



RESILIENT WASHTENAW

December 7, 2022 as Approved by the County Board of Commissioners



RESILIENT WASHTENAW

Climate change is among the defining issues of our time and is already impacting Washtenaw County through more intense rain events, more frequent days with very high temperatures, and changes in plant growing cycles and wildlife populations.

Recognizing the need to act, in 2019 the County Board of Commissioners declared a climate emergency for Washtenaw County and set a goal of carbon neutrality for all of the County by 2035. In 2020, the board accelerated the goal from 2035 to 2030. These actions were supported through the incorporation of climate action in the County's organizational priorities for 2019, 2020, and 2021.

Last fall, after extensive planning, the board approved a project to develop a plan to achieve these carbon neutrality goals, which would look to prepare the people, infrastructure, and systems of the County to be resilient to the already changing climate.

Today, it is my great honor to present Resilient Washtenaw, a climate action plan for Washtenaw County. This plan provides a path to carbon neutrality for both the County as an organization and for the broader community. It boldly outlines the steps we need to take to prepare for climate change. This plan, should it be adapted by the Board of Commissioners, would be the first County-based Climate Action Plan in the State of Michigan.

Resilient Washtenaw is a significant milestone for Washtenaw County. We have a long history of work that comes with climate benefits. These include administering the voter approved natural areas preservation program (NAPP); our efforts to improve the comfort, safety and efficiency of the homes in low-income neighborhoods through the weatherization program; our ongoing work to electrify County buildings improve their efficiency; and developmental support of regional efforts to coordinate and improve recycling efforts. There is much the County is already doing which has climate benefits. Resilient Washtenaw highlights these efforts and seeks to reconsider many such programs as tools of climate action.

The County's climate goals are ambitious. Our planning efforts alone will not be sufficient to achieve them. To successfully meet our climate goals, the County will need to do more. We will need to work differently, and we will need to

coordinate and work closely with others. For this reason, our planning thinks broadly about the tremendous resources of the County and involves them in these efforts every step of the way.

We have reasons to be hopeful despite the magnitude of the challenge. Should the Board of Commissioners adopt this plan, the County would join the list of others who are working diligently on this issue and who also are already acting. Last spring the state of Michigan released the MI healthy climate plan, the cities of Ann Arbor and Ypsilanti have adopted and are underway with their own plans to address climate change, numerous townships and villages are planning and acting to prepare their communities, and our universities. I am proud of this plan in that it adds the County to the list of those who are acting, and it commits our resources and talents to addressing this threat in partnership with others.

Finally, I am proud of the process by which this plan was developed, and the values incorporated within. Everyday Washtenaw County employees and our partners help residents with matters both routine and extraordinary; from recording births and weddings to providing health care during a global pandemic. This existing work is critically important, and so too, is addressing climate change. The County can and must do both, though it will be difficult. We know that the consequence of inaction means that families and communities will suffer unnecessarily. Accordingly, this plan very intentionally puts equity, and a focus on avoiding harm to those most likely to be hurt by climate change, at the center of our planning and future efforts.

Resilient Washtenaw is a milestone, and milestones are markers on long paths – they are not the destination. This plan and our efforts will need be revisited and improved in the coming years as we work towards our goals of carbon neutrality and a resilient community. We expect to have successes and failures in this important work. For the County, each action in this plan will require time, focus, commitment, and resources to successfully deploy. We will need your support, partnership, and ongoing commitment to be successful.

Gregory Dill, County Administrator



Washtenaw County Environmental Council

The Washtenaw County Environmental Council is an appointed subcommittee of the Washtenaw County Board of Commissioners, and advises the Board on emissions, climate change, environmental protection, and environmental justice.

- Kris Olsson, Chair - Community Groups
- Gay MacGregor, Vice Chair - Vehicle Emission Reduction Issues
- Michelle Deatrick, Chair Emeritus - Land Use and Preservation
- Anne Brown - Racial Equity & Environmental Issues
- Andrew Comai - Labor
- Hallie Fox - Water Protection
- Virginia He - Youth
- Tim Redmond - Sustainable Agriculture
- Joet Reoma - Infrastructure Energy Reduction Issues
- Theresa Tupacz - Sustainable Energy Producers
- Lisa Wozniak - Community Groups
- Sue Shink - County Commissioner
- Jason Morgan - County Commissioner

Washtenaw County

Andrew DeLeeuw, Director of Strategic Planning

Staff Steering Committee

The Steering Committee was convened to provide knowledge and guidance into the actions called for in the plan, and to consider the efforts and resources necessary to implement the plan.

- Theo Eggermont, Director of Public Works
- Coy Vaughn, Director of Washtenaw County Parks and Recreation Commission
- Jason Fee, Director of Facilities Management
- April Avigne, Energy Coordinator
- Ben Pinette, Emergency Operations Manager
- Kristen Schweighoefer, Environmental Health Director
- Cindra James, Emergency Preparedness Administrator
- Teresa Gillotti, Director of the Office of Community and Economic Development
- Crystal Campbell, Public Information Officer
- Lisa Fusik, District Court Administrator
- Katie Snay, CMH Director of Recipient Rights
- Terrance Williams, Racial Equity Office Communication and Program Manager
- Ruth Kraut, Deputy Health Officer

Resilient Washtenaw Consultants

Resource Recycling Systems, Wade Trim, Elevate Energy, EcoWorks, Beth Gibbons, Center for Neighborhood Technology



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EXECUTIVE SUMMARY

Local Impacts of Climate Change

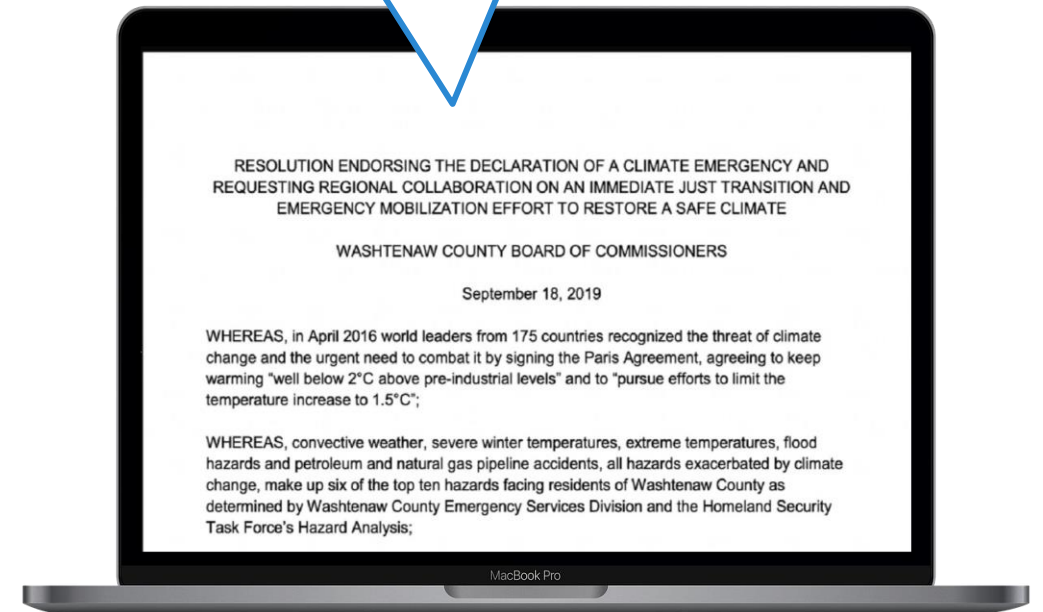
Climate change is already impacting quality of life and the way we live in Washtenaw County. In the last 50 years, the County has seen a marked increase in the number of extreme precipitation events, the overall amount of precipitation, and the number of days with a heat index over 90 degrees. Native flora and fauna species are migrating, or otherwise threatened, and native ecosystems are changing as a direct result of a warming planet.

Climate vulnerability is defined as *the propensity or predisposition to be adversely affected by climate change*. By the end of the 21st century, Southeast Michigan is expected to have more extreme weather events caused by climate change, and this will position the most vulnerable communities being at risk of extreme heat, flooding, and poor air quality.

Greenhouse gas emissions must be cut globally to prevent the planet from reaching the tipping point of a 1.5-degree Celsius increase in temperature. Climate change demands that we fundamentally reimagine our actions and how we live.

Local action is the first step in reducing global emissions. The Washtenaw County Board of Commissioners passed a resolution in 2019 acknowledging the climate emergency and set a goal to achieve carbon neutrality for County operations by 2030 and Countywide carbon neutrality by 2035.

NOW BE IT THEREFORE RESOLVED, Washtenaw County acknowledges that a climate emergency threatens our city, region, state, nation, civilization, humanity and the natural world;



Source: Climate Emergency Declaration R19-165 – September 18, 2019

The Problem: County Emissions

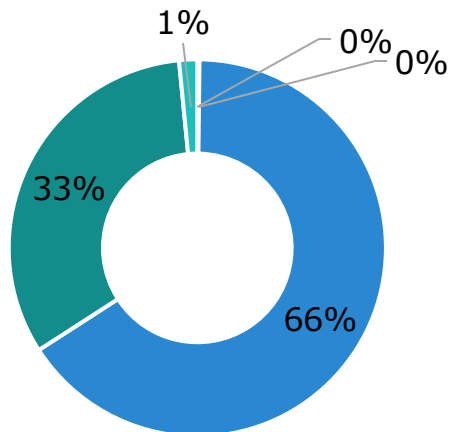
In 2019, Washtenaw County emitted 4,490,000 metric tons of carbon dioxide. Of these 4.49 million metric tons, Washtenaw County operations contributed 8,452 metric tons of carbon dioxide emissions in 2019 or 0.17% of total Countywide emissions.

Forecasting future emissions using business as usual assumptions, Countywide emissions would drop to approximately 4.25 million metric tons by 2030 and to 4 million metric tons by 2035. These reductions are largely the result of advances in technology and efforts underway within several municipalities and organizations. The data in this report show us how much work must be done quickly in the next 12 years to achieve carbon neutrality.

Climate change work requires us to reduce emissions, mitigate emissions through actions that either empower emission reduction or offset emissions by reducing them in other sectors, and to adapt to cope with the unavoidable impacts of climate change and become more resilient. The actions in this plan are designed to reduce emissions, increase our community adaptation, and to build resiliency with the County.

Where our Emissions Originate

COUNTY AND COMMUNITY EMISSIONS



- County Buildings
- County Transportation
- Community Buildings
- Community Transportation
- Community Waste

- Existing Buildings are the largest source of community CO2 emissions (66%).
- Transportation accounts for one third of community CO2 emissions.
- This information informs Resilient Washtenaw to target actions to reduce these emissions.

What is Resilient Washtenaw?

A WAY TO GET TO NET ZERO EMISSIONS AND PLAN FOR PROVIDING SERVICE AND INFRASTRUCTURE IN A CHANGING CLIMATE.

