designation, and could resolve to restore it. The primary benefit of Tree City status is the improved tree canopy, but the standards also provide a framework for action, and the status helps gain the necessary awareness and support to continue investing in it.

Sustainability Policy: Tree Species and Placement

The 2012 Urban Forest Management Plan (URMP) details suitable locations, necessary budget, recommended species to plant, and maintenance practices. This document should serve as the guidebook for tree purchasing and placement decisions. The map “Tree Planting Priority” adds an equity-focused dimension to tree placement and planning and should be considered as an additional resource.

Soil

Soil characteristics can impose limitations that affect the suitability of land for potential uses, such as dwelling units with basements and surface composting facilities. There are five types of soil in the City, and the table below shows the percentage of area within the City for each soil.⁴⁰ This section intends to address soil characteristics in relation to planning topics such as construction and green infrastructure, acknowledging that detailed soil science is beyond our scope.

Table X: Soil Types

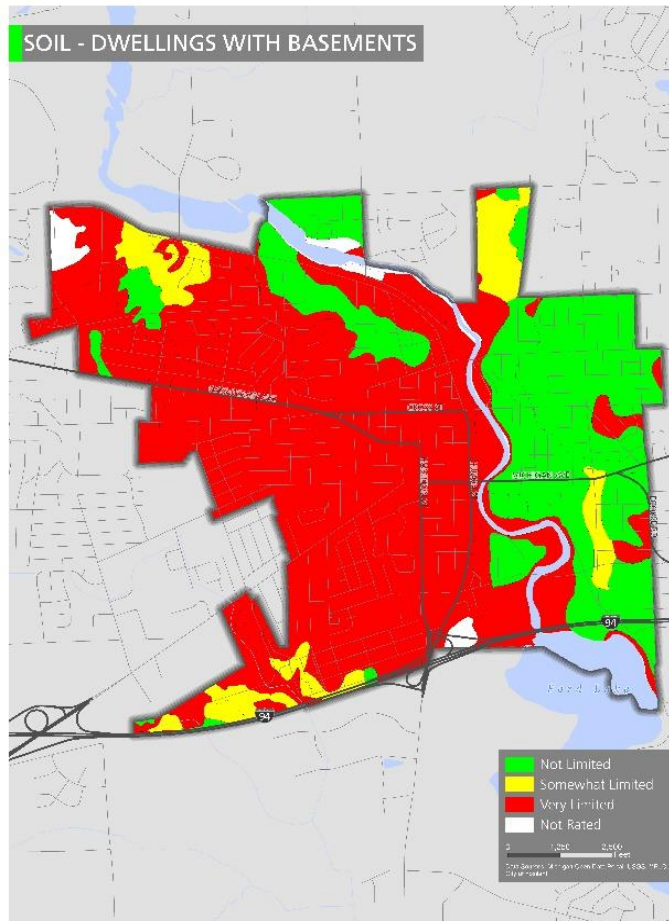
Soil Type	Basic Characteristics	Percentage of Area in Ypsilanti
Fine	Soil particles not visible to the eye, poor load bearing capacity, fairly impermeable, susceptible to frost action	56.4%
Coarse Loamy	Larger grain loam soil, visible to the eye	18.8%
Sandy	Light soil, quick water drainage, poor water retaining qualities	12.8%
Fine Loamy	Smaller grain loam soil, not visible to the naked eye	11.8%
Loamy	Not predominantly sand, silt, or clay, suitable for growing plants due to the nutrient and water capacity	0.2%

Source: United States Department of Agriculture Soil Survey, current

³⁹ City of Ann Arbor Urban & Community Forest Management Plan, City of Ann Arbor, June 2, 2014.

⁴⁰ Web Soil Survey, United States Department of Agriculture, <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

Basements



As a foundational part of construction, soils impact development. The “Soils – Dwellings with Basements” map shows that most of the western side of the City is not conducive to basement construction based on the soil’s limited capacity to support a building without the soil shifting. As moisture content changes, the soils in the “very limited” category shrink and expand to a degree that could reduce their ability to support a basement.⁴¹ Given the predictions for greater concentrations of precipitation and instances of flooding, building basements in unsuitable soils is not a fruitful adaptation strategy. Basement construction is governed by the building code, which is not - designed to take detailed soil considerations into account. At a minimum, this information should be made available to all current and prospective property owners to discourage subterranean development that may have a high

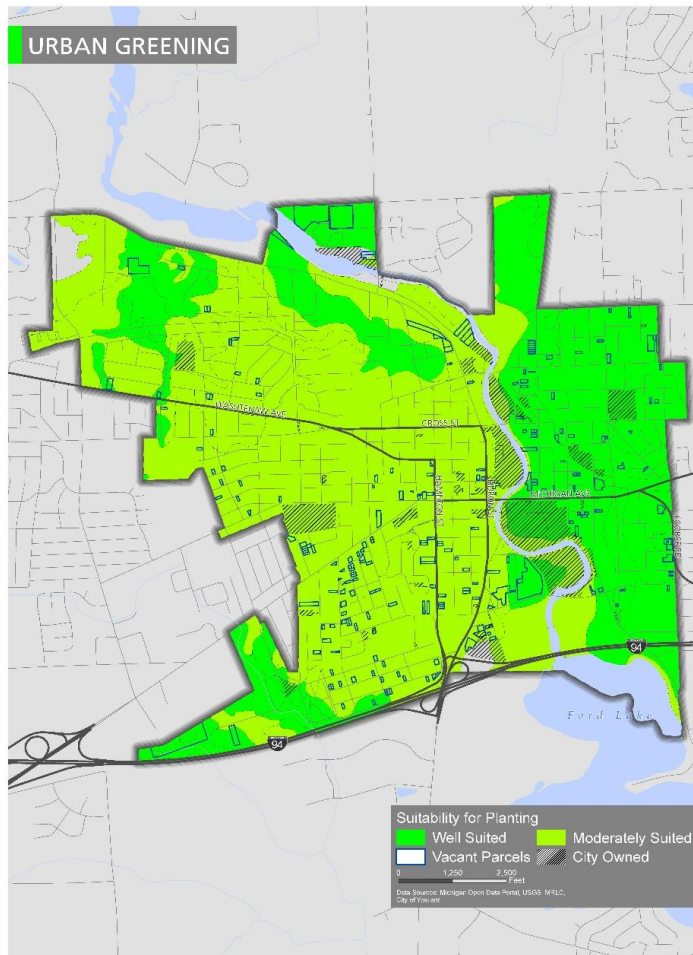
risk of failure. If continued construction, increased flooding events, or consistent property damage warrant a regulatory solution, an overlay zoning district could be applied to some or all of the “very limited” area that requires construction to meet floodplain standards, or that bans subterranean construction altogether.

Soil for Urban Greening

Soil factors into planning for green infrastructure, urban gardens, and tree planting. The “Urban Greening” map shows where the soil is best suited for vegetated plantings, along with vacant and public land within the City. Areas that are vacant, held in the public trust, and have soils suitable for planting should be prioritized for urban greening as they signify the conditions for the best outcomes. Alleys, culs-de-sac, and low-traffic residential streets are also good candidates for urban greening because they represent a significant land area distributed throughout the community while still experiencing a lower impact from vehicles, including snow removal. In addition to

⁴¹ United State Department of Agriculture. Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

supporting plantings, these characteristics are suitable to the less-durable nature of pervious surfaces. Elements for urban greening shall be incorporated in the maintenance plan for public alleys and culs-de-sac.



Sustainability Policy: Soil

The City of Ypsilanti does not have any city-specific regulations regarding soil or soil health but works with the County on soil erosion protections. Some cities have addressed soil conditions through the adoption of sensitive features overlays which include soil and slope protection. In the City of Grand Haven, development in the sensitive feature zone is subject to more intensive site plan restrictions and review, including the prevention of soil erosion and disturbance.⁴² Any development in the sensitive feature overlay cannot move or disturb the soil at all without prior approval of the Planning Commission.

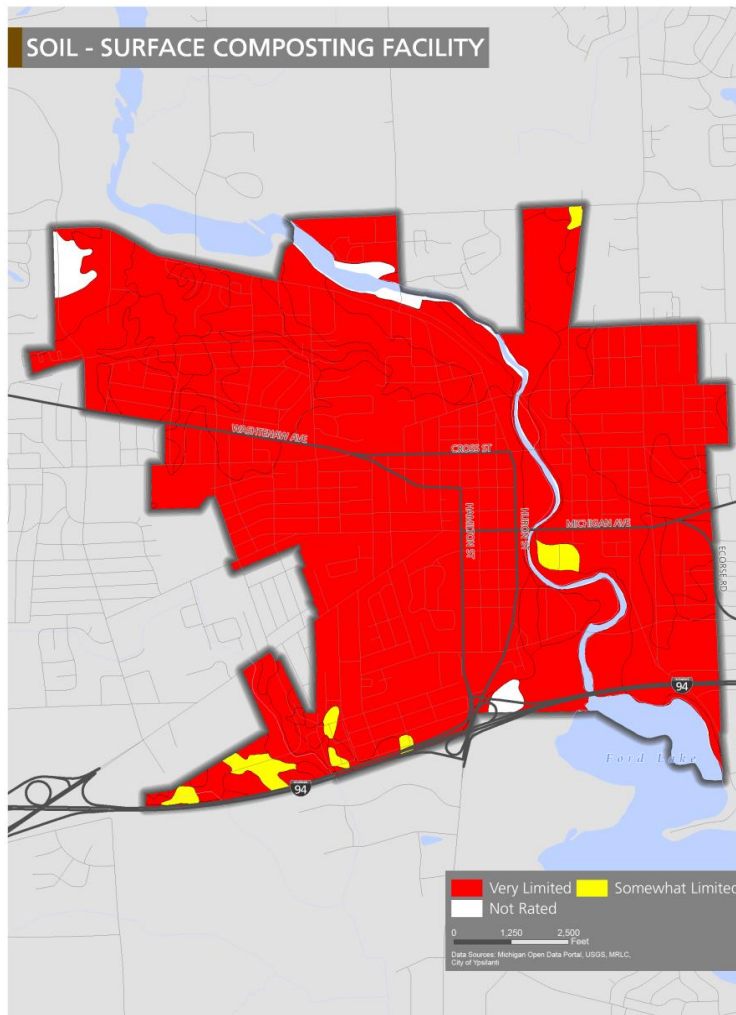
Ypsilanti participates in Washtenaw County's Soil Erosion and Sedimentation Control Program. The program is often triggered in the development process and "works to protect surface water and the environment

from the negative impacts of soil erosion pollution that are the result of earth changes."⁴³ Any projects that require substantial earth moving, defined as an area of 400 square feet, are required to obtain a Soil Erosion and Sediment Control (SESC) permit. Projects that require a permit include earth changes within 500 feet of a surface water's edge, earth changes more than 1 acre, earth changes related to gravel pits and landfills, installation or alterations to ponds, transportation facilities, and directional drilling or boring for utilities and infrastructure.⁴⁴

⁴² City of Grand Haven, Article IV Zoning Districts, Section 40-422 Sensitive Features Overlay district, https://library.municode.com/mi/grand_haven/codes/code_of_ordinances?nodeId=PTIIICOR_CH40ZO_ARTIVZODI_S40-422SASEAROVDI.

⁴³ Washtenaw County Water Resources Commissioner, Soil Erosion Control <https://www.washtenaw.org/232/Soil-Erosion-Sedimentation-Control>.

⁴⁴ Washtenaw County Soil Erosion and Sedimentation Control Ordinance 2016, <https://www.washtenaw.org/DocumentCenter/View/758/Soil-Erosion--Sedimentation-Control-Ordinance---April-1-2016-PDF>.



Waste Management

The City of Ypsilanti's waste disposal is contracted to Stevens Disposal, which serves Southeast Michigan. Stevens Disposal provides waste services to 5,337 households, roughly 70% of households in the City.^{45 46} The solid waste generated in the City is transported to two landfills in southeast Michigan: Carleton Farms located in Sumpter Township and the City of Riverview's municipal landfill, Riverview Land Preserve.⁴⁷ Carleton Farms accepts 2.25 million tons of waste annually, the third highest volume in Michigan, and has a total capacity of 101 million tons, the largest in the state. The landfill is estimated to produce 15.8 million cubic feet of gas per day, 40.1% of which is captured. Methane that cannot be captured is flared. Flaring gas is the process of lighting gas wells on fire to convert the more harmful

methane to carbon dioxide as it enters the atmosphere. Carleton Farms flares 0.65 million cubic feet of landfill gas daily, roughly two-thirds the size of an Olympic size swimming pool. In 2018, Carleton Farms emitted 195,105 metric tons of carbon dioxide equivalents to the atmosphere.⁴⁸ Based on current capacity, Carleton Farms is anticipated to close in 2052. River Land Preserve accepts 780,000 tons of waste annually and has a capacity of 39 million tons. Riverview Land Preserve is expected to close in 2031.⁴⁹ In 2018, Riverview Land Preserve emitted 288,394 metric tons of carbon dioxide equivalents into the atmosphere. While the waste generated by Ypsilanti is

⁴⁵ Stevens Disposal Services Contract. Retrieved from email with Bonnie Wessler. February 27, 2020.

⁴⁶ United States Census "Quick Facts: Ypsilanti city, Michigan"

⁴⁷ Stevens Disposal Customer Service. Phone call on January 20, 2020.

⁴⁸ FLIGHT, United States Environmental Protection Agency. <https://ghgdata.epa.gov/ghgp/main.do>

⁴⁹ Landfill Methane Outreach Program (LMOP) United States Environmental Protection Agency. <https://www.epa.gov/lmop/project-and-landfill-data-state>

only a fraction of the waste sent to these two facilities, it is undeniably contributing to a highly emissions-generating system.

The closure of the two landfills that Ypsilanti relies on in the relatively near future provides an opportunity to pursue strategies for diverting as much of the waste stream as possible. In 2016, Kent County published a landfill reduction plan called “Strategy to Reimagine Trash,” calling for a 20% reduction in landfill contribution by 2020 and a 90% reduction by 2030. The study found that up to 75% of the waste stream in the County has the potential to be converted or reused and explores a variety of targeted means to address specific waste categories. Recognizing that this represents a resource, a centerpiece of the plan is the development of a “Sustainable Business Park” comprised of businesses dedicated to the recovery and re-application of common elements found in the waste stream.

Recycling and composting are two household-level actions that can be supported by City actions. The City of Ypsilanti provides recycling hauling services, and as of 2020 serves 5,186 properties.⁵⁰ The City also has a composting site that can treat yard waste but not kitchen waste. Due to the soil composition of the City, a composting facility would likely have to locate outside of City boundaries as the “Soil – Surface Compositing Facility” shows that most of the City’s soil is not conducive to a surface composting facility. These ratings are based on factors that might lead to the contamination of groundwater from composting byproducts.⁵¹ Due to its location in the floodplain, its services should not be expanded to other organic waste at this site. However, kitchen waste can be composted by individual households using common aboveground systems and applied at the household level, and the City could support these efforts through education, perhaps in conjunction with education about natural lawn alternatives.

The public expressed the need for recycling and composting options in all three forms of engagement. Residents prioritized expanded recycling and composting services in the “infrastructure” category of the survey, and 61% believe that improved curbside access would realistically help their households divert waste from landfills. The Zero Waste Hierarchy describes a series of steps and considerations that will help communities, organizations, and individuals make smarter choices about materials purchases in order to reduce environmental impact.

⁵⁰ City of Ypsilanti

⁵¹ Web Soil Survey, United States Department of Agriculture <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>



Sustainability Policy: Waste Management

A comprehensive waste strategy starts with source reduction or diversion of waste from landfills. Every ton of mixed paper recycled can save the energy equivalent of 166 gallons of gasoline. Not purchasing that paper to begin with makes an even bigger impact because no raw materials or energy are used to produce it, to transport it, or haul it at the end of its life. Diverting organic waste from landfills includes separate collection requirements, education campaigns, financial incentives for food redistribution, and disincentives for generating food waste.⁵² Nearly half of the solid waste produced globally is organic or biodegradable.

The City of Ypsilanti provides finite curbside recycling and composting pickup, and households and property owners must rely on assorted groups for full service. The curbside recycling program does not collect glass and Styrofoam because they disrupt the recycling stream. The curbside recycling service is limited to properties with fewer than four units, which excludes roughly 88 residential properties. Ypsilanti's partnership with Simple Recycling grants households curbside recycling of textiles and small electronics, and the City relies on Washtenaw County for annual drop-offs and hazardous materials disposal. Items with Freon can be disposed of curbside with advanced planning and a fee. Residents are also eligible to use Ann Arbor's drop-off recycling station for safe disposal of items that Ypsilanti does not collect. This inventory shows that options for recycling do exist, but the decentralization of the services and locations is inconvenient and discourages full participation.

In 2018, the Sustainability Commission resolved (No. 2018-08-002) to increase recycling rates based on the Climate Action Plan findings. The resolution aims for increased education about the City's recycling program and the placement of artistic recycling bins throughout the City. The expansion of the recycling program would have to be accompanied by an extensive outreach and education program to ensure that best recycling practices are followed. The following summer, the Sustainability Commission defined 2019-2020 goals, one of which was to facilitate a Zero Waste event (No. 219-07-002).

The curbside composting program operates from April through December, but this service is only for yard waste and not for household waste.⁵³ Because the City's soil conditions inhibit the likelihood of expanding its composting infrastructure, and the current compost yard is in a floodplain, Ypsilanti should cooperate with an organization that offers composting services and encourage residents to use it. Another possibility is a biodigester that use microorganisms to decompose waste. The decomposing waste produces methane, which can be captured for energy,

⁵² Corvidae, J. et al. The Carbon-Free Region Handbook. RMI. (2018) Retrieved from https://rmi.org/category/global-energy-transitions/cities-and-communities/carbon-free-regions-handbook/?post_type=insight

⁵³ The City of Ypsilanti, Meeting with Bonnie Wessler, March 4, 2020.

and digestate, which can be used as fertilizer.⁵⁴ Biodigesters are more expensive to build than traditional composting facilities but produce two valuable resources, methane and digestate, which can be sold.⁵⁵ In 2017, the City of Ann Arbor conducted a feasibility study for a biodigester and concluded that the project would not yet be profitable – the startup costs are too high for the revenue stream it would provide. The study cited challenges such as low landfill fees, modest energy costs, and minimal financial reimbursement as the reasons for the improbable feasibility of the biodigester.⁵⁶ At a minimum, the City can offer educational resources to households interested in composting their own household waste.

Complete Neighborhoods

Land use planning is a critical component of mitigating and adapting to climate change. Density, walkability, and access to urban gardens and greenery are just some ways a city can curtail dependence of fossil fuels. Ypsilanti residents want to live in neighborhoods that are green, connected, and complete. Over two-thirds of respondents recorded that “completeness” is a deciding factor when choosing where to live. The features of a “complete neighborhood” were decided by survey-takers, and most important to them was the presence of “parks, recreation, and/or open space (96%),” and the fourth highest priority is trees and/or community gardens (77%).

Residents also see complete neighborhoods as physically connected so that streets safely accommodate bicyclists, pedestrians, public transportation passengers, and users of all ages and abilities. This was expressed in high response rates rating “sidewalks” (87%) and “public transportation options” (84%) as factors describing completeness of a neighborhood. Even though 64% of Ypsilanti residents commute to work alone in a personal vehicle,⁵⁷ improved nonmotorized transportation infrastructure can make a difference in how people choose to arrive to *other* destinations. Residents generally support alternative modes of transit, even those who report that they do not use the service themselves. Residents are proponents of expanded bicycle and pedestrian networks and public transit service including the development of an Amtrak stop. When residents were asked what they would like to see from walking or riding a bicycle to destinations, they cited incomplete sidewalks or bicycle lanes, the condition of the nonmotorized infrastructure, and the difficulty in crossing some streets safely. Ypsilanti has shown its commitment to connectivity by coordinating with the Township and County on the Border to Border trail and the AATA to expand bus coverage and frequency.

Motivated neighborhoods can establish “Eco districts” to concentrate focus on sustainability goals in a geographic area. This was proposed in the 2013 Master Plan, and the Zoning Ordinance has been updated to permit more components of an Eco district: community gardens, rain collection systems, and renewable energy projects. The City has enabled such developments, and while they cannot take on the lead on implementation, these changes support neighbors’ eco-friendly demonstrations. The next step would be for a group of neighbors to develop and agree to a set of performance standards, and, with the help of a Sustainability Commissioner liaison, look for

⁵⁴ Nyifa, W. “Remember the Biodigester.” Saskatchewan Research Council <https://www.src.sk.ca/blog/remember-biodigester>

⁵⁵ Dawson, L. “How Cities are Turning Food into Fuel.” Politico, Nov. 11 2019.

⁵⁶ City of Ann Arbor. “Ann Arbor Biodigester Feasibility Study.” June 2017. <https://www.a2gov.org/departments/systems-planning/planning-areas/climate-sustainability/SiteAssets/Pages/Sustainability/Ann%20Arbor%20Biodigester%20FS.PDF>

⁵⁷ American Community Survey. 2017 5-Year Estimates. Table DP03.

funding and/or initiate smaller scale projects that meet their performance goals. Eco district performance goals could be tailored to the neighborhood but aligned with City sustainability goals, for example, expanding tree canopy coverage or developing green houses in open space.

Sustainability Policy: Complete Neighborhoods

Transportation

City Ordinance No. 1156 provides for the planning, design, and construction of streets that offer appropriate access to all legal users and provide safe, accessible, comfortable, and efficient transportation options for people and goods in order to support the City's quality of life, economic vitality, and environmental sustainability. This is an important step in cutting vehicle miles traveled (VMT), as is coupling transportation routes with building density as the AAATA has done.

There is still much to be done in terms of reducing vehicle miles traveled. Undoubtedly, EMU is a primary traffic generator. A partnership between the university and the City to manage a bike-share and car-share program might limit how many trips students make by car. While it is hard to predict to what extent this will change behavior, an easy-to-use sharing system provides another option to close that "last mile" problem. The Ride also makes a good partner to encourage commuting by bus. The City and the DDA could partner with the Ride and local businesses to offer discounted transit passes to employees who bus to work to not only reduce VMT but also to reduce demand for parking in compact areas. A parking cash-out alternative is another possibility for employees that would otherwise drive and take a parking space for patrons. Strategic development of electric vehicle charging infrastructure will allow greener power alternatives for those cars which remain on the road.

Nonmotorized path enhancements also have the potential to change travel behavior. The City has identified intersections in the Master Plan that would slow down vehicular traffic and include pedestrian and bicycle improvements to create safer, multi-modal streets. Ypsilanti's commitment to safety as a guiding principle applies to the continuation of bicycle lanes on major thoroughfare and trunklines to protect bicyclists from sharing the road with fast moving vehicles. The timing and location are crucial to a connectivity strategy. When roads undergo repair is opportune to layer on topical improvement such as bicycle lanes or sidewalks. In terms of location, nonmotorized features should be installed where they connect to an expanding an existing network or build links between neighborhoods and job centers. Lastly, to protect their right to use the roads safely, police enforcement of bicycle and pedestrian safety would, over time, help build a reputation of balanced road use.

Land Use and Mobility

Land use and mobility planning go hand in hand. Reliable transportation, mixed-uses, and density are cornerstones of mobility. In that regard, Ypsilanti have a favorable combination. Permitting neighborhood-friendly stores that provide goods serving daily needs (convenience store, market) and personal services (hair salon, medical offices) in proximity to households makes destinations convenient by foot or bicycle. In Ypsilanti, 93% of residential parcels are within ¼ mile walk (and 100% are within ½ mile) from a small convenience retailer or service provider, based on 2015 SEMCOG land codes. This land use configuration has a huge impact, assuming that people walk to these locations when they can. The Urban Land Institute reviewed studies that show that compact suburban development reduces VMT by 12-18% compared to low-density suburban

development.⁵⁸ With that in mind, Ypsilanti should continue to prioritize infill development, converting central lots that bolster mobility for residents before tending to the City's periphery. Along major corridors where the Ride traverses and the vehicular capacity permits, density bonuses for a mix of uses could strengthen nonmotorized access to goods and services.

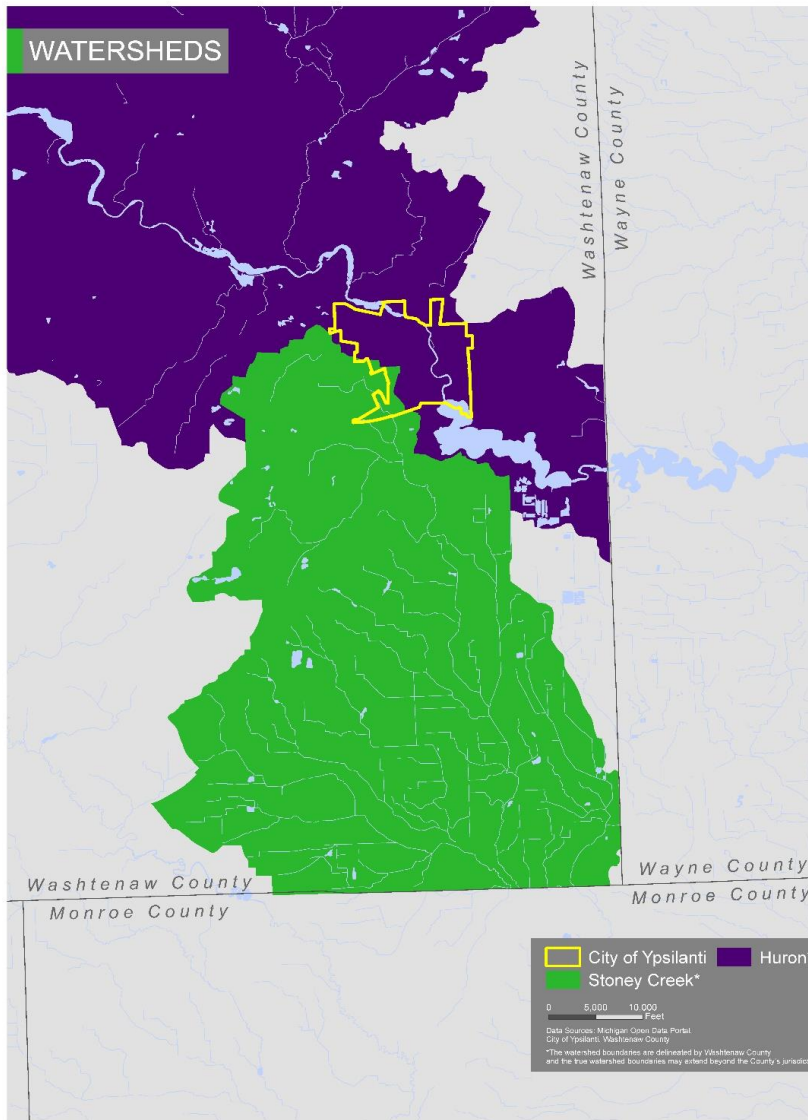
Development

Ypsilanti residents' preference for green, connected, and complete neighborhoods are reflected in the US Green Building Council's LEED for Neighborhood Development standard as well as in Detroit's vision for "20 minute neighborhoods" and Kalamazoo's Imagine 2025 Master Plan, demonstrating an emerging trend in Michigan. The US Green Building Council's LEED for Neighborhood Development standard recognizes that neighborhoods can be designed to respond to the local impacts of global climate change and make significant advances toward a sustainable planet. The standards focus on achieving sustainability goals at a neighborhood scale, and align with Ypsilanti's broader sustainability goals:

- Lower operating costs and increased asset value
- Reduce waste sent to landfills
- Reduces VMT
- Increase energy and water conservation
- Provide more healthful and productive environments for occupants
- Reduce greenhouse gas emissions
- Promotes rebates, zoning allowances, and other incentives

Equity development in a complete neighborhood also includes housing choice. Ypsilanti has a considerable segment of the population with low earnings who need of affordable housing. The current stock of affordable units has waiting lists, leaving those in need in a financially precarious situation. The process for securing affordable housing is long and involves many parties. The City in conjunction with the Housing Commission can seek affordable housing development opportunities and identify parcels where they could locate in a neighborhood with access to services. Coupling subsidized housing and green development would be an exemplary sustainability project that unquestionably embraces the pillars of equity, environment, and economy. Because the City is largely built-out with no room for an entire new neighborhood, these standards could be applied to infill sites or on sites that have room to expand on their parcel.