GOALS:

- Net Zero - County Operations by 2030
- Net Zero - County by 2035

THIS PLAN INCLUDES:

1. Climate Information of the County: history, current conditions, evolving trends, future projections
2. Greenhouse Gas Inventory: the sources and causes of the emissions from the County, and projections of future emissions
3. Vulnerability Analysis: identification of the people and places most at risk from climate change in our County
4. Strategies and Actions: the specific things that will be done to reach net zero emissions and to adapt to the changing climate

NEXT STEPS:

- Implementation Recommendations: *Detailed staffing, financing, reporting, and governance recommendations will be proposed after plan approval and brought to the Board of Commissioners for action*

Public Collaboration

From February 1, 2022, through October 20, 2022, the Resilient Washtenaw team hosted 17 public events, including targeted listening sessions for each of the nine County Board of Commissioners districts, two open sessions, and two youth sessions. Additionally, formal County meetings, open to the public, were held to discuss plan progress, outcomes and for the community to provide feedback on the Draft Action Plan. Public events targeted key community leaders and used partner networks to reach as many people as possible. Lastly, the County used the project website, social media and partner networks to notify residents about engagement sessions, provide feedback opportunities and share general information about the climate plan. A public comment period was provided to give stakeholders a means of reviewing the draft actions.

A crucial aspect of Resilient Washtenaw was reaching out to all communities in the County to learn directly from residents about their concerns, how climate change has impacted their personal life and the communities in which they live, and how to bridge the gap between the government, businesses, and the people in order to create net zero emissions by 2035.

In addition to working with the public, the project team also established a County Steering Committee comprised of key County staff to provide review and counsel to the Resilient Washtenaw Team about County organization issues. The Resilient Washtenaw Team also worked closely with the Washtenaw County Environmental Council – an appointed body including two County Commissioners who provided valuable insight and direction to the Community-wide issues of the plan.

The Resilient Washtenaw team worked with the County staff Steering Committee and a broader cohort of County staff across multiple departments for 6 facilitated Strategy Sessions that identified 445 potential actions that the County explored to support climate mitigation and adaptation. These actions were sorted across each strategy area and used to inform the actions outlined in the Resilient Washtenaw Plan.

As Resilient Washtenaw is implemented, it is critical that the County continues to build relationships and improve engagement with community-based organizations, individuals, non-profit organizations, businesses, and neighborhoods throughout the County.

Further, the County needs to deliver a consistent and ongoing message to help shift behaviors, emphasizing the relationship between the environment, health, quality of life, community well-being, and economic strength.

Success of the endeavor will be dependent on County leadership's ability to establish clear, consistently communicated, broadly understood goals—for overall County-wide change and transparent metrics to show progress.

What is Resilient Washtenaw

RESILIENT WASHTENAW ADDRESSES BOTH THE ORGANIZATION AND COMMUNITY

- Organization – County Government itself: everything it takes to run the organization
- Community – who the County serves: everything inside of County borders

RESILIENT WASHTENAW ADDRESSES BOTH MITIGATION AND ADAPTATION

- Mitigation - taking action to minimize and stop climate change
- Adaptation - preparing for the existing and future impacts of climate change

What Resilient Washtenaw is *not*:

- *A complete assessment of climate vulnerability for Washtenaw County*
- *An implementation plan for climate action in Washtenaw County*
- *A final statement or recommendation on resource allocation*

RESILIENT WASHTENAW ALIGNS WITH EXISTING PLANS, SERVICES, AND PRIORITIES OF AND WITHIN THE COUNTY

- Builds on existing County plans and initiatives from multiple departments including Health, Community and Economic Development, Parks and Recreation, and Facilities.
- Reinforces priorities and recommendations from area plans including A2Zero and the City of Ypsilanti's Sustainability Plan.

RESILIENT WASHTENAW IS EQUITY BASED

- Prioritizes mitigation strategies that create new economic opportunities through workforce development, circular economy, and reduced energy and transportation costs.
- Focuses adaptation efforts on areas that have been historically disinvested in or harmed by public policy and infrastructure initiatives.

RESILIENT WASHTENAW IS COLLABORATIVE

- Built through in-person/virtual meetings with over 30 local organizations and invitations to every County-wide municipality.
- Reached beyond meetings to hear from residents across the County via online surveys and engagement tools.

Resilient Washtenaw Framework

<p>STRATEGIES Focus areas of climate action plan Do impact carbon levels</p>	<p>PRINCIPLES Other County priorities Do not impact carbon levels</p>
<ol style="list-style-type: none"> 1. Implementation 2. Energy Transition 3. Housing 4. Mobility and Access 5. Health 6. Preserve Working Lands & Natural Areas 7. Infrastructure 8. Circular Economy 	<ol style="list-style-type: none"> 1. Racial Equity and Environmental Justice 2. Support Public Health 3. Just Transition 4. Resilient Economy 5. Community Support & Partnership 6. High Communication & Engagement

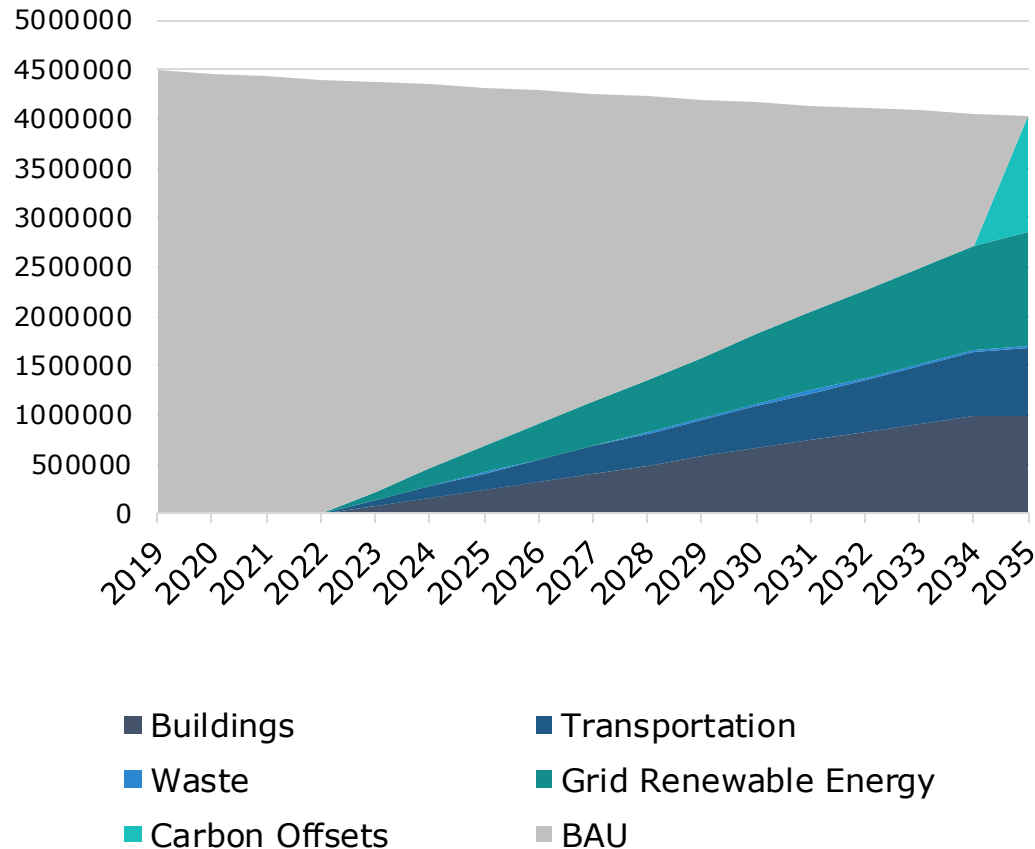
ACTIONS: 5-10 per strategy, each of which connect to the plan principles, and which cumulatively would achieve the carbon neutrality goals

GOALS
Zero net CO2 emissions for County Operations by 2030
Zero net CO2 emissions for all of Washtenaw County by 2035



Strategies and Actions

COMMUNITYWIDE EMISSIONS WEDGE REDUCTIONS TO ACHIEVE CARBON NEUTRALITY BY 2035 (MTCO2E)



- There are 45 actions spread across the eight strategy categories (list on following page).
- As noted previously, some of the actions are mitigation actions, designed to reduce or eliminate CO2 emissions and others are adaptation actions which will help the community adapt to the changing climate.
- Each action includes an analysis of implementation difficulty, return on public investment, the required implementation actors, and emission reductions (where applicable).
- The actions indicate which of the six principles or co-benefits may be realized with each action.
- Even with more aggressive adoption of building weatherization, electrification, and conversion to renewable energy sources than anticipated in the model, these actions alone will not achieve carbon neutrality for Washtenaw County.
- Based on the analysis of proposed actions, current emissions, and anticipated reductions, Washtenaw County will still need to address approximately 2.3 million metric tons of carbon dioxide in 2035, to get to carbon neutrality.
- Offsets are not a long-term solution for carbon neutrality. They are, however, a necessary short and near-term requirement to meet the goals set by the Board of Commissioners.



ACTION #	STRATEGY	ACTION TITLE
1.01	Implementation	On-going Climate Education and Public Engagement
1.02	Implementation	Create a Regional Resilience Authority
1.03	Implementation	Carbon Pricing in Decision Making
1.04	Implementation	Create a County-Based Carbon Offset Program
2.01	Energy Transition	100% Renewable Energy Options for Everyone
2.02	Energy Transition	Create Countywide Energy Concierge
2.03	Energy Transition	Expand Bulk Purchase Programs
2.04	Energy Transition	Expand Weatherization Programs
2.05	Energy Transition	Update Building Codes
2.06	Energy Transition	Time of Marketing Energy Rating Disclosure
2.07	Energy Transition	100% Renewable Energy and Energy Efficiency Upgrades for All County Operations
3.01	Housing	Infill Housing and Increased Density
3.02	Housing	Model Zoning Ordinances and Policies
3.03	Housing	Emissions Accounting Mechanism
4.01	Mobility and Access	Electric Mobility Options Hub
4.02	Mobility and Access	Improve Transit County-wide
4.03	Mobility and Access	Build All Season County-wide Non-Motorized Transportation Network
4.04	Mobility and Access	Support Regional Transportation Options (RTA)
4.05	Mobility and Access	Reduce VMTs
4.06	Mobility and Access	Improve MPG and MPGE throughout Community-wide Fleet
4.07	Mobility and Access	Expand on Work from Home and Remote Service Access for County Operations
4.08	Mobility and Access	Provide Financial Incentives to Employees to Walk, Bike, or Use Transit
4.09	Mobility and Access	Support More Efficient School Transportation
5.01	Health	Update the County's Hazard Mitigation Plan
5.02	Health	Create Resilience Hubs Network
5.03	Health	Reduce Heat Islands
5.04	Health	Expand and Maintain County Tree Canopy
5.05	Health	Expand County Education and Outreach Programs
5.06	Health	Create Opportunities for Local Food Production on County Properties
5.07	Health	Prepare Health System for Climate Emergencies
6.01	Preserve Working Lands and Natural Areas	Natural Area Preservation
6.02	Preserve Working Lands and Natural Areas	Farmland Preservation
7.01	Infrastructure	Provide Comment on Infrastructure Agency Planning Projects
7.02	Infrastructure	Prioritize Public Projects that Reduce Fossil Fuel Use and Prepare for More Extreme Weather
7.03	Infrastructure	Urbanized Area Storm Vulnerability Assessment and Prioritization
7.04	Infrastructure	County-wide Stormwater Basin Inspection and Retrofit
7.05	Infrastructure	Expand Rain Garden Program
7.06	Infrastructure	Update Stormwater Regulations
8.01	Circular Economy	Build an Equitable, Low-carbon, and Resilient Circular Economy
8.02	Circular Economy	Develop a County Wide Organics/Compost Program
8.03	Circular Economy	Support and Grow the Washtenaw Regional Resource Management Authority (WRRMA)
8.04	Circular Economy	Build a Multi-dimensional Public Education and Promotion Plan for the Circular Economy
8.05	Circular Economy	Diversify Funding for Circular Economy Work
8.06	Circular Economy	Policy Initiatives to Expand Circular Economy Scope and Infrastructure
8.07	Circular Economy	Incentivize Local Food Production

Glossary - Key Terms

Climate Resilience - The capacity of an individual, group, or system to prevent, withstand, respond to, and recover from a climate-related disruption.