⁵⁸ Urban Land Institute. "Land Use and Driving: The Role Compact Development Can Play in Reducing Greenhouse Gas Emissions." <https://uli.org/wp-content/uploads/ULI-Documents/Land-Use-and-Driving-Low-Res.pdf>



Water

Surface Water

Quality

Ypsilanti is a part of the Lake Erie Basin. Within the City's boundaries are two watersheds - Huron and Stoney Creek. The Huron Watershed, which covers most of the City, is divided into five sections. The section that encompasses Ypsilanti is known as the "Lower Middle Huron," enveloping about 27.7 miles of the river from North Maple Road (Barton Pond) downstream to Belleville Lake. It includes the City and Township of Ann Arbor, Superior Township, Ypsilanti Township, and Van Buren Township.⁵⁹ Because a watershed crosses several jurisdictional boundaries, it is incumbent on these

municipalities to cooperatively maintain high-quality drinking water while permitting access to the river. The health of the river depends on the quality of all its tributaries, which is often linked, at least in part, to land use policy. One way to coordinate across municipal jurisdictions is through a watershed council: the Huron River Watershed Council (HRWC) was the first in the state and has been working to protect and restore the Huron River since 1965. In addition to writing a

⁵⁹ HRWC. "The Huron River: Lower Middle Huron." River Profile.
<https://hrwc.maps.arcgis.com/apps/MapJournal/index.html?appid=67e1fd1bbc9a44cf853cd78dd6d8219f>

management plan for the entire watershed, the HRWC also authors management plans covering specific sections of the watershed. The HRWC is updating the section of the watershed that includes Ypsilanti in 2020-2021.

The HRWC identifies that the section of the Huron River that runs through Ypsilanti and Ann Arbor is heavily impounded: 77% of it is impounded by the seven dams that stretch across this area, making it more similar to a lake ecosystem than a river. Two sources afflicting the health of the watershed are runoff from impervious surfaces, and new development along the riverbank that clears vegetation vital to the absorbing runoff. In particular, phosphorous and E.coli are entering the river from Mill, Honey, and Boyden Creeks.

Table X: Watershed Report Card

Subject ⁶⁰	Grade	Explanation
Watershed land use	D	High impervious surfaces along tributaries
Natural areas	D	12% of watershed has intact natural areas
River flow	F	Flashes following storms, erratic dam gate
River habitat	B	Where undammed, favorable features for river life
Aquatic Insect Community	C	Where undammed, good habitat for insects
Fish Community	B	Anglers enjoy good smallmouth bass
Phosphorous	C-	Concentrated of phosphorous exceed target; declining
E.Coli	C	After heavy rain, E.coli exceeds state standards
Total Suspended Solids	A	Low levels of TSS
Water Temperature	B	High maximum summer temperatures
Conductivity	B	Mostly measured at normal levels
Dams	F	High presence of dams and poorly controlled

Source: HRWC

⁶⁰ Huron River Watershed Council. Barton Pond to Belleville Lake Dam.
<https://hrwc.maps.arcgis.com/apps/MapJournal/index.html?appid=67e1fd1bbc9a44cf853cd78dd6d8219f>

Sustainability Policy: Water Quality

Some measures are in place to protect water quality. According to the City of Ypsilanti's code of ordinances, all development along any river frontage must show where a planned conservation and/or access easement of 50 to 100 feet would be located.⁶¹ A conservation easement allows river access for potential restoration or cleanup efforts. Without an easement, the City would have to receive permission from private property owners to pursue any river projects. The City has also adopted ordinances to limit phosphorus fertilizers and asphalt sealcoats; the success of this regulation is limited by enforcement and cooperation from property owners and has yet to be measured.

To further ensure protections for the Huron River, an overlay district could be implemented. The regulations would limit new development, curtail uses involving toxic chemicals on site, and enforce low impact design standards that allow the site to retain water to mitigate contamination entering the river. Ypsilanti has adopted the stringent standards from Washtenaw County Water Resources Commissioner, a mighty step in safeguarding future development from polluting practices. However, these regulations are not a panacea because they only apply to new redeveloped sites, which are much fewer in number than established sites.

A retrofitting program would have wider scale effects, but its implementation is more controversial than policies pertaining only to new development. The adoption of stormwater fees based on the amount of impervious coverage on a property is an example of this type of effort and has been enacted in places like Detroit and Ann Arbor. In those communities, impervious surfaces incur drainage fees, thus incentivizing the implementation of pervious substitutes. Credits are offered for on-site stormwater management investments, such as the installation of a rain barrel, cistern, or rain garden to capture run-off from a rooftop. Rain barrels are a cost-effective method of storing water when used correctly. Best practices suggest rain barrels should stand upright, be screened to prevent mosquito breeding and debris accumulation, connect to overflow barrels, have a "do not drink" spigot, and belong to property owners who have been educated about its use and maintenance.

Stormwater Drainage Program

A case study in Detroit quantified the combined advantage of pervious pavement and a rain garden on a church's parking lot. Using the EPA's stormwater management model, they calculated that a 4,530 square foot rain garden and a 33,000 square foot patch of pervious pavement reduced stormwater runoff volume by 70%, even during the heaviest six-hour period of precipitation in Detroit's recent history (2016).¹ In Detroit, there is an added incentive for property owners to use green infrastructure because they are charged a drainage fee based on the impervious surface area on the property. However, they may also earn a "green credit" for actions such as redirecting downspouts into areas where natural infiltration can take place.

⁶¹ City of Ypsilanti Code of Ordinances, Article VI: Site Regulations, Section 122-607 (c).
https://cityofypsilanti.com/DocumentCenter/View/1396/ZOUpdate--02--ZO_BW20170215_anno?bidId=

It takes the work of many groups to see positive change in our water systems. The Middle Huron Partners, a group that works with the HRWC, has invested over \$10 million over 11 years on projects that reduce and capture stormwater runoff. At a larger scale, the Middle Huron Partners successfully lobbied to restrict phosphorous fertilizers, and the state followed suit in 2012 with new legislation to reduce algae blooms. At the county level, Washtenaw County modified its focus from flood control to quality control. This change in philosophy is backed by a hierarchy of preferred management practices that prioritizes natural vegetation first for infiltration, then minimizing impervious surfaces, and finally detention and conveyance of excess stormwater.⁶² Vegetation is at the top of the hierarchy for its varied benefits: plants provide structural support, stabilize the soil through their root networks to reduce erosion, keep rivers healthier for aquatic life, and purify runoff before it enters the river.

As vegetation becomes the priority for protecting water quality, it is important to recognize the maintenance challenges that have hampered its progress. Landscaping is not a short-term proposition. Specifically, it takes about three years for a rain garden to take root and maximize its capacity as a water absorber and purifier. During that time, it must be regularly nurtured *and* must avoid its other unintended function as a “litter collector.” In cases where rain gardens have amassed trash and debris, they have been deemed “blight” and subsequently removed. A rain garden sign that includes its year of inception can insulate them from removal during their nascent stages and give them sufficient time to mature.

Water Sources

There are 13 water wells within the City: four type 1 (community) wells, one type 2 (facility) well, four household wells, and four irrigation wells.⁶³ All of the type 1 municipal wells in Ypsilanti have been closed, and the type 2 well is inactive according to EGLE. The remaining wells are personal wells that residents are responsible for testing. The City of Ypsilanti sources water from the Great Lakes Water Authority for its municipal water system.

Rain Barrel Math
Roof catchment area = total square footage of your house plus the extension of the eaves
Ex. 40 ft x 50 ft = 2,000
1 inch of rain provides 600 gallons of water per 1,000 square foot of catchment area
Ex. 600 gallons x 2 = 1,200 gallons
The rain barrel system is only 80% effective at capturing the water
.80 x 1,200 gallons = 960 gallons
A rain barrel has the capacity to capture 960 gallons during a one-inch storm

Source: Ecology Action Center.
<https://ecologyactioncenter.org/clean-water/rain-barrels/>

⁶² Washtenaw County Water Resources Commissioner. Rules and Guidelines: Procedures and Design Criteria for Stormwater Management Systems. Revised October 2016. <https://www.washtenaw.org/DocumentCenter/View/302/Rules-and-Guidelines---Procedures-and-Design-Criteria-for-Stormwater-Management-Systems-PDF?bidId=>

⁶³ Michigan Open Data Portal, “Water Wells – South Central & Southeastern Michigan” <http://gis-michigan.opendata.arcgis.com/datasets/water-wells-south-central-southeastern-michigan?geometry=29.491%2C-17.893%2C-105.860%2C71.775>

Sustainability Policy: Water Sources

The City provides a municipal water system and requires households that can be serviced by municipal sewer shall be, according to ordinance 106-22. At the point of a sewer hookup, the City encourages households to use the municipal water system, and as most of the few remaining households convert, the installation of personal wells is no longer necessary nor advisable.

The City created two well exclusion areas which are written into local ordinances and documented through property deeds. Well exclusion areas were instituted to protect property from water contamination; for example, in the downtown, a well was prohibited on a parcel where there was a leak from the former gas station. As wells become a less ubiquitous source of water in urban areas, this tool will be used even less frequently.

What the City can focus on is how to improve services through its water and wastewater provider Ypsilanti Community Utilities Authority (YCUA). Because wastewater treatment plants are energy-intensive, and provide an essential service to households, upgrades to this system are a win-win. Potential policies are two-fold. First, the City and YCUA can collaborate on home and business water efficiency financing programs to reduce total load and peak flow rates, saving energy at the plant and potentially lowering water bills for households. Secondly, advances to sensors and software can also improve its energy efficiency so that our water sources and treatment can contribute less to emissions.⁶⁴

Dam Removal

The Peninsular Paper Dam, in its current state, is a cause of many troubling ecological indicators regarding the Huron River's health, namely creating impoundments where algae forms and changing water temperatures that alter dissolved oxygen levels, harming fish habitats.⁶⁵ Ypsilanti and the HRWC conducted a feasibility report on removing the dam. The dam was classified as a high potential hazard, due to the severity of impending damage it could cause if it failed, and its classification as obsolete because it no longer serves any purpose. Based on sediment quality and quantity, potential infrastructure and utility impacts, and riverfront land ownership, it was determined that removing the dam is feasible.⁶⁶ In 2016, estimates for repairing the dam would exceed \$800,000 and removing it would cost closer to \$2.7 million. Its removal would help restore the Huron River to a flow that is better suited for the ecosystem that depends on it.

Sustainability Policy: Dam Removal

In May 2019, City Council voted to approve \$500,000 towards deconstructing the dam as opposed to continuing to pay for repairs so long as the City applies to grants to complete the project.^{67 68} Dismantling the dam will protect the environmental health of native species that rely on the Huron River, and protect the City's budget in the long run.

⁶⁴ Ypsilanti Climate Action Plan. 2012. Pg 30.

⁶⁵ Huron River Watershed Council. The Huron River Data Report: Ann Arbor and Ypsilanti Vicinity. <https://www.hrwc.org/wp-content/uploads/LowerMiddleHuron-11x8.pdf>

⁶⁶ Princeton Hydro. Peninsular Paper Dam: Dam Removal Assessment and Feasibility Report. September 2018. <https://cityofypsilanti.com/DocumentCenter/View/1789/2018-11-21-Peninsular-Dam-Removal-Study-Report>

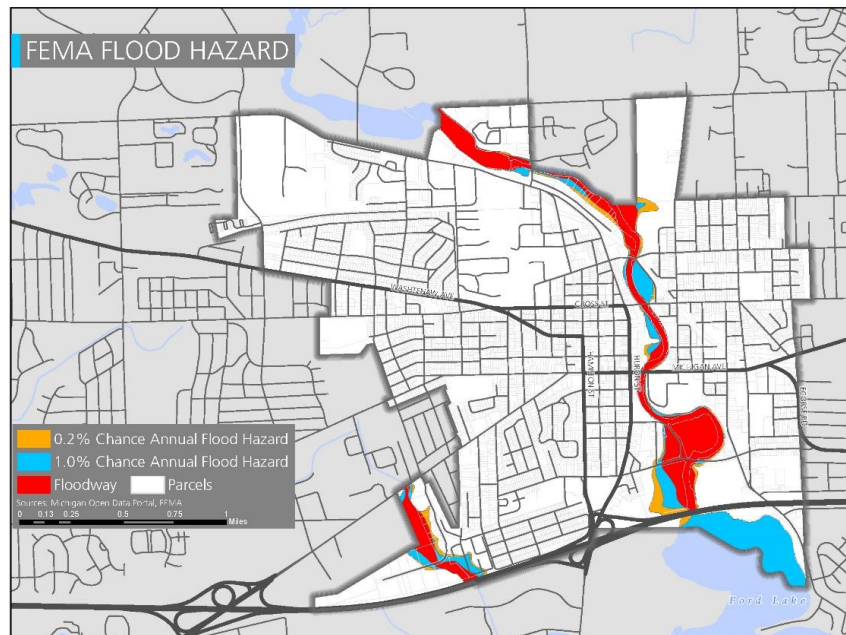
⁶⁷ WXYZ Detroit. Ypsilanti City Council Votes to Tear Down Peninsular Dam. May 2019. <https://www.wxyz.com/homepage-showcase/ypsilanti-city-council-votes-to-tear-down-peninsular-dam>

⁶⁸ Ypsilanti City Council. Resolution 2019-101. May 7 2019.

Flooding and Stormwater Management

Flooding has the potential to harm the drinking water supply, human life, property, and infrastructure. The Federal Emergency Management Agency (FEMA) has identified zones based on the anticipated frequency an area will flood in a 100-year interval. These predictions are based on historical data, which means that they do not incorporate climate change considerations. Already,

the FEMA-delineated floodplains have been shown in many cases to be outdated, as areas vulnerable to flooding have expanded outside of its boundaries. Part of the increase in instances of flooding is linked to increased precipitation falling in concentrated storm patterns. Fortunately, Ypsilanti has not



yet experienced flooding that has overwhelmed its storm sewer infrastructure. The composition of Ypsilanti's soil helps in that regard, since only 7% of the soils in Ypsilanti are prone to "frequent flooding," and the other soils experience no flooding aside from extreme circumstances.⁶⁹ To gain more accurate depictions of how the City may flood in the future, Ypsilanti can invest in an updated study that incorporates recent data and includes forecasts of more intense and frequent storms. The study should also include how the river's altered channel (due to the removal of the dam and water treatment plant) will impact flooding.

Green Stormwater Infrastructure (GSI)

GSI is one way to reduce the impacts of excess stormwater. Green stormwater infrastructure is a broad term that includes several practices of water management that protect or mimic the natural water cycle. As opposed to conventional "gray" stormwater infrastructure, which uses hard surfaces and systems to channel excess water elsewhere, this approach protects and expands the natural environment so that water can be absorbed naturally at several scales: a home, a downtown, an entire city, a watershed. Common examples are rain gardens, green roofs, trees,

⁶⁹ Web Soil Survey, United States Department of Agriculture, <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

planter boxes, rainwater harvesting systems, and bioswales, and better protection of wetlands and floodplains.

The utility of GSI should not be underestimated. For example, one acre of imperviously-surfaced roadway can generate between 0.5 and 1 million gallons of stormwater runoff annually. On Michigan Avenue in Lansing, there are 30 planter box bioretention areas that collect runoff from four acres of roadway and reduce the annual stormwater runoff by approximately 75%.⁷⁰

Sustainability Policy: Flooding and Stormwater Management

Landscaping requirements that beautify a site can also be used to capture stormwater runoff. Already embedded in the landscaping requirements in the Zoning Ordinance is a tree protection plan for site plan review. The applicant is awarded credit for preserving or incorporating existing trees and shrubs into the development, and if trees or shrubs intended to meet the minimum landscaping requirements are cut down or damaged, the applicant must replace them according to ordinance specifications. Moreover, trees proposed for credit cannot be invasive (122-632). The frontage of all public and private streets for a new or altered use that requires site plan review must be landscaped with street trees (122-636). Existing regulation stops short of a tree preservation ordinance, which would prevent the removal of trees determined meeting criteria for condition, size, and species.

In 2011, more space was allotted for urban agriculture in the form of community gardens in several zoning classifications including Park, Single-Family, Multiple-Family, Core Neighborhoods, and Health and Human Services zones. The Zoning Ordinance also permits accessory stormwater control features such as swales, pervious paving, rain gardens, rain cisterns, vegetated roofs, and other methods. Ypsilanti has one city-sponsored rain garden at the Freight House that is managed by volunteers. The rain garden in Depot Town is maintained by the DDA with volunteer assistance.

In partnership with Washtenaw County Conservation District (WCCD), the Sustainability Commission has offered support to promote WCCD workshops to residents, encourage tree planting on residential lots, and identify a site and volunteers for an Earth day tree planting event. Washtenaw County has staff dedicated to teaching master rain gardener certification courses and provides technical advice for planting one on private property. The City of Ypsilanti also won bronze at the Michigan Sustainability Conference in 2019 for its work with the Washtenaw County Water Resources Commissioner to provide free consultations to households interested in developing or enhancing rain gardens.⁷¹

During a site plan review process, an engineer calculates water displaced from a building and the rate that runoff will be absorbed by the different surfaces on site. Depending on the volume of runoff, mitigation recommendations are made, such as building retention ponds or installing storm trap tanks. However, landscaping standards are not typically based on the level of imperviousness onsite. A landscaping ordinance that ties in engineering standards, planning, and landscape architecture would combine each field's expertise to account for type, location, and design of landscaping that would optimize for water retention and appearance.

⁷⁰ SEMCOG. Green Infrastructure Vision for Southeast Michigan. 2014. Page 45.

<file:///C:/Users/Michelle%20Bennett/Downloads/GreenInfrastructureVisionForSoutheastMichiganMarch2014.pdf>

⁷¹ Michigan Green Communities (MGC). 2019 MGC Challenge Participants and Awards. <https://migrreencommunities.com/blog/>

In addition to enhancing green stormwater infrastructure, some expansion to grey infrastructure may also be needed. In 2013, Ypsilanti was awarded a Stormwater, Asset Management, and Wastewater (SAW) grant. With the funds, the City mapped its storm sewers and plans to purchase a GIS license to continue monitoring and recording its conditions. With improved access to the interior of its infrastructure, Stormwater Management Plans can be tailored to specific areas for improvement and estimates for expansion are based on more accurate data. Using climate change predictions for precipitation and updated inventory on the storm sewer system, Ypsilanti can continue to use the Capital Improvement Plan to plan for greater stormwater capacity with greater precision.

Education & Communication

Disaster Preparedness and Adaptive Responses to Climate Change

Extreme heat and cold events, heavy rainfall, flooding, and other extreme weather events are expected to increase over time as a result of climate change, and each will require a coordinated response among county, state, and federal levels of government amid a catastrophe. While sustainability-related actions will help mitigate these risks in the future, the City must help residents adapt to these increasing risks by expanding emergency preparedness and communication tools.

Extreme Heat and Cold

As GHG emission rates continue to rise, Michigan is expected to see up to a 5°F increase in average air temperature between 2041 and 2070. An additional 30 to 70 days per year, depending on the region, are expected to exceed 90°F. The amount of energy needed to cool buildings will also rise. There were 474 cooling “degree days” in 1990, 679 cooling degree days in 2000, and 1205 cooling degree days in 2019. Degree days can be a confusing and counterintuitive measurement. There can be more than 365 heating or cooling degree days in one year because degree days are measured relative to a base of 65°F (18°C) and reflect the *amount* of heating or cooling necessary at a facility. Above 65°F (18°C), it is assumed that a facility will need to be cooled, and below 65°F (18°C), it is assumed that a facility will need to be heated. Heating Degree Days (HDD) are the equivalent number of days a facility would need to be heated by 1 degree to accommodate the heating requirement. For example, one day where the temperature measures 80°F would be 15 Cooling Degree Days because it is 15 degrees above 65°F.

Extreme heat events are among the most harmful weather phenomena. They amplify ground-level ozone levels, which are associated with higher hospitalization rates for asthma, more severe allergic reactions, and premature deaths for people with heart and lung disease. Healthcare costs increase as a result of these negative health impacts. Heat events also put pressure on electrical distribution as people rely more on air conditioning and reduce grid reliability as a result of increased demand, and decrease energy efficiency and increase costs for rate payers. More generally, many types of seasonal businesses are impacted, from wineries to ski resorts.

Michigan will continue to experience extreme cold events as well, which disproportionately affect homeless people who are vulnerable to cold temperatures. The risk of illness increases for low-income individuals, the elderly, and those with chronic ailments who may be vulnerable to colder temperatures.

Heavy Rain and Flooding

Precipitation is projected to increase on average and to concentrate in more intense precipitation events, likely resulting in greater periods of both extreme flooding and extreme drought. An additional 2 to 3 inches of annual precipitation is expected for Michigan, and the number of days each year experiencing heavy rainfall is expected to increase by at least one day per year. These extreme weather events will impact the economy, disrupt the environment, and disproportionately impact vulnerable populations. Flooding puts residents and emergency response personnel in direct physical danger; increases pollution and waterborne illnesses; incurs expensive property damage; displaces households and businesses; creates damp conditions that spur the development of mold and reduce indoor air quality; stresses the capacity of aging sewer infrastructure and increases the risk it may be overwhelmed, forcing the release of untreated water into nearby water sources including those used for drinking; erodes banks and shorelines that support buildings and infrastructure; damages power lines, infrastructure, and vegetation; and disrupts power and transportation systems resulting in reduced productivity and profitability.

Sustainability Policy: Disaster Preparedness

The City has a dedicated page on its website to emergency preparedness that has a list of links and contact information for essential services. The City nor the County has a local hazard mitigation plan that includes what to do in case of extreme weather. In 2004, Washtenaw County worked with all local units of government to adopt resolutions that would support a Hazard Mitigation Plan to become eligible for FEMA grant funding for high-risk hazards. However, that year, FEMA grants focused on flooding mitigation instead and the Hazard Mitigation Plan was discontinued.⁷² Since then, the County conducted a risk assessment that put convective weather (severe winds, lightning, tornadoes, hailstorms) as the top threat.⁷³ The County also has an Emergency Operations Center which becomes the centralized coordinating point for large-scale emergencies. It is recommended that Ypsilanti participates in this process when the County updates the plan to a multilingual and universally accessible plan for emergencies that include climate change predictions.

Heat

Because not everyone has access to air conditioning, this is an equity issue. While cooling centers have been identified at the county-level, it is worth preparing now for increasing locations and hours for air-conditioned rooms. To start, conducting a heat island assessment will show the hottest areas of the City and provide guidance on where to locate cooling centers. Secondly, monitoring where ozone levels peak on hot days can indicate where “outbreaks” for respiratory problems may stem from and supplementary services to cooling centers could be targeted there.

Cool

Cold days also come with response improvements. When heating a household is too expensive for vulnerable populations to maintain, heating centers shall be distributed for households to get through the winters comfortably. Similar to cooling centers, there should be an expectation that established heating centers need to be revisited and likely expanded. On a municipal level, many processes are set in motion during rain and snow events. The shift in focus will be in capacity building and less so in wholesale change to established processes. For example, an apt overlap with goals of walkability is to improve snow removal from sidewalks and bicycle lanes so that weather

⁷² Email with David Halteman, Emergency Services Director. April 2020.

⁷³ Washtenaw County. Washtenaw County's Risk Assessment. <https://www.washtenaw.org/1760/Risk-Assessment-Hazard-Ranking>

doesn't have to stop residents from nonmotorized travel. With the expectation of colder and hotter weather, infrastructure made of the same materials will not last as long. The abrupt and prolonged changes cause roads and sidewalks to crack more frequently. An investment in materials that withstand such swings should be investigated and incorporated in the CIP with a priority on longevity.

Outreach about Sustainability Goals and Practices

Based on the collective prioritization results, residents see a need for education and outreach focused on sustainability-related services and programs. Most survey-takers gave the City a grade of a B or C on the guiding principle "communication is key," indicating that there is room for improvement. The decentralization of services makes it difficult for residents to know where to start when they are in need and/or how they can get involved. Most survey participants were unaware of the City of Ypsilanti Climate Action Plan (69%), let alone the strategies that the City is using to adapt to and mitigate the impacts of climate change that require buy-in from residents. Residents will be impacted by the effects of climate change and need easy access to resources that will help them respond to the negative impacts on their families and their health. Through its already established communication channels like the monthly newsletter and social media, the City can share its sustainability vision, efforts to fulfill it, and ways that residents can participate. Easy-to-follow tips for residents to reduce consumption could also be shared on a regular basis as a friendly reminder that it will require everyone to make change. Wide-scale reach would necessitate that Ypsilanti develop municipal marketing materials and have a plan for regularly schedule distribution.

When it comes to sustainability specifically, the public has also noted that sustainability education should place substantial emphasis on youth. Residents want to see a sustainability curriculum incorporated in the school district, pulling on the strength of local experts to teach these lessons. This has yet to be done at a national or state level, but some local efforts have incorporated sustainability into youth's curriculum. In the foreseeable future, most of this education will have to remain extracurricular due to limited funding.