Climate Change - Changes in average weather conditions—such as temperature, precipitation, and risk of extreme events—that persist over multiple decades or longer (Jay et al., 2018).

Climate Impacts - Effects on natural and human systems that result from climate related hazards.

Green Jobs – Jobs in the fields or areas of specialization that eliminate or reduce carbon emissions. Examples are renewable energy-related jobs (production, installation) and building trades focused on electrification.

Equity - Giving front-line and marginalized communities an explicit voice in (or input to) processes and reapportioning or redistributing resources so individuals can access opportunities.

Just Transition - A framework for a fair shift to an economy that is ecologically sustainable, equitable and just for all its members.

Carbon Neutrality - Achieving a state where the net amount of greenhouse gas emissions emitted into the atmosphere is reduced to zero by taking actions to minimize those emissions and/or by purchasing offsets.

Carbon Offset – A project to mitigate GHG emissions that is measurable, additional, and verifiable. Carbon Offset programs recognize the value of new emission reductions and create an opportunity to "offset" carbon use (e.g., jet travel) with carbon reductions elsewhere (e.g., local land preservation, tree planting). Carbon Offsets are one strategy to meet emission reduction goals.

Glossary – Frequently Used Acronyms

AAATA - Ann Arbor Area Transportation Authority (The Ride)

AD - Anaerobic Digestion

ARPA - American Rescue Plan Act of 2021

BAU - Business as Usual

BOC - Board of Commissioners

CBO - Community Based Organization

CDBG - Community Development Block Grant

CVA - Climate Vulnerability Analysis

CVT - Cities, Villages, and Townships

DTE - Detroit Edison

EGLE - Michigan Department of Environment, Great Lakes and Energy

EPR - Extended Producer Responsibility

EV - Electrical Vehicle

FEMA - Federal Emergency Management Administration

GHGI - Greenhouse Gas Inventory (GHGI)

GLISA - Great Lakes Integrated Sciences and Assessment

HRWC - Huron River Watershed Council

IRA - Inflation Reduction Act

MDARD - Michigan Department of Agriculture and Rural Development

MDNR - Michigan Department of Natural Resources

MDOT - Michigan Department of Transportation

MEDC - Michigan Economic Development Council

MPG - Miles Per Gallon

MPGE - Miles per Gallon Equivalent

MPSC - Michigan Public Service Commission

MWBE - Minority and Women owned Businesses and Enterprises

NAPP - Natural Area Preservation Program

NGO - Non-Government Organizations

OSI - City of Ann Arbor Office of Sustainability and Innovation

P3 - Public-Private Partnerships

RAA - Recycle Ann Arbor

RRWC - River Raisin Watershed Council

RTA - Regional Transit Authority

SEMCOG - Southeast Michigan Council of Governments

SPARK - Ann Arbor SPARK

TNC - The Nature Conservancy

USGBC - US Green Building Council

VMT - Vehicle Miles Traveled

WATS - Washtenaw Area Transportation Study

WCHD - Washtenaw County Health Department

WCDPW - Washtenaw County Department of Public Works

WCPARC - Washtenaw County Parks and Recreation Commission

WCRC - Washtenaw County Road Commission

WCWRC - Washtenaw County Water Resources Commissioner

WISD - Washtenaw Intermediate School District

WRRMA - Washtenaw Regional Resource Management Authority

WWTP - Waste Water Treatment Plant



CLIMATE CHANGE AND WASHTENAW COUNTY

CLIMATE CHANGE AND WASHTENAW COUNTY

“

“The observed trends in temperature, precipitation, and seasonality are projected to continue or accelerate into the future. The rate of warming has been fastest during the winter, with some locations experiencing twice the annual warming rate of the Great Lakes region. Temperatures will continue to warm at a pace near or faster than the current rate, and precipitation will likely continue to increase, though variability and multi-year dry periods should still be anticipated. By 2050, summer and spring temperatures may have greater increases compared to fall and winter.”

SOURCE: GLISA

Climate Hazards in the Great Lakes Region

Risk	By Mid Century	By End of Century	Summary
Convective Weather (Severe Winds, Lightning, Tornadoes, Hail)	↑	↑	Warmer temperatures and additional moisture increase the potential for severe weather (e.g., tornadoes and hail) and allow for a longer severe weather season.
Severe Winter Weather (Ice/Sleet Storms, Snow Storms)	↑	↑	Warmer, shorter winters will reduce the length of winter and winter-related impacts. However, due to climate variability, cold air outbreaks will continue and some areas may see more ice, sleet, freezing rain, and wet snow.
Extreme Heat	↑	↑↑	The number of extremely hot days, those over 95°F and 100°F, will likely increase, though not as fast as in areas farther south. Overnight lows have warmed faster than daytime highs, which may lessen opportunities for relief during heat waves. Increased heatwaves and humid conditions elevate the risk of heat-related deaths and illnesses.
Extreme Cold	↓	↓↓	The number of extremely cold days (i.e., days below 10°F) have decreased in the region and are projected to decrease even more in the future.
Dam Failures	↑	↑↑	Stronger and more extreme precipitation events coupled with aging dam infrastructure will increase the probability of dam failure, if appropriate measures are not taken.
Flood Hazards	↑↑	↑↑	Stronger and more extreme precipitation events will be more likely to overwhelm stormwater infrastructure without appropriate adaptation efforts.
Wildfires	↑	↑	Summer drought and the number of consecutive dry days will likely increase in the future, despite more precipitation annually, increasing the risk of wildfires, particularly in the northern portions of the region.
Drought	↑	↑↑	Summer drought and the number of consecutive dry days will likely increase in the future, interspersed with periods of increased rainfall.
Infestation	↑	↑↑	With shorter winters and longer growing seasons, conditions will become more suitable for invasive species and pests currently found elsewhere and distribute vector-borne illnesses.

The arrows in this table reflect a qualitative assessment made by the project team based on the best available data for the Great Lakes region. While these trends hold true for projections for most of the region, they should not be assumed to hold true for any particular location. This assessment was created by the Great Lakes Integrated Sciences and Assessments (GLISA) team, based on data provided by the Fourth National Climate Assessment.

More Precipitation

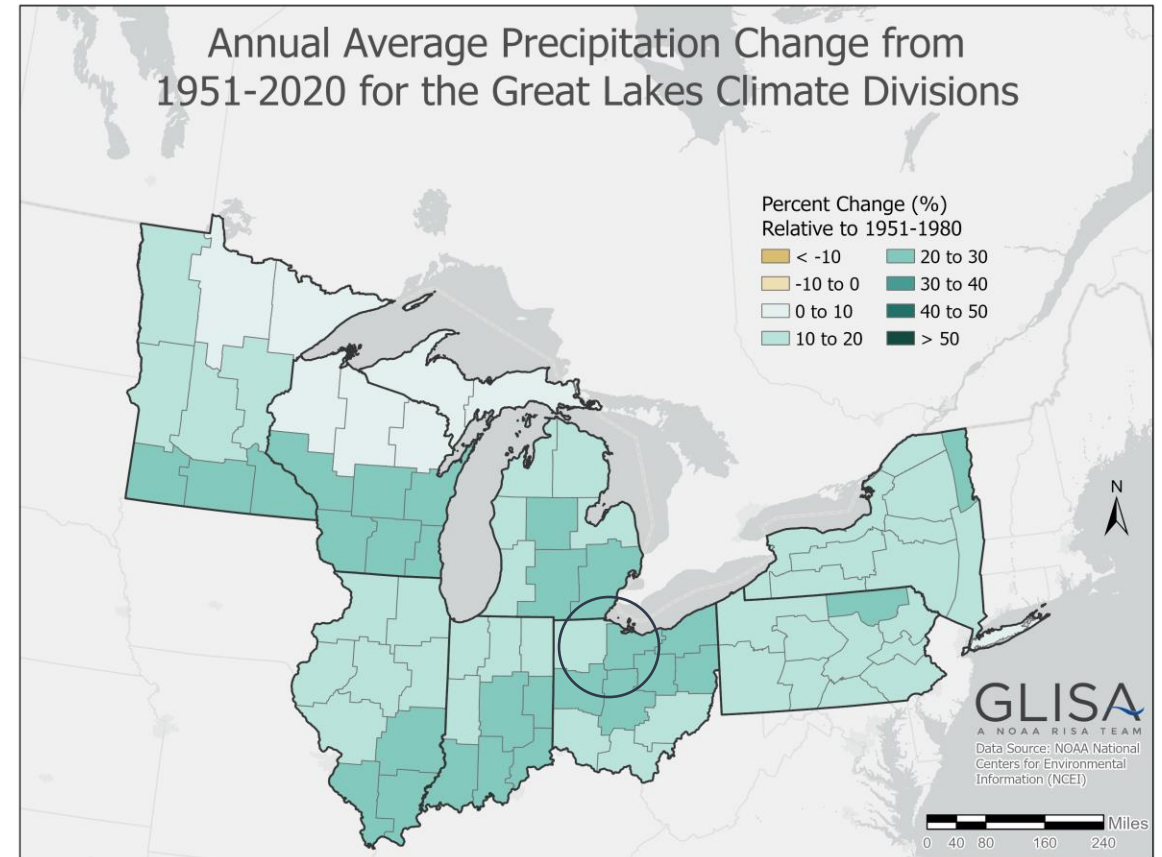


Total annual precipitation in Southeast Michigan has increased by:

20%

Changes vary seasonally and across the region.

While precipitation is increasing overall, the pattern of rainfall is coming in more severe storms punctuated by periods of drought.



Percent change are calculated relative to the period of 1951-1980 historical reference period.

Source: National Centers for Environmental Information

Extreme Precipitation



HISTORIC CHANGE

Greater than 1-inch Precipitation Days:

2.3 more days per year

1951 - 2020

Percent change are calculated relative to the period of 1951-1980 historical reference period.



MID-CENTURY

Greater than 1-inch Precipitation Days:

0.7 to 2.4 days more per year

2040-2059

Extreme Precipitation events are measured by the amount of total precipitation (rain, snow, etc.) falling in 1 hour. Extreme Precipitation events lead to increased risk of flooding and runoff that can threaten the health and wellbeing of people and the natural environment.

Source: GLISA, National Centers for Environmental Information, & U of Wisc. Nelson Institute

Weather Variability

Precipitation has increased 48% in Ann Arbor compared to a 20% increase across Southeast Michigan. Precipitation is a highly localized event and preparing for a range of change is necessary.

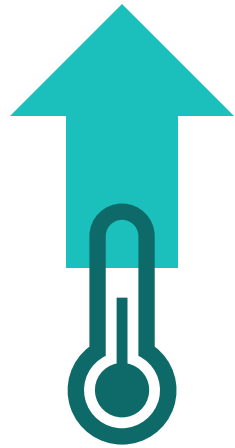
Ann Arbor Weather Station

	in.	%
<i>Annual total precipitation</i>	14.5	48.00
<i>Winter total precipitation</i>	3.8	65.30
<i>Spring total precipitation</i>	3.3	39.30
<i>Summer total precipitation</i>	3.5	37.30
<i>Fall total precipitation</i>	3.6	52.00

Percent change are calculated relative to the period of 1951-1980 historical reference period.

Source: National Centers for Environmental Information

Extreme Heat Events

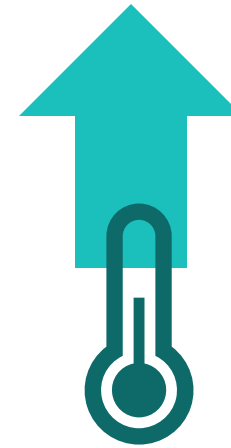


HISTORIC CHANGE

**Annual Average
Temperature Increase:**

1° F Annually from 1951 -
2020

*Percent change is calculated
relative to the period of 1951-
1980 historical reference
period.*



MID-CENTURY

**Annual Average
Temperature Increase:**

3 to 6° F Annually by 2050

17 more days over 90°
compared to days over 90°
in 1990

Source: GLISA, National Centers for Environmental Information, & U of Wisc. Nelson Institute

What does this mean for Washtenaw County?

INFRASTRUCTURE:

More stormwater and flooding

NATURAL SYSTEMS:

Decrease in water quality due to increased runoff during intense weather events

Forest ecosystems forced northward

- Maple-Beech-Birch forest displaced

Amplified stressors on biodiversity

- Declining cold water fish populations, species migrating northward

AGRICULTURE

Longer growing season

Water availability, warm spells, spring freezes, flooding, and drought will reduce crop yields

PUBLIC HEALTH:

Vulnerable populations (seniors, young children, health compromised, and poor and disadvantaged residents) will be more susceptible to extreme heat and cold and associated health emergencies

Increases in infectious and vector-borne diseases

HOUSEHOLD COSTS:

Increased costs for heating and cooling and flood/disaster insurance



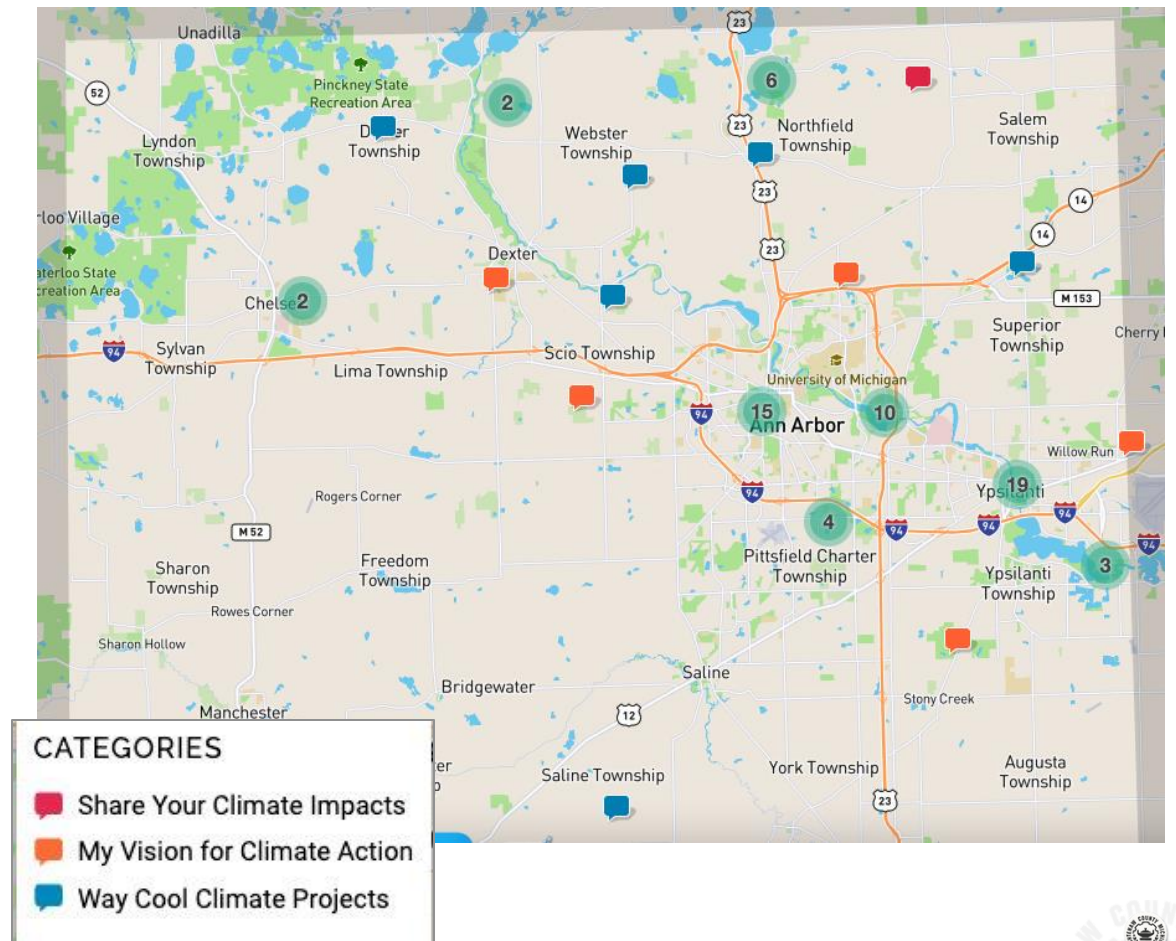
PUBLIC ENGAGEMENT

Public Engagement Introduction

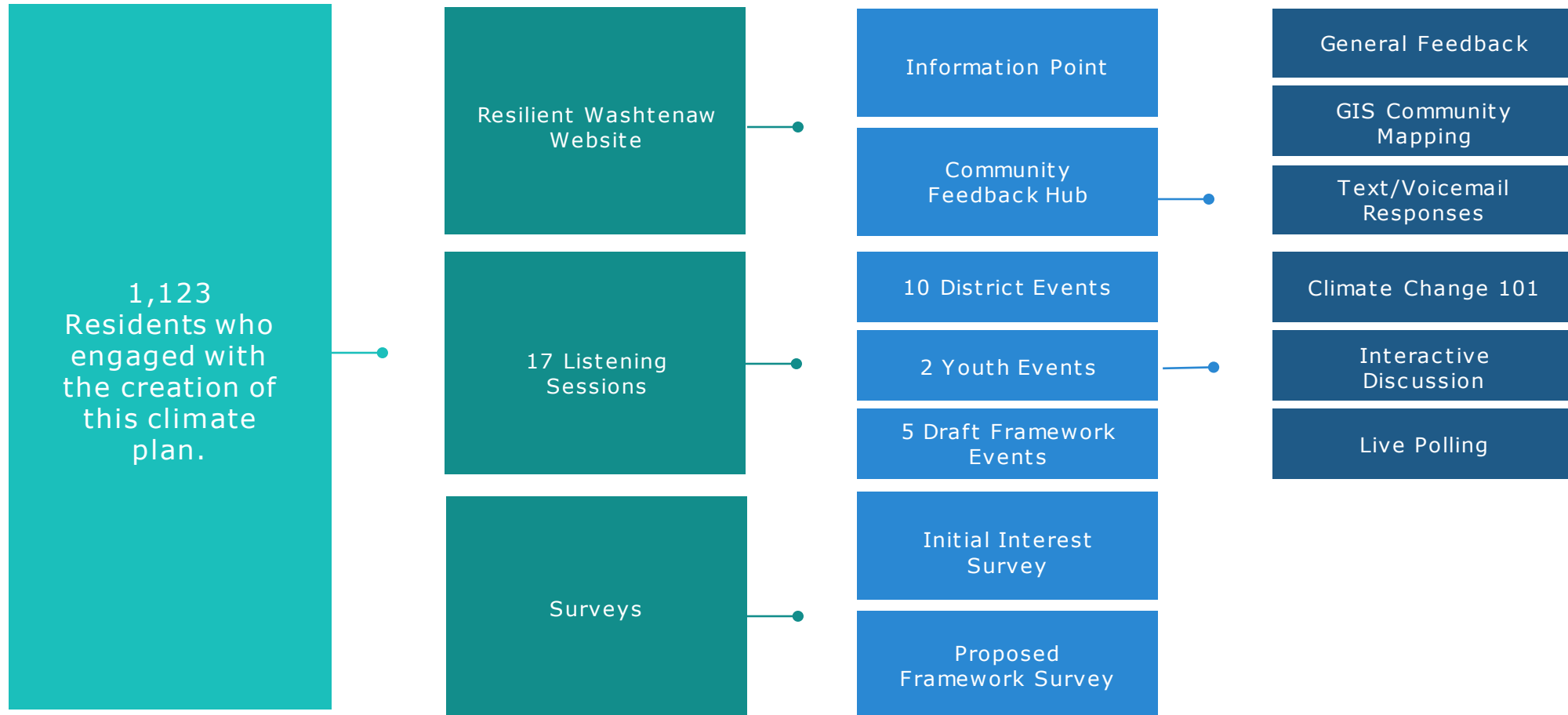
A central component of the Resilient Washtenaw Plan is and will continue to be public engagement. The original plan called for public meetings across all 9 County Board of Commissioners districts. Most of the public engagement had to be remote due to COVID-19 and a precautionary approach following County Health Department guidance. This Plan was developed with significant input from the public through three main channels: (1) public meetings; (2) public surveys; and (3) a public website.

From February 1, 2022, through October 20, 2022, the Resilient Washtenaw Team hosted 17 public events. This is in addition to individual meetings with local NGOs, local units of government, and a variety of community groups. Public events targeted key community leaders and used partner networks to reach as many people as possible. Lastly, the County used the project website, social media and partner networks to notify residents about engagement sessions, provide feedback opportunities and share general information about the climate plan.