Sustainability Policy: Education and Communication

To increase the climate resiliency of residents, the City must make information easier to access, provide emergency response training for extreme events, and help residents take proactive measures to reduce GHG emissions. Community education is an important step in promoting adaptation and mitigation strategies on an individual and community level, and the City is in a good position to provide easily accessible and well-publicized information through its established channels. One practical adaptation action the City to take on would be the promotion of the Great Lakes Water Authority, and other helpful but unknown services, that provide direct assistance to low-income households who have trouble with paying water bills or making repairs to leaky plumbing. The hope is that as the City develops and disseminates informational materials that residents can access and rely on, a beneficial partnership will continue to be strengthened.

A federal grant was awarded to the Southeast Michigan Stewardship Coalition to educate students across nine schools, including one school in Ypsilanti, about climate resiliency. Discussion on this topic included identifying potential solutions to make communities more resilient through a community-based project. Ypsilanti Community High School students worked with City Council

and the Sustainability Commission; all hope to forge a lasting partnership to complete more projects.⁷⁴

Working with the Sustainability Commission is the likely path forward for the City to educate its youth and residents on such issues. As the educational leader for sustainability initiatives, the Sustainability Commission can create and present a series of learning opportunities for energy savings and other assistance programs that lower monthly expenses and expose residents to new resources. Ideally, these sessions will be held at different venues throughout the City and focus on reaching the most vulnerable populations in need of home repair, utility assistance, and energy efficiency measures. A fun way to educate the community is to introduce a friendly competition. Competitions can be set up between city staff, businesses, schools, neighborhoods on any measure the Sustainability Commission wishes to teach. For example, a designated “zero waste” day for waste management or “commute challenges” for alternative transportation would entice people to modify their behavior and have other groups to discuss the challenges and benefits to it. Other ideas proposed by community members included energy treasure hunts, adopting catch basins or green infrastructure, and a “Bring Your Green to Work” day.

Public Input

In 2019, high priority themes from The City of Ypsilanti Energy Plan (2018), The City of Ypsilanti Climate Action Plan (2012), and the Shape Ypsilanti Master Plan (2013) were identified and coupled with a round of community input.

Residents were invited to attend an in-person meeting held on July 11, 2019 to participate in group exercises that prioritized sustainability actions. There was also an online survey (physical copies were provided), and in an attempt to “go to the people,” boards were placed on easels at different locations throughout the City (City Hall, EMU Student Center, Parkridge Community Center, and Cream & Crumb) in the spring and summer of 2019 that allowed residents to select their environmental priorities. The findings from each engagement were compiled, analyzed, and used as a basis for outlining the City’s ongoing path towards sustainability. The action plans represent public engagement findings, data collection, best practices, and staff capacity.

Community Engagement Summary of Details

Survey respondents: 144

Board entries: 876 unique
responses

Attendees at in person
session: 25

Action Plan

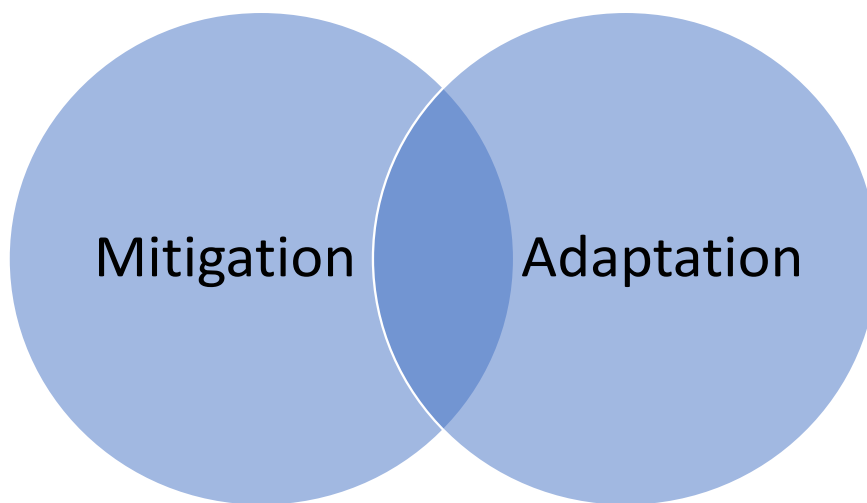
Adaptation & Mitigation Model

In practice, the actions that address the three pillars of sustainability fall into a common policy framework that differentiates “adaptation” strategies from “mitigation” strategies. Adaptation refers to actions that address the *effect* of the problem, but not the *root* of the problem. Adapting to climate change necessitates changing behaviors, systems, and our way of life *in response* to the results of climate change. One example would be relocating electricity and communication lines from overhead to underground locations to prevent power outages during extreme weather.

⁷⁴ Michigan Radio. “Centering the Classroom on Climate Resilience.” December 2019. <https://www.michiganradio.org/post/centering-classroom-climate-resilience>

Mitigating, or *reducing the risk of future changes* to the climate, necessitates dramatically reducing future GHG emissions and increasing the sequestration or storage of existing GHG in natural sinks such as forests or soil. While mitigation strategies will take decades to positively impact rising temperatures, reducing GHG emissions now will reduce future risk and make it easier to adapt to the future impacts of climate change. An example of a mitigation strategy would be increasing the deployment and utilization of renewable energy.

Where the two categories overlap is where resiliency is born – if an action can simultaneously mitigate negative effects of climate change and help a community adapt, then it rises to priority status. Because the tangible positive effects of mitigation will take the entire world’s coordination, not just the region’s, Ypsilanti’s focus on adaptation to the inevitable changes coming its way is the most prudent.



Energy

- Increased Energy Efficiency
- Renewable Energy
- Light Pollution

Table X: Action Plan: Increasing Energy Efficiency and Renewable Energy

Sustainability Alignment	Action	Source	Adaptation/ Mitigation	Key Accountable Agency	Funding/ Financing Source
Equity, Environment, Economy	Improve municipal building performance following suggested actions from City of Ypsilanti Energy Plan and following	EP, New	Mitigation		

	energy management best practices. 1. Sustain the City's revolving loan fund. 2. Establish an energy manager position to: • Improve knowledge of energy management among city staff and appointed officials among staff. • Create a data-driven system that is replicable over time, and includes annual forecasts, benchmarks for energy use reductions, and an internal reporting protocol • Work with the Sustainability Commission to produce an annual report that highlights where emission reductions and procedural improvements have been made • Improve communications with facility managers, utility providers, and relevant contractors to resolve issues quickly.				
Equity, Environment, Economy	• Conduct a GHG inventory every 5 years • Input 2012 findings in the ICLEI GHG framework	New	Mitigation		
Environment, Economy	• Research and utilize the most efficient equipment available • Continue to incorporate renewable energy into the energy portfolio of each building including back-up generation. • Select a suite of projects to undertake in the short-term Couple projects with a short return on investment with projects with a long return on investment to improve the terms of longer ROI projects and facilitate their completion.	EP			
Equity, Environment,	Publicly report on progress made toward those energy goals.	New	Mitigation		

Economy					
Equity, Environment, Economy	Increase outreach to and participation of industrial and commercial customers in renewable energy and energy efficiency projects.	New	Mitigation		
Equity, Environment, Economy	Purchase renewable energy credits (RECs) for City operations.	New	Mitigation		
Equity, Environment, Economy	Promote state policies, incentives, grants and Community Energy Management programs that encourage energy efficiency and renewable energy to property owners.	New	Mitigation		
Equity, Environment, Economy	Implement an inter-departmental site plan review process with attention to sustainability-related strategies such as energy use and efficiency, generation and offsetting of emissions, on-site water management and infiltration, etc.	New	Mitigation and Adaptation		
Equity, Environment, Economy	Focus on increasing the energy efficiency and safety of rental properties. - Continue and increase rental inspections and enforcement. - Create a green rental certification program to encourage energy-efficient improvements.	MP, CAP	Mitigation and Adaptation		
Equity, Environment	Promote Washtenaw County's weatherization program for low-income homeowners.	New	Mitigation and Adaptation		
Equity, Environment,	Participate in or sign-on to regional, national or international commitments energy, climate, and sustainability including: - The Paris Climate Agreement - The Sierra Club's "Ready for 100" pledge - The Global Covenant of Mayors for Climate and Energy.	EP, New	Mitigation and Adaptation		

Equity, Environment,	Work with community stakeholders to initiate an energy competition. The university and City can partner together to challenge another city and university to an energy reduction competition.	EP, CAP	Mitigation		
Equity, Environment, Economy	Improve fleet fuel efficiency with clean diesel, alternative fuels, and electrification.	New	Mitigation		
Environment, Economy	Develop an electric charging vehicle infrastructure strategy.	New	Mitigation		
Equity, Environment, Economy	Investigate the feasibility of a microgrid.	New	Adaptation		
Equity, Environment, Economy	Work with the City of Ann Arbor to investigate bulk buying of renewable energy through the Community Choice Aggregation Legislation.	New	Mitigation		

CAP – Climate Action Plan EP – Energy Plan MP – Master Plan PE – Public Engagement

Table X: Action Plan: Light Pollution

Sustainability Alignment	Action	Source	Adaptation/ Mitigation	Key Accountable Agency	Funding/ Financing Source
Environment, Economy	Review and incorporate aspects of the International Dark Sky Model ordinance to reduce energy waste.	New	Mitigation		
Environment, Economy	Require motion activated lighting on municipal buildings to save energy	New	Mitigation		
Environment	Encourage warm light to protect insects.	New	Mitigation and Adaptation		
Environment	Work with the HDC to incorporate historically compatibly fixtures that are dark sky compliant.	New	Mitigation and Adaptation		

CAP – Climate Action Plan EP – Energy Plan MP – Master Plan PE – Public Engagement

Earth

- Waste Management
- Biodiversity/Trees/Contamination
- Complete Neighborhoods

Table X: Action Plan: Waste Management

Sustainability Alignment	Action	Source	Adaptation/Mitigation	Key Accountable Agency	Funding/Financing Source
Environment, Economy	Conduct a waste audit to understand the baseline composition of the waste stream at the municipal operations and community level.	New	Mitigation		
Environment	Investigate funding sources to bring down the cost of a biodigester	New	Mitigation		
Equity, Environment, Economy	Implement an educational campaign on recycling and composting	New	Mitigation and Adaptation		
Environment, Economy	Create a coordinated recycling system that has a one stop for or difficult-to-recycle materials including electronics and refrigerant management.	New	Mitigation		
Environment, Economy	Define Zero Waste for Ypsilanti using the Zero Waste hierarchy. Set a goal for City operations to be zero waste (excluding medical waste) by a specific date with annual benchmarks.	New	Mitigation		
Environment, Economy	Require any events with a City permit provide for recycling and compost, and provide a discount for Zero Waste events.	New	Mitigation		
Environment, Economy	Promote and increase opportunities for municipal composting. • Implement a pilot program for a municipal kitchen compost system with high food-waste generators. • Investigate a partnership with a commercial-scale compost operations.	CAP	Mitigation		

	Pilot curbside community composting services for leftover food.				
Environment, Economy	Require government operations to use durable or compostable materials	CAP	Mitigation		
Equity, Environment	Increase access to curbside recycling services to multi-family units.	CAP, PE	Mitigation		
Equity, Environment	Expand recycling to public spaces and all City facilities by placing artful, educational, and engaging waste sorting stations throughout the community.	CAP	Mitigation		
CAP – Climate Action Plan EP – Energy Plan MP – Master Plan PE – Public Engagement					

Table X: Action Plan: Biodiversity, Trees, and Contamination

Sustainability Alignment	Action	Source	Adaptation/ Mitigation	Key Accountable Agency	Funding/ Financing Source
<i>Biodiversity</i>					
Environment, Economy	Partner with the County to inventory land that could be nominated for WAPP	New	Mitigation		
Environment, Economy	Train inspectors to spot wildlife-friendly plants and prevent their removal	New	Mitigation		
Environment, Economy	Create informational materials for property owners on preferred and prohibited plants	New	Mitigation		
Environment, Economy	Rezone Mansfield and Clark to a more protective zoning district	New			
<i>Trees</i>					

Environment	Diversify the public tree stock	New	Mitigation and Adaptation		
Environment, Equity	Invest in tree maintenance	New	Mitigation and Adaptation		
Environment	Implement a tree preservation ordinance	New	Mitigation and Adaptation		
Environment	Renew the City's Arbor Day designation	New	Mitigation and Adaptation		
Environment	Update street planting guidelines to prioritize tap roots species and vary pit size by species	New	Mitigation and Adaptation		
Environment	Increase tree plantings according to the Community Forestry Management Plan	New	Mitigation and Adaptation		
<i>Soil Contamination</i>					
Environment, Economy, Equity	Confirm sites of contamination with EGLE	New	Mitigation		
Environment	Continue to use the Zoning Ordinances to limit land uses that have a higher likelihood of contaminating soil	New	Mitigation		
Environment, Equity	When using rezoning as a tool for protecting inhabitants from contamination, consult residents prior to the public hearing	New	Adaptation		
CAP – Climate Action Plan EP – Energy Plan MP – Master Plan PE – Public Engagement					