The Resilient Washtenaw Team recognizes that more work needs to be done to bring a broader set of County voices to the table. The public engagement effort will continue as implementation plans are developed and individual programs are designed and funded by the Washtenaw, state, federal and philanthropic sources. Each new project is an opportunity to bring more County voices into the Resilient Washtenaw planning process.



Process Summary



Community Organization Meetings and Outreach

As part of the Resilient Washtenaw planning effort, meetings were held with a variety of organizations across the County.

- Washtenaw Biking and Walking Coalition
- Citizens Climate Lobby
- Ecology Center
- Huron, Rouge, Raisin Watershed Councils
- Ann Arbor Climate Ambassadors
- Washtenaw County Youth Commission
- New West Willow Neighborhood Association
- Faith Based Community Outreach to four pastors
- Community Action Board
- Interfaith Council for Peace and Justice
- Scio Township
- Washtenaw County Zero Waste Coalition
- Freeman Youth Council - Ann Arbor Environmental Education
- Washtenaw Community College
- Faith Based Community Meetings
- Washtenaw County Conservation District
- Washtenaw County Farm Bureau
- MSU Extension
- Ypsi - Ypsi TWP – Resilient Washtenaw/Green Infrastructure
- Manchester TWP – Farm Bureau
- Sierra Club Huron Valley
- Washtenaw County Trash Talk Tour
- County Libraries

As part of the Resilient Washtenaw planning effort, several organizations asked to be “partners” and were highlighted on the Resilient Washtenaw website with short descriptions of their climate activities. This list demonstrate that a diverse cross section of the community is already engaged; however, this list is not fully inclusive of all County organizations working on climate change.

- Ann Arbor Center for Independent Living
- Ann Arbor Citizens' Climate Lobby (CCL)
- Ann Arbor Climate Partnership
- Ann Arbor Township Climate Resilience Committee
- Ann Arbor YMCA
- City of Ann Arbor Environmental/Energy Commissions
- City of Ypsilanti Sustainability Commission
- Common Cycle
- Ducks Unlimited
- Ecology Center - Clean Energy and Climate Action
- Elders Climate Action - Ann Arbor Area Chapter
- Huron River Watershed Council
- Pittsfield Township - Sustainability
- Scio Township Environmental Sustainability Task Force
- Slow Farm, Slow Food Huron Valley
- Temple Beth Emeth Dayenu Circle
- Washtenaw Climate Reality Project

Initial Community Outreach - >175 registrants

AS PART OF THE RESILIENT WASHTENAW PLANNING EFFORT, THE RESILIENT WASHTENAW TEAM HELD MEETINGS FOCUSED ON EACH COUNTY COMMISSION DISTRICT.

1. January 31 – District 1
2. February 1 – District 2
3. February 3 – District 3
4. February 8 – District 4
5. February 9 – District 5
6. February 15 – District 6
7. February 17 – District 7/8/9
8. March 1 – 6PM
9. March 4 – Noon
10. March 15 – Joint County meeting with Scio Township
11. March 16 - Youth Listening Sessions
12. March 17 - Youth Listening Session

Due to Covid-19, the Resilient Washtenaw Team was unable to hold face-to-face meetings. Zoom meetings were led by the Resilient Washtenaw Team and invitations were delivered to a variety of social media outlets by the County and Resilient Washtenaw partners.

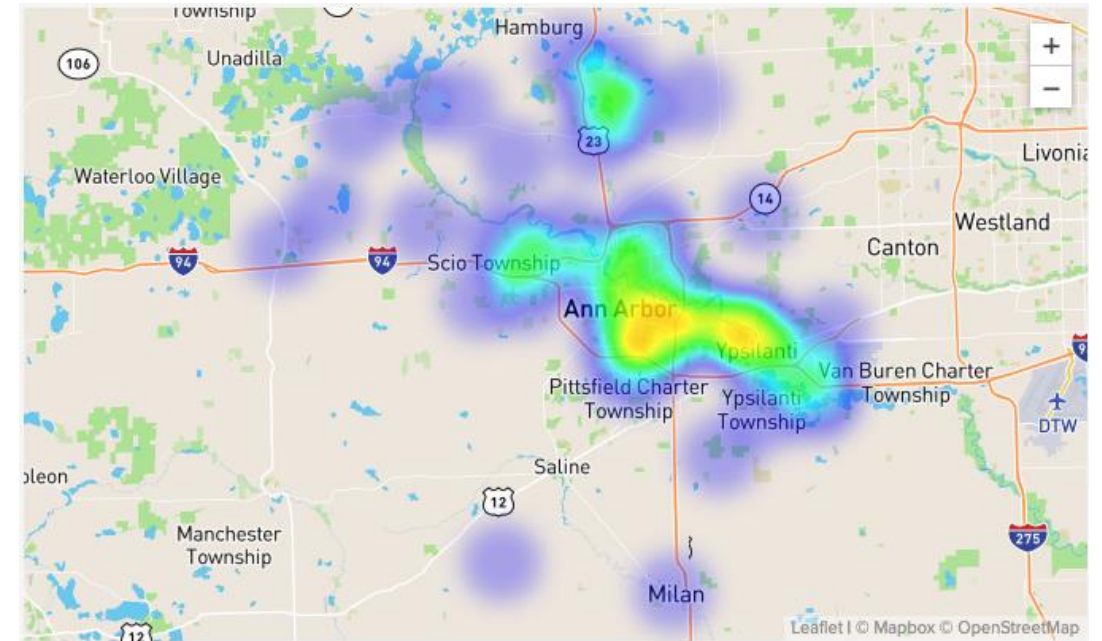
The Resilient Washtenaw team held 12 Zoom meetings with at least 175 registrants. Many residents came to meetings that were convenient for them even if they did not live in the advertised meeting district. Several meetings had just a few residents while others had 60 registrants or more. Due to limited attendance, additional meetings were held in early March. The Youth Listening sessions were unable to be recorded as there were registered youth attending.

Attendees were introduced to the Resilient Washtenaw Planning effort, saw short presentations on the plan process and climate changes in the region, and were introduced to the Resilient Washtenaw website with open time at the end to assist residents in navigating the website.

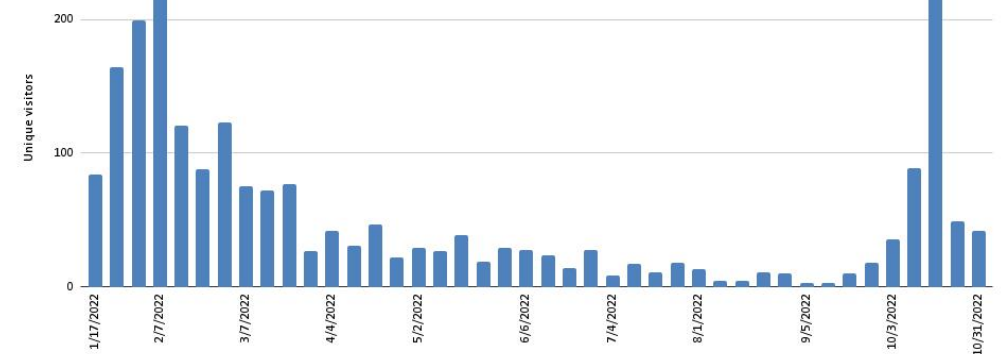
Resilient Washtenaw Website

The Resilient Washtenaw team used the coUrbanize platform to share information with the public. Some of the engagement statistics include:

- Use of the platform peaked at 264 unique visitors per week and averaged 54 unique visitors a week over the 10-month period.
- 228 pieces of feedback and replies
- 53% of the feedback was positive, 44% neutral, and 3% negative
- 273 people registered and followed activity on the site
- Feedback came from most areas of the County with the majority from urban areas as shown on the map.



WEEKLY UNIQUE VISITORS



CATEGORIES

- Share Your Climate Impacts
- My Vision for Climate Action
- Way Cool Climate Projects

445 Actions Identified in Staff Strategy Sessions

A crucial aspect of Resilient Washtenaw was reaching out to all communities in the County to learn directly about residents' concerns, how climate change has impacted their personal life and the communities in which they live, and how to bridge the gap between the government, businesses, and the people in order to create net zero emissions by 2035.

In addition to working with the public, the project team also established a County Steering Committee comprised of key County staff to provide review and counsel to the Resilient Washtenaw Team on County organization issues.

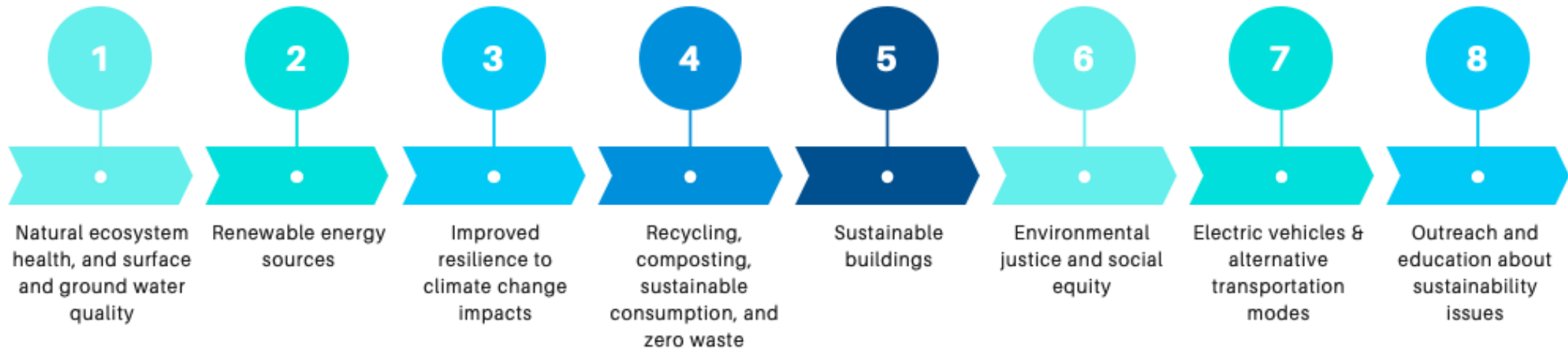
The Resilient Washtenaw Team also worked closely with the Washtenaw County Environmental Council – an appointed body including two County Commissioners who provided invaluable insight and direction to the community-wide issues of the plan.

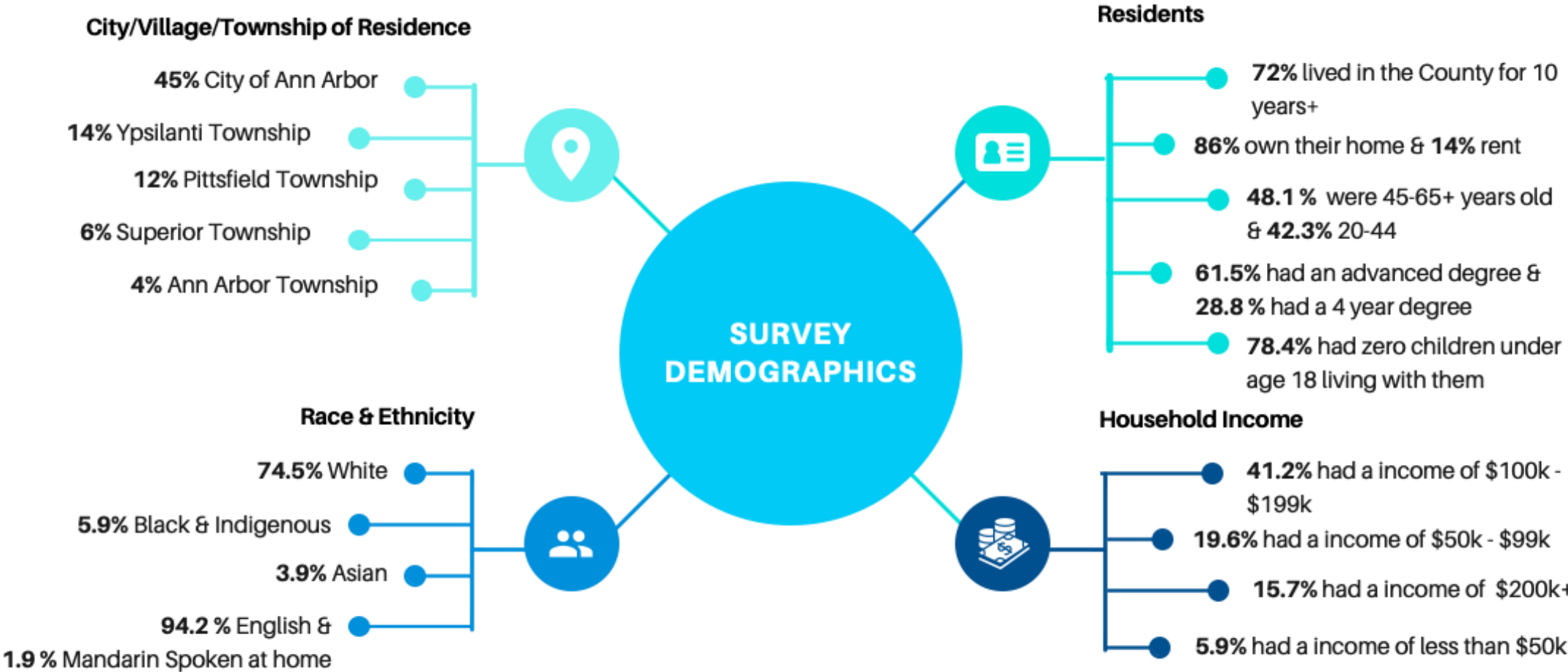
These groups actively participated in agenda creation, content preparation, and project facilitation. These Environmental Council steering committee members advocated for the County's climate action plans and served as principal advisors in the creation of the plan.

The Resilient Washtenaw team worked with the County staff Steering Committee and a broader cohort of County staff across multiple departments for 6 facilitated Strategy Sessions that identified 445 potential actions that the County explored to support climate mitigation and adaptation. These actions were sorted across each strategy area and used to inform the actions outlined in the Resilient Washtenaw Plan.

Ranked Climate-Related Solutions

PARTICIPANTS RANKED THE FOLLOWING CLIMATE-RELATED SOLUTIONS IN ORDER OF IMPORTANCE TO THEM.





Public Engagement – Moving Forward

Climate change is not a regular part of the daily lives of most people, organizations or businesses. Climate action will require people and organizations to adopt new behaviors and new ways of thinking, which can only be sustained when there are community-wide shifts in the behaviors in how we live and use resources.

The core message of engagement from the County's community engagement and outreach plan is that Resilient Washtenaw must clearly link climate action to a broad range of community concerns, such as health, quality of life, community well-being, and economic growth and strength. Additionally, this message must be supplemented by messages customized for specific constituencies, for example youth, seniors, BIPOC communities, the disabled, and faith-based communities.

As Resilient Washtenaw is implemented, it is critical that the County continues to build relationships and improve engagement with community-based organizations, residents, non-profit organizations, businesses, and neighborhoods throughout the County.

A consistent message emphasizing the relationship between the environment, health, quality of life, community well-being, and economic strength is needed to help shift behaviors.

This plan helps to establish clear goals that need to be consistently communicated and broadly understood for overall County-wide change to occur with metrics to show progress.

County government should adopt a clear and defined approach, which includes:

- Partnering with community organizations to promote climate action at the neighborhood level;
- Encouraging community involvement in policy development, program planning, and assessment;
- Supporting a County-wide awareness campaign;
- Framing Resilient Washtenaw as focused on community concerns;
- Educating residents about the Resilient Washtenaw Plan;
- Committing high level resources and funding to support the necessary public engagement to motivates residents to act;
- Supporting community-based organizations and individual residents to act and influence their peers; and
- Leading by example.

A scenic view of a paved trail leading to a rocky river. In the foreground, a woman and a child are riding bicycles on the trail. Further down the trail, several people are carrying large inflatable tubes. To the right, a river flows over rocks, with people tubing and standing on the banks. The background is filled with lush green trees and vegetation.

INVENTORY AND CURRENT CONDITIONS

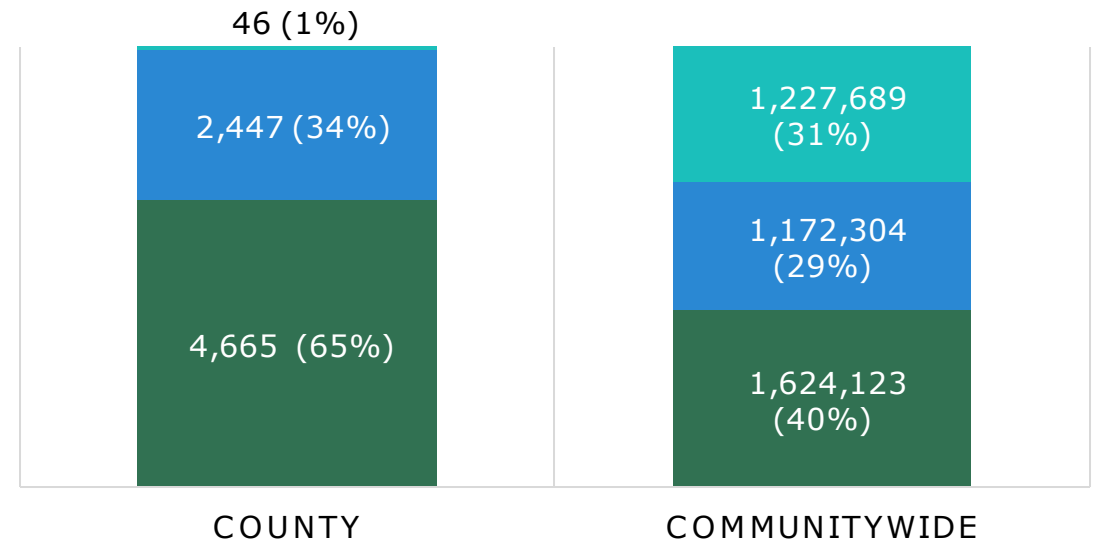
GHGI, BAU, and Wedge Analysis

The Greenhouse Gas Inventory (GHGI) measures the current sources of greenhouse gas emissions for both County operations and communitywide activity. From this, a Business as Usual (BAU) forecast estimates future trends in emissions. Next, we conducted a wedge analysis by estimating the impact of our Actions to reduce emissions to meet our Goals within our timeline. Any remaining emissions will be the result of grid-supplied electricity that continues to be produced, in-part, by fossil fuels by the utilities, continued use of fossil fuels in transportation or onsite in buildings, or emissions from waste and wastewater management.

We estimate that through direct mitigation actions we can reduce greenhouse gas emissions by ~65% for the County's operations and by ~40% for communitywide emissions. The County will still need to offset ~34% of emissions coming from grid-supplied electricity and utilize a very small number of offsets (<1%) to achieve carbon neutrality. Communitywide emissions will require significant offsets, including ~29% for grid supplied electricity and ~31% for all other sources of emissions.

WEDGE ANALYSIS RESULTS (MTCO2E)

- Remaining Non-Electricity GHG Emission to be Addressed with Offsets or Otherwise
- Remaining Grid-Supplied Electricity to be Addressed with Renewable Options
- Emissions Reduced by Actions



Greenhouse Gas Inventory

Greenhouse Gas Inventories were created for both the County's operations and the community. The County provided data on their energy consumption across their building portfolio as well as information about its fleet of vehicles. Emissions for the community were calculated based on locally available data and standard methods to estimate emissions where local data were not available.

The baseline year for data was set to 2019, as the global Covid-19 pandemic caused 2020 and 2021 to be outliers in terms of emissions and not representative of future trends.

LOCAL DATA SOURCES:

Utility data from DTE and Consumers Energy

- Consumption by year, customer class, and the total number of accounts
- Customers utilizing Green Pricing, EV Rates, and Distributed Generation Tariff programs
- Information on local natural gas infrastructure that produces emissions

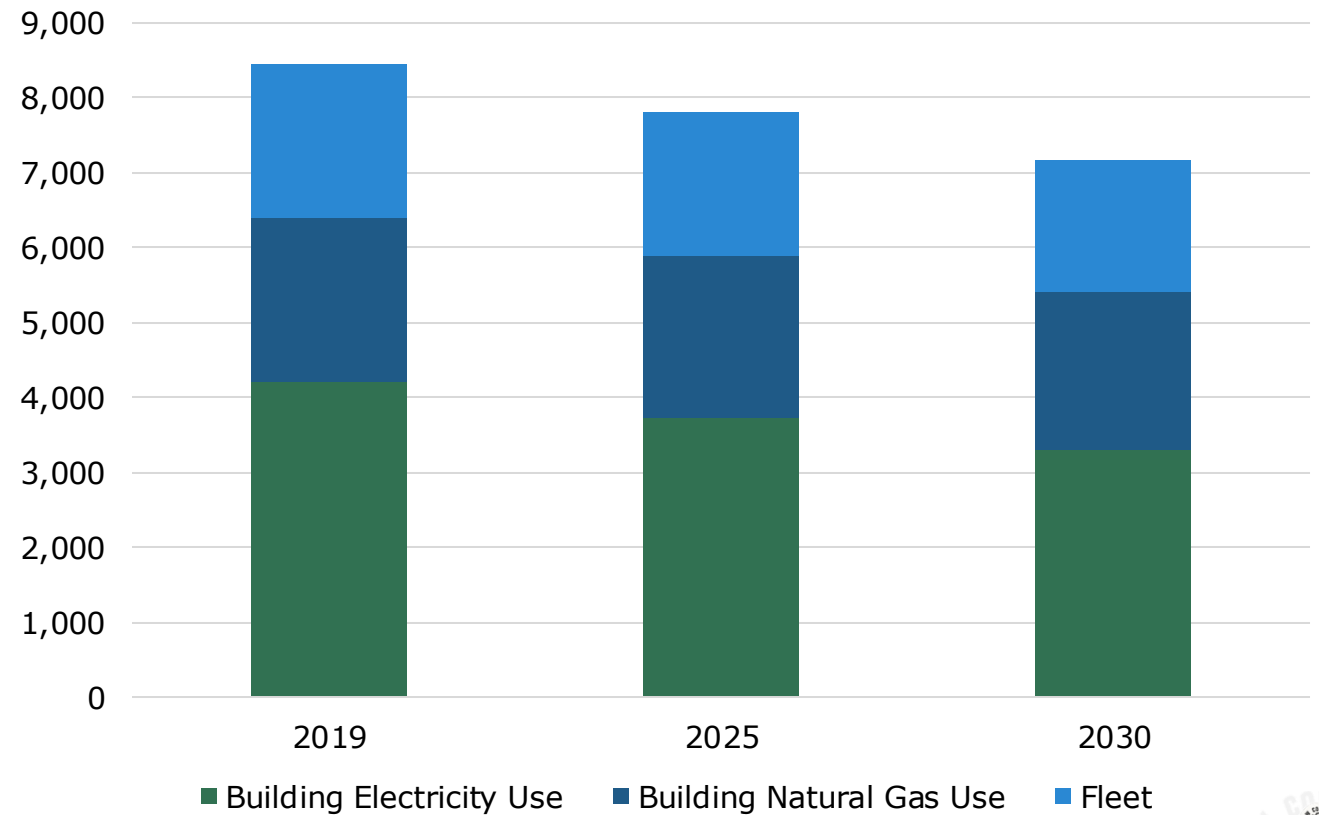
Vehicle emissions data from Google Energy Insights