Table X: Action Plan: Complete Neighborhoods

Sustainability Alignment	Action	Source	Adaptation/ Mitigation	Key Accountable Agency	Funding/ Financing Source
<i>Transportation</i>					
Equity, Environment, Economy	Maintain and expand transportation options including the development of bicycle, pedestrian, and sharing networks. • Coordinate with Townships and WCRC on Border to Border (B2B) trail development. • Partner with Eastern Michigan University to create a bike-sharing program and car-sharing network. • Partner with the DDA and AATA to provide a discounted transit pass as an alternative to downtown parking permits. • Implement a parking cash-out alternative benefit option for employees. • Encourage police enforcement and legislative support for bike and pedestrian safety.	CAP, MP, New	Mitigation		
Equity, Environment, Economy	Make it easier for pedestrians and bicyclists to cross the street safely • Add bicycle lanes to major thoroughfares and trunklines • Retain the mix of uses within each corridor but allow them throughout the area. • Restore two-function to Cross, Huron, and Hamilton Streets. • Separate Cross and Washtenaw. • Restore Harriet Street as the Main Street of adjacent neighborhoods.	MP, PE	Mitigation		
Equity, Environment, Economy	Prioritize the improvement of nonmotorized connections that link neighborhoods and job centers	New	Mitigation		
Equity, Environment,	Prioritize transit-oriented development	New	Mitigation		

Economy					
Equity, Environment, Economy	Encourage corporate sponsorship of transit passes and infrastructure to encourage employee bus and bikeshare ridership.	New	Mitigation		
Equity, Environment, Economy	Improve neighborhood walkability by improving sidewalk connectivity and conditions.	New	Mitigation		
Equity, Environment, Economy	Continue to support the development of the Amtrak station	New	Mitigation		
<i>Development</i>					
Environment, Economy	Consider density bonuses on commercial corridors in exchange for developers meeting criteria that achieve city goals	New	Mitigation and Adaptation		
Equity, Environment, Economy	Develop a Green Business/Neighborhood Certification program.	New	Mitigation		
Equity	Seek affordable housing development and identify parcels where it can locate near services.	New	Adaptation		
Equity, Environment	Provide a Sustainability Commissioner liaison to a neighborhood interested in developing an eco district	New	Mitigation and Adaptation		
Environment, Economy	Incentivize US Green Building Council's LEED for Neighborhood Development standard for new development	New	Mitigation		
CAP – Climate Action Plan EP – Energy Plan MP – Master Plan PE – Public Engagement					

Water

- Water Quality
- Flooding

Table X: Action Plan: Water

Sustainability Alignment	Action	Source	Adaptation/ Mitigation	Key Accountable Agency	Funding/ Financing Source
Equity, Environment	Establish a Sensitive Features Overlay Zoning District along the Huron River and implement LID standards and chemical bans.	New	Mitigation		
Equity, Environment, Economy	Work with YCUA to develop home and business water efficiency financing program.	CAP	Mitigation		
Environment	Research the status of wells and provide resources for testing water quality to property owners.				
Equity, Environment	Invest in consistent enforcement for compliance to the Sensitive Feature Overlay	New	Mitigation		
Equity, Environment	Connect homeowners to Washtenaw County rain garden services.	New	Mitigation and Adaptation		
Equity, Environment,	Investigate an equitable stormwater fee schedule that encourages converting impervious to pervious surfaces and proper use of rain barrels.	New	Adaptation		
Equity, Environment, Economy	Incorporate rainwater displacement calculations into the site plan review and base landscaping standards on run-off volume	New	Mitigation		
Environment	Continue to financially support the removal of the Peninsular Dam	New	Adaptation		
Environment	Update the flood maps based on climate projections and changes to the river channel	New	Adaptation		

Environment, Equity	Ban basements where the soil has limited capacity to handle stormwater or enforce floodplain standards	New			
Environment	Expand the City's capacity to deal specifically with heavy rainfall. - Develop a Stormwater Management Plan - Incorporate capacity upgrades for grey stormwater management into the CIP based on predictions for greater precipitation	.			

Education and Communication

- Education
- Communication
- Disaster Preparedness

Table X: Action Plan: Education and Communication

Sustainability Alignment	Action	Source	Adaptation/ Mitigation	Key Accountable Agency	Funding/ Financing Source
Equity, Environment, Economy	Promote the city's energy, climate, and sustainability vision. - Include in the monthly newsletter dedicated to the community's sustainability vision, efforts, and easy-to-follow tips for residents. - Develop municipal marketing materials to share with residents on key sustainability topics - Promote the City's commitment to energy, climate, and sustainability through regional conferences, and/or other appropriate communication mechanisms.	CAP, EP, New	Mitigation and Adaptation		
Equity, Environment,	Organize competitions between municipal employees, business owners, and neighborhoods that promote	CAP, New	Mitigation		

Economy	sustainability-focused activities: • “Bring Your Green to Work,” • Energy treasure hunts, • Adopting catch basins or green infrastructure, • Zero waste days, • Smart commute weeks, and challenges to bike, walk or take public transit to work.				
Equity, Environment, Economy	Implement an educational series about energy efficiency in different venues. • Focus on the most vulnerable populations. • Educate on the availability of low and no cost business energy audit services through multiple partners. • Promotes home water and energy efficiency improvements, utility assistance programs, home repair, and other programs that help residents reduce their monthly expenses. • Publicize existing finance and funding opportunities for integrating solar development into private projects	CAP, New	Mitigation and Adaptation		
Equity	Promote Great Lake Water Authority program WRAP to perform conservation audits and funds for repairs to help reduce low-income households reduce water bills.	New	Mitigation and Adaptation		
Equity, Environment, Economy	Sustainability Commissions shall continue to work with sustainability-related organizations to develop and offer in school guest lectures, field trips, and other learning opportunities with local schools	New	Mitigation and Adaptation		

Table X: Action Plan: Disaster Preparedness and Adaptive Responses to Climate Change

Sustainability Alignment	Action	Source	Adaptation/ Mitigation	Key Accountable Agency	Funding/ Financing Source
Equity, Environment, Economy	Conduct an Environmental Justice analysis that identifies vulnerable populations and structures that are disproportionately impacted by climate change.	New	Adaptation		
Equity	Implement renewable backup power systems for areas of refuge and emergency facilities.	New	Adaptation		
Equity, Environment	Partner with Washtenaw County to expand emergency preparedness and communication tools including a multilingual and universally accessible plan that includes climate change predictions.	New	Adaptation.		
Equity, Environment,	Conduct an urban heat island assessment.	New	Adaptation		
Equity	Work with the County to identify additional warming and cooling shelters and invest in back-up generation.	New	Adaptation		
Equity	Require occupied residential rental units to have one air-conditioned room.	New	Adaptation		
Equity, Environment, Economy	Work with the County to expand local air quality monitoring system.	New	Adaptation		
Equity, Environment, Economy	Improve response to severe storm events. - Investigate infrastructure materials that can weather extreme weather. - Improve snow and ice response for sidewalks.	PE, New, CAP	Adaptation		

Appendix

Table X: Contamination and LUSTs by Census Tract

Census Tract	Sites of Environmental Contamination	Leaking Underground Storage Tanks (Open)	Leaking Underground Storage Tanks (Closed)	Total
Tract 4108	8	2	13	23
Tract 4106	4	3	3	10
Tract 4107	1	1	4	6
Tract 4103	3	1	7	11
Tract 4110	2	2	4	8
Tract 4112	1	1	1	3
Tract 4109	1	1	2	4
Tract 4102	0	0	1	1
Tract 4111	0	0	1	1
Total	20	11	36	67

Source: Michigan Department of Environment, Great Lakes, and Energy, EnviroMapper

Action Plan Prioritization for Ypsilanti’s Sustainability Plan

ENERGY: Decrease government operation emission in support of attaining citywide net zero by 2030		
	Action	Term
1	Establish an Energy Manager position to be responsible for the following duties: • Improve knowledge of energy management among city staff and appointed officials among staff • Create a data-driven system that is replicable over time, and includes annual forecasts, benchmarks for energy use reductions, and an internal reporting protocol • Work with the Sustainability Commission to produce an annual report that highlights where emission reductions and procedural improvements have been made • Improve communications with facility managers, utility providers, and relevant contractors to resolve issues quickly • Increase outreach to and participation of industrial and commercial customers in renewable energy and energy efficiency projects • Research and utilize the most efficient equipment available	Mid
2	Continue to incorporate renewable energy into the energy portfolio of each government building including back-up generation	Mid
3	Re-establish the City’s revolving loan fund for energy efficiency projects.	Mid
4	Conduct a GHG inventory every 5 years using input from 2012 & 2018 findings in the ICLEI GHG framework	Long
5	Improve fleet fuel efficiency with clean diesel, alternative fuels, and electrification.	Long
6	Publicly report on progress made toward those energy goals.	Near
ENERGY: Decrease the community’s emissions by 171,310 metric tons of C02e by 2030		
	Action	Term

1	Work with the City of Ann Arbor to investigate bulk buying of renewable energy through the Community Choice Aggregation Legislation	Long
2	Purchase renewable energy credits (RECs) for City operations	Long
3	Promote state policies, incentives, grants, and Community Energy Management programs that encourage energy efficiency and renewable energy to property owners	Near
4	Promote Washtenaw County’s weatherization program for low-income homeowners.	Near
5	Work with community stakeholders to initiate an energy competition. The university and City can partner together to challenge another city and university to an energy reduction competition.	Near
6	Implement an inter-departmental site plan review process with attention to sustainability-related strategies such as energy use and efficiency, generation and offsetting of emissions, on-site water management and infiltration, etc.	Near
7	Investigate the feasibility of a microgrid	Near
8	Review and incorporate aspects of the International Dark Sky Model ordinance to reduce energy waste (i.e. motion activated lighting on municipal buildings)	Near
9	Participate in or sign-on to regional, national, or international commitments energy, climate, and sustainability including: • The Paris Climate Agreement • The Sierra Club’s “Ready for 100” pledge • The Global Covenant of Mayors for Climate and Energy.	Near
10	Develop an electric charging vehicle infrastructure strategy	Long
11	Create a green rental certification program to encourage energy-efficient improvements	Mid

12	Work with the HDC to incorporate historically compatibly fixtures that are dark sky compliant	Mid
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*with an Energy Manager

EARTH		
WASTE MANAGEMENT: Reduce the amount of waste generated in Ypsilanti that enters landfills		
	Action	Term
1	Expand recycling to public spaces and all City facilities by placing artful, educational, and engaging waste sorting stations throughout the community	Mid
2	Create a coordinated recycling system that has a one stop for difficult-to-recycle materials including electronics and refrigerant management	Long
3	Define Zero Waste for Ypsilanti using the Zero Waste hierarchy. Set a goal for City operations to be zero waste (excluding medical waste) by a specific date with annual benchmarks.	Near
4	Require government operations to use durable or compostable materials	Near
5	Implement a pilot program for a municipal kitchen compost system with high food-waste generators.	Mid
6	Increase access to curbside recycling services to multi-family units	Mid
7	Investigate a partnership with a commercial-scale compost operation	Near

8	Pilot curbside community composting services for leftover food	Mid
9	Conduct a waste audit to understand the baseline composition of the waste stream at the municipal operations and community level	Near
10	Investigate funding sources to bring down the cost of a biodigester	Mid
11	Implement an educational campaign on recycling and composting	Mid
12	Require that any events with a City permit provide for recycling, compost, and provide a discount for Zero Waste events	Near

	Action	Term
Biodiversity: Expand and protect natural habitats		
1	Create informational materials for property owners on preferred and prohibited plants	Near
2	Rezone Mansfield and Clark to a more protective zoning district	Near
3	Train inspectors to spot wildlife-friendly plants to prevent their removal	Near
4	Partner with the County to inventory land that could be nominated for NAPP	Near
5	Encourage warm light to protect insects	Near

Trees: Preserve and expand a resilient tree canopy		
1	Implement a tree preservation ordinance	Near
2	Increase and diversify the public tree stock according to the Community Forestry Management Plan	Long
3	Invest in tree maintenance	Long
4	Renew the City’s Arbor Day designation	Mid
5	Update street planting guidelines to prioritize tap roots species and vary pit size by species	Near
Soil Contamination: Eliminate new instances of soil contamination and responsibly deal with the legacy of existing polluted sites		
1	Continue to use the Zoning Ordinances to limit land uses that have a higher likelihood of contaminating soil	Near
2	Consult residents prior to the public hearing regarding rezoning as a tool to mitigate contamination	When applicable
3	Confirm sites of contamination with EGLE	Near
COMPLETE NEIGHBORHOODS		
Transportation: Maintain and expand transportation options including the development of bicycle, pedestrian, and sharing networks.		
	Action	Term

1	Implement a parking cash-out alternative benefit option for employees	Long
2	Prioritize transit-oriented development	Ongoing
3	Partner with the DDA and AATA to provide a discounted transit pass as an alternative to downtown parking permits	Mid
4	Encourage corporate sponsorship of transit passes and infrastructure to encourage employee bus and bikeshare ridership	Mid
5	Partner with Eastern Michigan University to create a bike-sharing program and car-sharing network	Mid
6	Make it easier for pedestrians and bicyclists to cross the street safely • Add bicycle lanes to major thoroughfares and trunklines • Retain the mix of uses within each corridor but allow them throughout the area. • Restore two-function to Cross, Huron, and Hamilton Streets. • Separate Cross and Washtenaw. Restore Harriet Street as the Main Street of adjacent neighborhoods.	
7	Coordinate with Townships and WCRC on Border to Border (B2B) trail development	Ongoing
8	Encourage police enforcement and legislative support for bike and pedestrian safety	Near
9	Improve neighborhood walkability by improving sidewalk connectivity and conditions. Prioritize the improvement of nonmotorized connections that link neighborhoods and job centers.	Long
10	Continue to support the development of the Amtrak station	Long