Waste management data on local landfills and waste management facilities

County Operations Emissions and Business-as-Usual Forecast

Washtenaw County's Operations emitted ~8,452 metric Tons of CO₂e in 2019. The business-as-usual forecast of emissions shows a natural decrease over time. While there is little change to emissions from natural gas, emissions from electricity are expected to decrease as grid supplied electricity becomes cleaner due to increased use of renewable energy and transportation emissions are reduced due to increased efficiency of vehicles and increased adoption of electric vehicles.

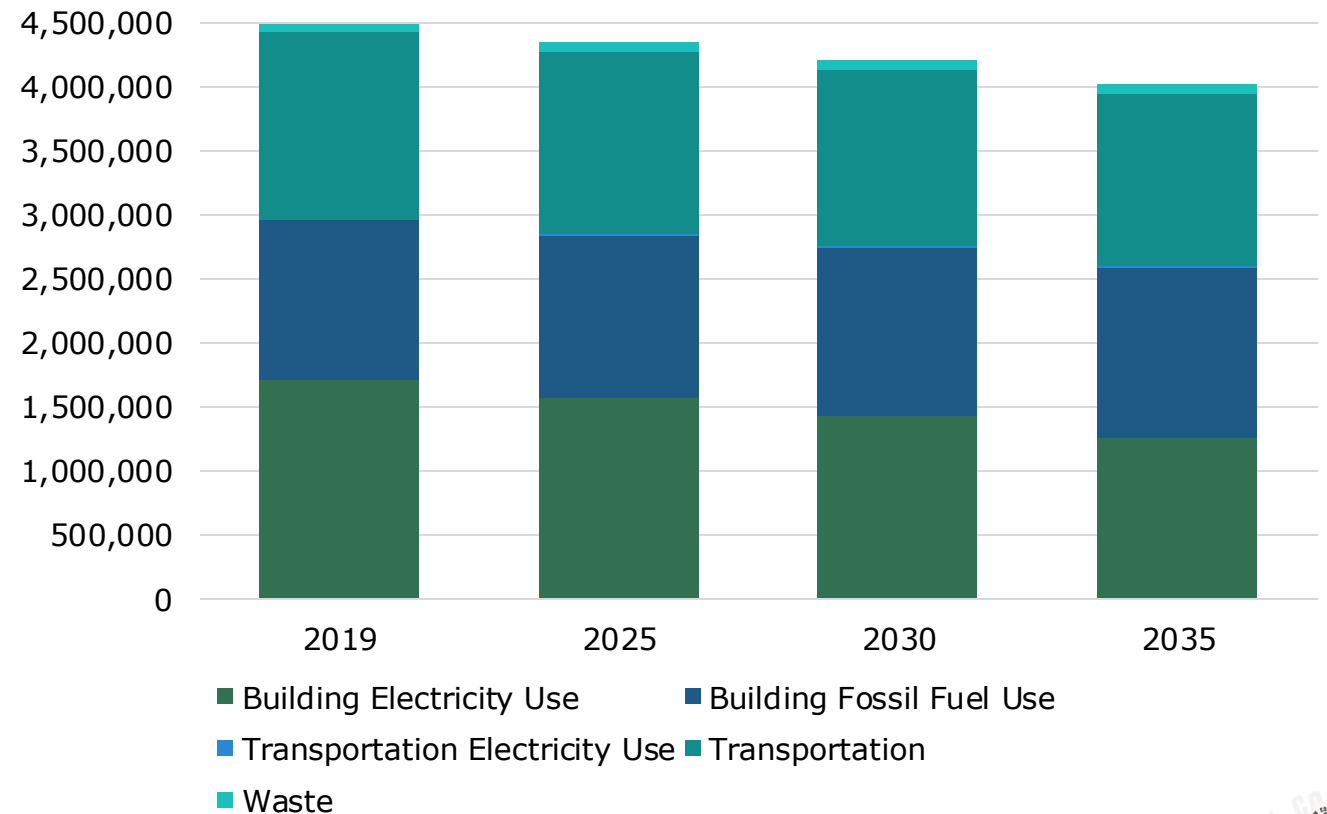
WASHTENAW COUNTY OPERATIONS GHG BAU FORECAST TO 2030



Community-wide Emissions and Business-as-Usual Forecast

The Community of Washtenaw emitted ~4.49M metric Tons of CO₂e in 2019. The business-as-usual forecast of emissions shows a slight natural decrease over time. Emissions from electricity are expected to decrease as grid supplied electricity becomes cleaner due to increased use of renewable energy. Transportation emissions are reduced due to increased efficiency of vehicles and increased adoption of electric vehicles.

WASHTENAW COMMUNITYWIDE GHG BAU FORECAST TO 2035

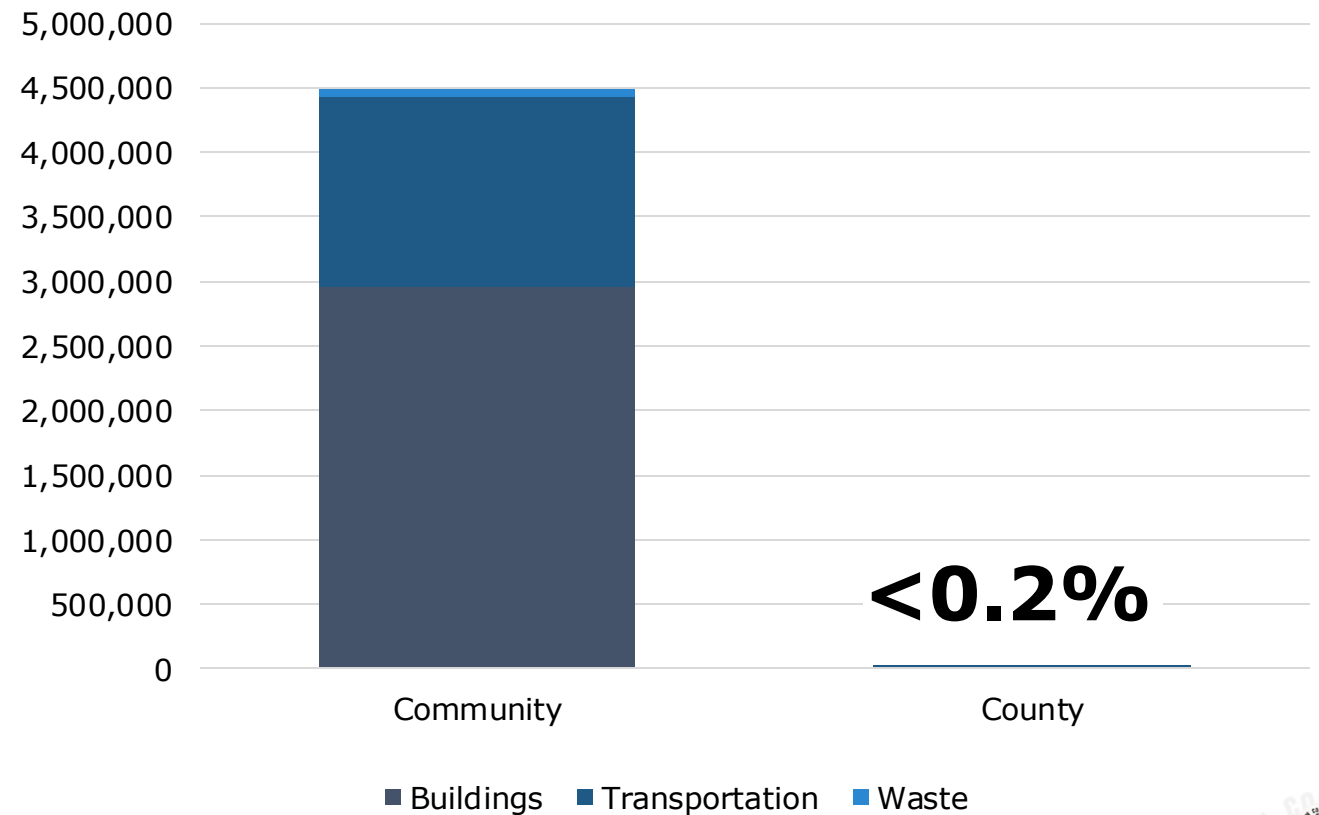


County Operations vs. Community-Wide Emissions

The vast majority of emissions come from community buildings and transportation. The County's operations account for less than 0.2% of overall emissions in the County.

However, the County has the most control over its own operations and can more easily take action to reduce emissions across its buildings and fleet.