Development: Incentivize energy efficient and socially responsible development

1	Consider density bonuses on commercial corridors in exchange for developers meeting criteria that achieve city goals	Near
2	Incentivize US Green Building Council's LEED for Neighborhood Development standard for new development	Near
3	Develop a Green Business/Neighborhood Certification program	Mid
4	Seek affordable housing development and identify parcels where it can locate near services	Ongoing
5	Provide a Sustainability Commissioner liaison to a neighborhood interested in developing an eco-district	When applicable

WATER		
	Action	Term
Quality: Protect the watershed from further contamination		
1	Establish a Sensitive Features Overlay Zoning District along the Huron River and implement LID standards and chemical bans	Near
2	Invest in consistent enforcement for compliance to the Sensitive Feature Overlay	Mid
3	Connect homeowners to Washtenaw County rain garden services	Near

Flooding: Expand the City’s capacity to deal with heavy rainfall to mitigate negative effects on people and property.		
1	Incorporate capacity upgrades for grey stormwater management into the CIP based on predictions for greater precipitation	Mid
2	Update the flood maps based on climate projections and changes to the river channel	Near
3	Investigate an equitable stormwater fee schedule that encourages converting impervious to pervious surfaces and proper use of rain barrels	Mid
4	Ban basements or enforce floodplain standards its boundaries where the soil has limited capacity to handle stormwater	Near
5	Develop a Stormwater Management Plan	Near
6	Continue to financially support the removal of the Peninsular Dam	Ongoing
Efficiency: Promote resources for water conservation and testing to ensure access to clean water and efficiency upgrades		
7	Work with YCUA to develop home and business water efficiency financing programs	Near
8	Promote Great Lake Water Authority program WRAP to perform conservation audits and funds for repairs to help reduce low-income households reduce water bills	Near
9	Research the status of wells and provide resources for testing water quality to property owners	Near

EDUCATION AND COMMUNICATION		
	Action	Term
Learning: The City of Ypsilanti plays a leading role in educating its residents on sustainability topics		
1	Implement an educational series about energy efficiency in different venues with a focus on teaching the most vulnerable populations about resources that help reduce their utility bills	Near
2	Sustainability Commissions shall continue to work with sustainability-related organizations to develop and offer in school guest lectures, field trips, and other learning opportunities with local schools	Ongoing
3	The city determines a designated point person to direct sustainability-related questions or comments to the correct department	Near
4	Promote the city's energy, climate, and sustainability vision through the establish monthly newsletter and develop other municipal marketing materials to update residents on city efforts, key sustainability topics, and easy-to-follow tips at home	Near
5	Organize competitions between municipal employees, business owners, and neighborhoods that promote sustainability-focused activities: • “Bring Your Green to Work,” • Energy treasure hunts, • Adopting catch basins or green infrastructure, • Zero waste days, • Smart commute weeks, and challenges to bike, walk, or take public transit to work.	Mid

Disaster Preparedness: Develop the datasets necessary to determine where disaster relief efforts should be targeted		
1	Conduct an Environmental Justice analysis that identifies vulnerable populations and structures that are disproportionately impacted by climate change	Near
2	Conduct an urban heat island assessment	Near
3	Work with the County to expand local air quality monitoring system	Near
4	Investigate infrastructure materials that can weather extreme weather	Near
5	Implement renewable backup power systems for areas of refuge and emergency facilities	Mid
6	Partner with Washtenaw County to expand emergency preparedness and communication tools including a multilingual and universally accessible plan that includes climate change predictions	Near
7	Work with the County to identify additional warming and cooling shelters	Near
8	Require occupied residential rental units to have one air-conditioned room	Near
9	Review response protocol and update where needed to respond to severe storm events	Near
10	Improve snow and ice response for sidewalks	Near



Sustainability Plan edits:

All graphics should be displayed in sufficiently high resolution to be readable. They are not currently readable. Also data behind the GIS images is not readily available and it should be.

In terms of overall layout, I recommend placing the section of the Action Plan related to each narrative section at the conclusion of that section, in addition to keeping the full action plan at the end.

With the action items positioned at the conclusion of each section we could see a score of how the policy recommendations will advance the Commissions goals of addressing Ypsi's equity, environment & economy.

Page 4

I strongly suggest articulating the inception of the EJ movement as being with Dr. Robert Bullard. The EJ movement was initiated by the black community and really shouldn't be cited as starting with President Clinton's EO. EPA offers this history slide deck:

<https://www.epa.gov/environmentaljustice/environmental-justice-timeline>

Page 6

Equity Example:

Change language to: Eliminating disparities among traditionally disadvantaged people....

Economics Definition: The degree to which this plan can positively impact community wealth and uplift the well being of the working class.

Page 20

Wildlife-friendly Gardens

- It would be helpful to have model language or recommendation here.

Educational Materials

- Same with his section

Page 22/23

Tree Equity Placement is problematic. It has the whole EMU campus shaded fairly with most other areas of the city; I think that the scale may need to be adjusted to accommodate the characteristics of the city. Eg. Low-income overall and other consideration of social vulnerability.

- This and other maps need full description of data available somewhere in the appendix or other location.

Page 28/29

This section needs a discussion of BuyNothing and Mutual Aid groups in Ypsi. There is a lot of reuse efforts that should be highlighted.

I would like to see policy recommendations for city supported reuse programs.

Page 31

Complete Neighborhoods: This section is fairly tone deaf to the fact that the state owns trunk lines through the city. The impact of having major one-way arteries throughout the city really limits the complete streets success. I think the state's unwillingness or extremely slow action committing to road diets in the city is a problem.

Policy Recommendations should include some kind of suggestion on where to look for how to collaborate or manage state ownership of major streets.

Page 41

I would like this offered as a policy recommendation.

Page 42

Policy Recommendations: The City should advocate to ban utility shut-offs during heat and cold events.

The City should work with the county on an update HMP that takes climate projections into account. (this is not currently required by the state and it should be done. Without future climate considerations the work is effectively useless).

Re: UHI Assessment: It seems like the UHI assessment should be nearly complete by virtue of the Tree Equity Map. Can B&R share this map and underlying data with the City and the student group working on Resilience Hubs to create this tool.

Page 43:

GLWA - What program specifically at GLWA. I checked their website and I don't see anything about support programs.

Page 45

Mitigation + Adaptation + Social Justice = Resilience

Page 50

Add action on Microhabitats

Page 51

Create a prioritize UTC plan focusing on equitable tree planting which address UHI and other social vulnerability considerations.

Page 53

Coordinate citizen to advocate of change at the state level to slow down traffic on state owned arteries/corridors.

Page 53

Prioritize pedestrians at all cross walk. Make pedestrian walk lights automatic.



Resolution No. 2020-002
2020-02-24

RESOLVED BY THE SUSTAINABILITY COMMISSION:

WHEREAS, there is an ongoing global biodiversity crisis, with current rates of species' extinctions estimated at 1000 times the historical background rate across evolutionary time; and

WHEREAS, this biodiversity crisis is impacting animals responsible for pollinating the vast majority of food plants used for human consumption (hereafter "pollinators"); and

WHEREAS, monoculture turf grass (lawn grass) does not support biodiversity, requires unsustainable inputs of fertilizers, water, and fossil fuels for mowing and maintenance; and increases runoff and stream bank erosion; and

WHEREAS, native plants and other habitat- and food-providing plants (hereafter "pollinator-friendly plants") support pollinators and other wildlife; and

WHEREAS, pollinator-friendly plants can be well-adapted to local soils and climate, and insect- and disease-resistant, therefore requiring less water, chemical application, and maintenance; and

WHEREAS, the City of Ypsilanti has been designated as a "Bee City;" and

WHEREAS, perception of lawn, property, or garden aesthetics is a personal choice;

NOW, THEREFORE BE IT RESOLVED that the City of Ypsilanti shall make every reasonable effort to use pollinator-friendly plants on properties owned by the City, and

BE IT FURTHER RESOLVED that the City Council will instruct the Planning Commission to update the City Zoning Ordinances to (a) strike the plant height limitation; (b) prohibit only invasive and noxious weeds; and (c) reflect support of pollinator-friendly plants and plantings; and

BE IT FURTHER RESOLVED that the City Council will instruct the Administrative Hearings Bureau to disregard plant blight violations until the Zoning Ordinance is updated, and

BE IT FURTHER RESOLVED that the Sustainability Commission will make every effort to educate and empower residents with the goal of transitioning private properties to include pollinator-friendly plants.

OFFERED BY: Commissioner Greenwald

SUPPORTED BY: _____

YES:

NO:

ABSENT:

VOTE:

Invasive and Noxious Weeds

(List adapted from the resources below, along with consultation with professional botanists and restoration biologists.)

Common Name	Scientific Name	Plant Type
Garlic Mustard	<i>Alliaria petiolata</i>	Forb
Ragweed	<i>Ambrosia artemisiifolia</i> L. var. <i>elatior</i> (L.) Descourtils; <i>Ambrosia elatior</i>	Forb
Spotted Knapweed	<i>Centaurea maculosa</i>	Forb
Chicory	<i>Cichorium intybus</i>	Forb
Canada Thistle	<i>Cirsium arvense</i>	Forb
Bull Thistle	<i>Cirsium vulgare</i>	Forb
Queen Anne's Lace	<i>Daucus carota</i>	Forb
Teasel	<i>Dipsacus</i> sp.	Forb
Giant Hogweed	<i>Heracleum mantegazzianum</i>	Forb
Dame's Rocket	<i>Hesperis matronalis</i>	Forb
Purple Loosestrife	<i>Lythrum salicaria</i>	Forb
Sweet Clover	<i>Melilotus</i> sp.	Forb
Wild Sweet William (Bouncing Bet)	<i>Saponaria officinalis</i>	Forb
Bladder Campion	<i>Silene vulgaris</i>	Forb
Mullein	<i>Verbascum thapsus</i>	Forb
Orchard Grass	<i>Dactylis glomerata</i>	Grass
Japanese Stiltgrass	<i>Microstegium vimineum</i>	Grass
Common Reed	<i>Phragmites australis</i>	Grass
Japanese Barberry	<i>Berberis thunbergii</i>	Shrub
Autumn Olive	<i>Elaeagnus umbellata</i>	Shrub
Japanese Knotweed	<i>Fallopia japonica</i>	Shrub
Asian Honeysuckles	<i>Lonicera</i> sp.	Shrub
Giant Knotweed	<i>Polygonum sachalinensis</i> (<i>Fallopia sachalinensis</i>)	Shrub
Common Buckthorn	<i>Rhamnus cathartica</i>	Shrub
Glossy Buckthorn	<i>Rhamnus frangula</i> (<i>Frangula alnus</i>)	Shrub
Multiflora Rose	<i>Rosa multiflora</i>	Shrub
Poison Sumac	<i>Toxicodendron vernix</i>	Shrub
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	Vine
Bindweed	<i>Convolvulus</i> sp.	Vine
Sweet Pea	<i>Lathyrus latifolius</i>	Vine
Poison Ivy	<i>Toxicodendron pubescens</i>	Vine/Shrub

Resources:

Michigan Department of Agriculture & Rural Development (MDARD) List of Prohibited and Restricted Weeds

https://www.michigan.gov/documents/mdard/Michigan_Prohibited_and_Restricted_Weeds_641413_7.pdf

State of Michigan Invasive Species Database

https://www.michigan.gov/invasives/0,5664,7-324-68002_71240---,00.html

U.S. Department of Agriculture – Michigan State-Listed Noxious Weeds

<https://plants.usda.gov/java/noxious?rptType=State&statefips=26>

7/13/2020

Gmail - FW: Sustainability Commission | Native Landscaping resolution, ordinance, my recs



Keith Michalowski <kmichalowski@gmail.com>

FW: Sustainability Commission | Native Landscaping resolution, ordinance, my recs

Bonnie Wessler <wesslerb@cityofypsilanti.com>
To: Keith Michalowski <kmichalowski@gmail.com>

Fri, Jul 10, 2020 at 3:59 PM

See below

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Bonnie Wessler, AICP

Project Manager, Department of Public Services

734/719.0266 (cell)

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she/her/hers

Sign up to receive City news and public notices here: <http://cityofypsilanti.com/list.aspx>

I am currently working remotely due to COVID-19. Current City Hall hours are posted at <https://cityofypsilanti.com/CivicAlerts.aspx?AID=1056>. For more information on the City's response and community resources during this time please visit cityofypsilanti.com/covid. For Countywide response and resources, please visit washtenaw.org/covid19. For Statewide response and resources, please visit www.michigan.gov/coronavirus.

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From: Bonnie Wessler
Sent: Friday, June 19, 2020 17:10
To: Ronald Akers <rakers@cityofypsilanti.com>
Subject: Sustainability Commission | Native Landscaping resolution, ordinance, my recs

This is the draft resolution:

RESOLVED BY THE SUSTAINABILITY COMMISSION:

WHEREAS, native plants are localized, well adapted to the local soils and climate, tend to be more insect and disease resistant, and require less watering and fertilizing than non-native plants; and

WHEREAS, wildlife such as birds are more attracted to the Native Plants with which they coevolved, and use such plants for food, cover, and rearing their young; and

WHEREAS, native plants, having evolved in the climate, are extremely hardy and therefore have lower maintenance and replacement costs; and WHEREAS, native plants protect water quality by reducing stormwater runoff and erosion; and

WHEREAS, healthy ecosystems have been shown to provide therapeutic benefits to our mental well-being and physical health; and WHEREAS, Native Plant usage helps restore the ecological balance we have lost through

<https://mail.google.com/mail/u/0/?ik=fb74bd3e7c&view=pt&search=all&permmsgid=msg-f%3A1671861305100206355&simpl=msg-f%3A16718613051...> 1/4

development and can help maintain, or even increase, property values; and

NOW, THEREFORE BE IT RESOLVED that the City of Ypsilanti shall make every reasonable effort to use native plants on properties owned by the City, and

BE IT FURTHER RESOLVED that the City Council will instruct the Planning Commission to update the City Zoning Ordinances to reflect support of native plants, and

BE IT FURTHER RESOLVED that the City Council will instruct the Administrative Hearings Bureau to disregard native plant blight violations until the Zoning Ordinance is updated, and

BE IT FURTHER RESOLVED that the Sustainability Commission will make every effort to educate and empower residents with the goal of transitioning private properties to include native plants.

The ordinance under which people are cited: 110-80 through 86:

- ARTICLE IV. - WEED CONTROL

- Sec. 110-80. - Noxious weeds, grass and brush determined to be a nuisance.

In order to preserve the public health, safety, and welfare of the citizens of Ypsilanti, the council determines that **the existence of grass, weeds, and brush more than ten inches in height within the city constitutes a nuisance for the reason that the said grass, weeds, and brush provides a hiding place for vermin, is unsightly and unkempt, and is more likely to be a dumping ground for trash than otherwise.**

- Sec. 110-81. - Duty to remove; penalty.

(a) The city council determines that the existence of weeds, brush and grass over ten inches in height on private property within the city poses a threat to the public health, safety and welfare, and is noxious and a nuisance per se, because weeds, brush and grass over ten inches in height is likely to attract and harbor vermin, provide cover for wild animals, encourage trash, attract criminal activity and lower property values.

(b) No owner, possessor or occupier shall permit noxious weeds, grass or brush at a height greater than ten inches on any private property. The provisions of this section are in addition to and cumulative with any and all other remedies or requirements which may be provided to the city by law or any provision of this Code or other ordinance of the city, and nothing in any provision of this Code or other ordinance of the city shall be deemed to impair the full effectiveness of this section.

(c) Blight violation. A person who violates any provision of this section is responsible for a blight violation, subject to payment of a civil fine as set forth in section 71-73. Repeat offenses under this section shall be subject to increased fines as set forth in section 71-73.

- Sec. 110-82. - Publication and contents of general notice to remove.

It shall be the duty of the city manager to give general notice at least once each year of required weed cutting by publication in a newspaper in the same manner as is required for the publication of other city notices. Such notice shall set forth the fact that all such weeds, brush and grass must be cut on or before the date therein designated and the publishing of such notice shall take place at least ten days prior to the date upon which such weeds, brush or grass must be cut.

- Sec. 110-83. - Removal by city.

(a) In the event the owner, possessor or occupant of land or the person having charge of any such land refuses or neglects to comply with the aforementioned notice to cut the weeds, brush or grass on or before the date stated in the notice such person is responsible for a blight violation, subject to payment of a civil fine as set forth in section 71-73. Repeat offenses under this section are subject to increased fines as set forth in section 71-73.

(b) It is the duty of the city manager or his/her designee to enter upon such land and to cause all such weeds, brush and grass to be cut down and the city manager or other authorized person doing this work shall not be liable in any action of trespass therefor.

- Sec. 110-84. - Payment of costs.

It shall be the duty of the city manager to keep an accurate account of the costs incurred in carrying out the provisions of section 110-83 and to file a statement thereof in the office of the city clerk. The owner, possessor or

occupant of any parcel or lot on which noxious weeds, brush or grass have been cut by city employees under the direction of the city manager, in the manner herein prescribed, is required to pay the costs so incurred. The city clerk shall bill each such owner, possessor or occupant for the costs charged against each parcel or lot. Payment may be made at the office of the city clerk, who is hereby authorized to receive it and to receipt therefor in the name of the city.

- Sec. 110-85. - Lien for costs.

In the event the owner, possessor or occupant of any parcel or lot on which noxious weeds, brush or grass have been cut by the city fails to pay the aforementioned bill from the city clerk within 30 days from the date of the billing, the city clerk shall thereupon place the entire sum, plus a collection charge as set by resolution of the city council, on the tax rolls as an assessment against the parcel or lot, the assessment to be collected as other taxes are levied and collected. Such charges shall be added to the general city tax roll, and to the total of the taxes levied on such parcel or lot the same year and shall be a lien on the parcel until fully paid.

- Sec. 110-86. - Appeal.

(a) The owner, possessor, or occupant of any parcel of lot billed for cutting noxious weeds pursuant to this article has the right to appeal the bill.

(b) Appeal must be taken within ten days of receipt of the bill, but in no case later than 30 days from the date of billing, to the city manager. The appeal must be in writing, signed by the appellant, and specify the reason for the appeal.

(c) The city manager will consider the appeal and make a decision in writing, within ten days of receipt of the appeal. A copy of the decision will be filed with the city clerk and sent to the appellant by first class mail.

(d) An adverse decision of the city manager may be appealed to the circuit court.

A separate-but-integrally-related section of code provides:

18-92: Property Maintenance Code

302.4 Weeds. All premises and exterior property must be maintained free from weeds or plant growth in excess of ten inches. All noxious weeds are prohibited. **Weeds are defined as all grasses, annual plants and vegetation, other than trees or shrubs provided; however, this term does not include cultivated flowers and gardens.** This section will be enforced according to the procedures in Article III, Weed Control, Sections 110-80 through 110-86 of the Ypsilanti City Code.

Essentially, the way the blight ordinance is written allows for people to have cultivated gardens, doesn't matter what's in it. So long as I can show my 4'x4' plot of poison ivy is well-cared-for, in theory it's all good. The question is, what's acceptable proof that the garden is well cared-for? Ferndale requires that people with these sorts of gardens register (online, free) and offer up signage (contact: Erin Quetell at equetell@ferndalemi.gov or 248-336-4361). Another way is called "cues to care" – essentially, you sort of over-the-top show that this is a cared-for plot of land, using borders, signage, and at least some very common/recognizable plants. Decent article here: <http://www.annarbor.com/home-garden/is-it-a-weed-patch-or-a-garden/>. It all comes down to intent (did you plant all that goldenrod on purpose) and execution (are you letting your goldenrod patch be overtaken by vinca or turfgrass or dandelions). If there's trash sitting untouched in it for weeks, obviously a weed patch. If there are rabbits nesting in there, could still be good. Rats, you definitely have a problem (that's generally not attributable to native plants, there'd have to be a good unsecured trash source nearby). They should probably also incorporate some mention of [state-registered invasive species](#).

So, what should SC call for?

-staff &/or SC to develop clear guidelines about how to declare intent (cues to care, registration, signage, receipts for plants/landscaper, lack of invasive species (as declared by the state), other)

-staff &/or SC to develop clear guidelines about how to prove maintenance (documentation by enforcement officer, landscaping contract, neighbor complaints, ongoing uncontrolled presence of invasive species (as declared by the state)- lots of photos).

7/13/2020

Gmail - FW: Sustainability Commission | Native Landscaping resolution, ordinance, my recs

-staff/legal review the need to amend ordinance to reflect intent + execution schema after trial period using said schema. Ordinance is currently broad enough that no changes are needed to implement, only to enshrine.

--

Bonnie Wessler, AICP

Project Manager, Department of Public Services

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she/her/hers

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Home / Newsroom / News Releases

USDA Announces Cooperative Agreements for Community Compost and Food Waste Reduction

Contact: FPAC.BC.Press@usda.gov

WASHINGTON, May 11 –The U.S. Department of Agriculture (USDA) today announced the availability of \$900,000 for local governments to host a Community Compost and Food Waste Reduction (CCFWR) pilot project for fiscal year (FY) 2020. The cooperative agreements will support projects that develop and test strategies for planning and implementing municipal compost plans and food waste reduction plans. The agreements are offered through USDA's Office of Urban Agriculture and Innovative Production.

"Food waste shouldn't end up in landfills when options like food recovery and composting are available," Under Secretary for Farm Production and Conservation Bill Northey said. "Such options not only benefit communities and the environment, they can also provide farmers and urban gardeners with exceptional, nutrient dense planting material."

"We are tapping into the creativity of communities across the nation to rethink the lifecycle of food in ways that minimize waste and maximize use," said Under Secretary for Marketing and Regulatory Programs Greg Ibach. "We look forward to highlighting the innovative practices of selected pilot projects."

Key Dates

USDA will accept applications on [Grants.gov](https://www.grants.gov) until 11:59 p.m. Eastern Time on June 26, 2020. Projects should span two years with a start date of October 1, 2020 and completion date of September 29, 2022.

Details

Cooperative agreements support projects led by local governments that: 1) generate compost; 2) increase access to compost for agricultural producers; 3) reduce reliance on, and limit the use of, fertilizer; 4) improve soil quality; 5) encourage waste management and permaculture business development; 6) increase rainwater absorption; 7) reduce municipal food waste; and 8) divert food waste from landfills. USDA's Natural Resources Conservation Service will provide assistance for conservation related activities.

Priority will be given to projects that anticipate or demonstrate economic benefits; incorporate plans to make compost easily accessible to farmers, including community gardeners; integrate other food waste strategies, including food recovery efforts; and collaborate with multiple partners.

Webinar

A webinar, which will be held on June 4, 2020, from 2 to 4 p.m. Eastern Daylight Time, will provide an overview of the cooperative agreements' purpose, project types, eligibility and basic requirements for submitting an application. Information on [how to register and participate in the webinar](#), or listen to the recording, will be posted at farmers.gov/urban.

More Information

Comments can be sent to UrbanAgriculture@usda.gov within 90 days, with the subject line "Community Compost and Food Waste Reduction Project."

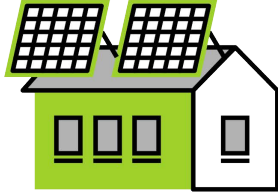
Questions about this cooperative agreement opportunity can be sent to UrbanAgriculture@usda.gov.

The Office of Urban Agriculture and Innovative Production was established through the 2018 Farm Bill. It includes representatives from many USDA agencies, including Farm Service Agency and Agricultural Marketing Service, and is led by the Natural Resources Conservation Service. Its mission is to encourage and promote urban, indoor, and other emerging agricultural practices, including community composting and food waste reduction. More information is available at farmers.gov/urban.

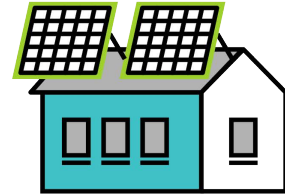
Additional resources that may be of interest to urban agriculture entities include [AMS grants](#) to improve domestic and international opportunities for U.S. growers and producers and [FSA loans](#).

The deadline for application was updated from midnight to 11:59 p.m. Eastern Time on June 26, 2020 to align with grants.gov.

USDA is an equal opportunity provider, employer and lender.



SOLARIZE YPSILANTI

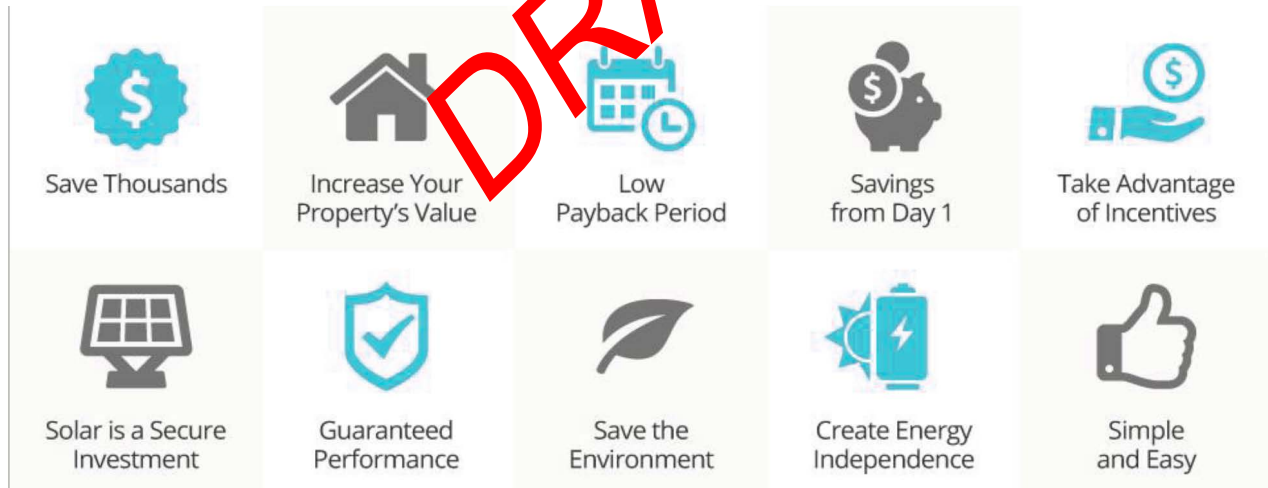


A City of Ann Arbor program to make it easier and more affordable for Washtenaw County residents to get solar on homes and businesses.

THE IDEA

- Neighbors and friends come together to learn about solar energy with a participating pre-vetted installer
- Participating residents benefit from group-buy discounts, agreed upon ahead-of-time with the installer
- Installers benefit from decreased costs associated with outreach and education, and discounts associated with buying in bulk
- All installers are approved by and work with Michigan Saves, which provides expedited low-interest financing for those interested

THE BENEFITS



If you are interested in participating in a Solarize event or learning more about it, contact:
Julie Roth
Solarize Program Coordinator, City of Ann Arbor
juliekayeroth111@gmail.com 734-330-9585

A Program of A²Zero