WASHTENAW COUNTY EMISSIONS VS. COMMUNITY EMISSIONS IN 2019

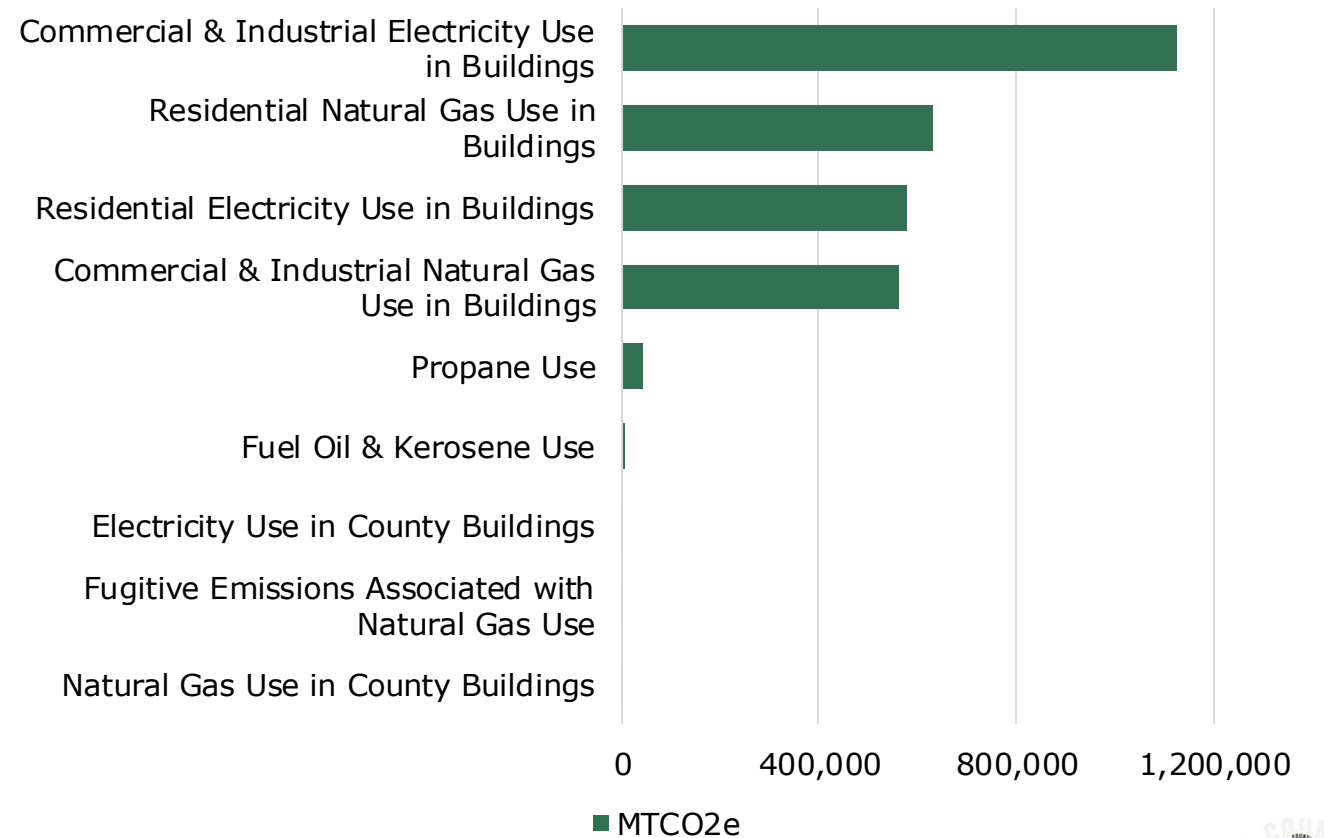


Energy Use in Buildings

Emissions from buildings come mostly from grid-supplied electricity and the use of natural gas. Commercial and industrial electricity use account for ~38% of 2019 emissions, and residential electricity use accounts for another ~20%. Emissions from electricity can be reduced by a combination of efficiency and changing the mix of sources for the electricity supply to more renewable energy, either on site or on the grid.

Fossil fuel use, ~42% of emissions, can be reduced through efficiency. However, you can only eliminate fossil fuel emissions by switching to electric-powered appliances and building systems.

2019 EMISSIONS FROM BUILDINGS



Transportation Emissions

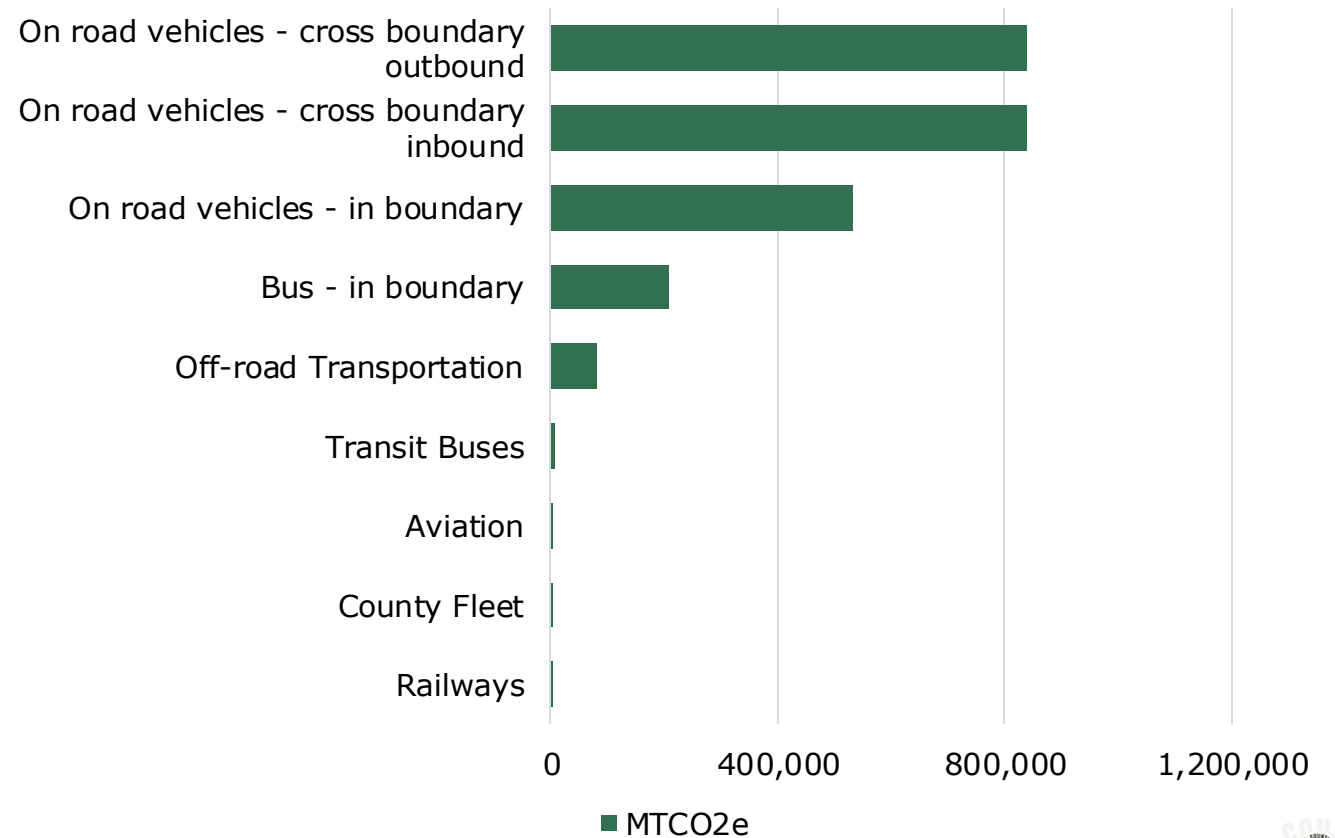
Emissions from transportation are heavily concentrated in vehicle travel across the boundaries of the County. These are trips that either start in the County and exit its borders or start outside the County and end within its borders, and these cross-boundary trips account for ~67% of emissions.

~29.5% of emissions come from in-boundary trips that start and end in the County.

Off-Road Transportation emissions, ~3%, come from a variety of sources, including construction, agricultural operations, and recreational vehicles.

The remaining ~0.5% of emissions come from other transportation trips in the County including mass transit trips on buses, aviation, and railways.

2019 TRANSPORTATION EMISSIONS



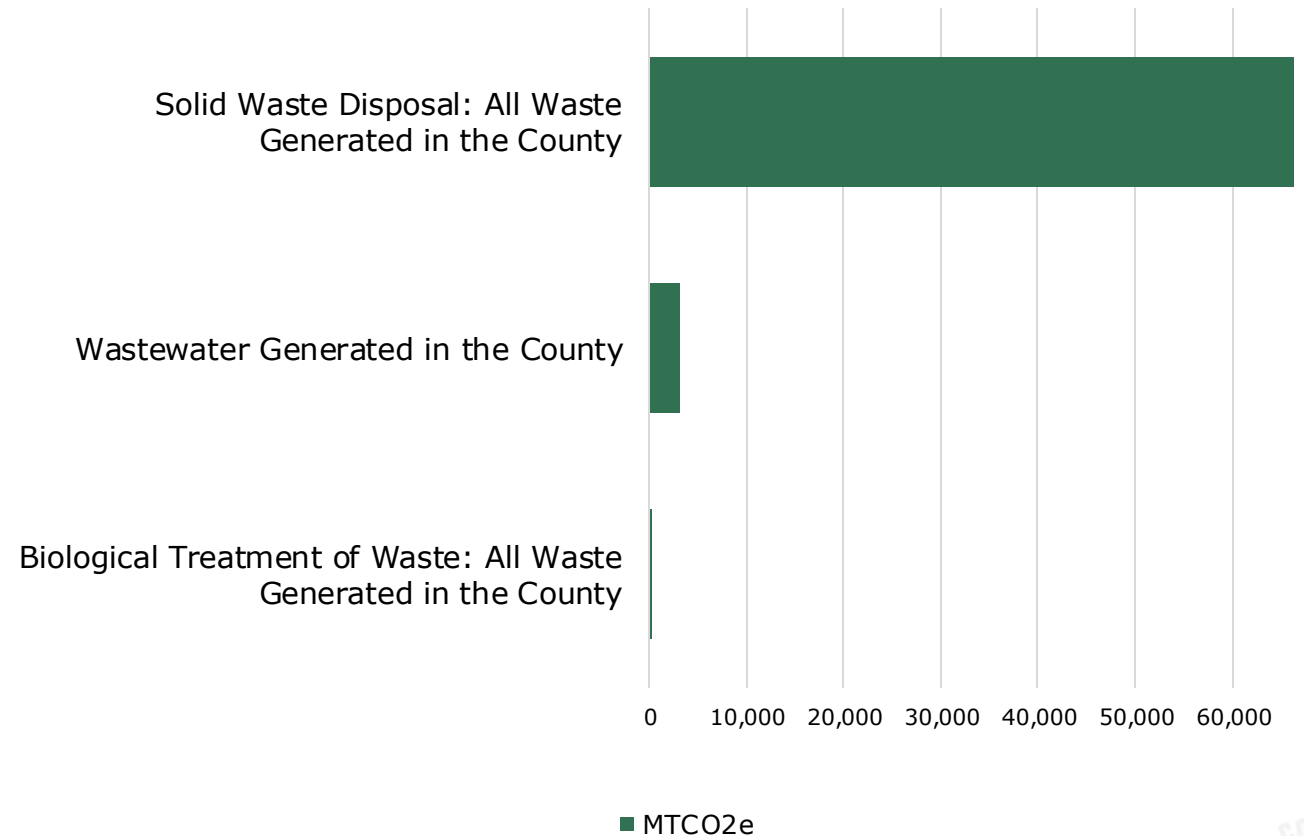
Waste Emissions

Emissions from waste are heavily concentrated in solid waste disposal. ~95% of waste emissions come from waste generated in the County and sent to landfills.

~4.5% of waste emissions come from wastewater treatment generated in the County and another ~0.5% come from the biological treatment of waste.

Waste emissions can only be reduced through actions to reduce overall waste, increase recycling or reuse of materials in a more circular economy, and diversion of organics from landfills via composting.

2019 WASTE EMISSIONS

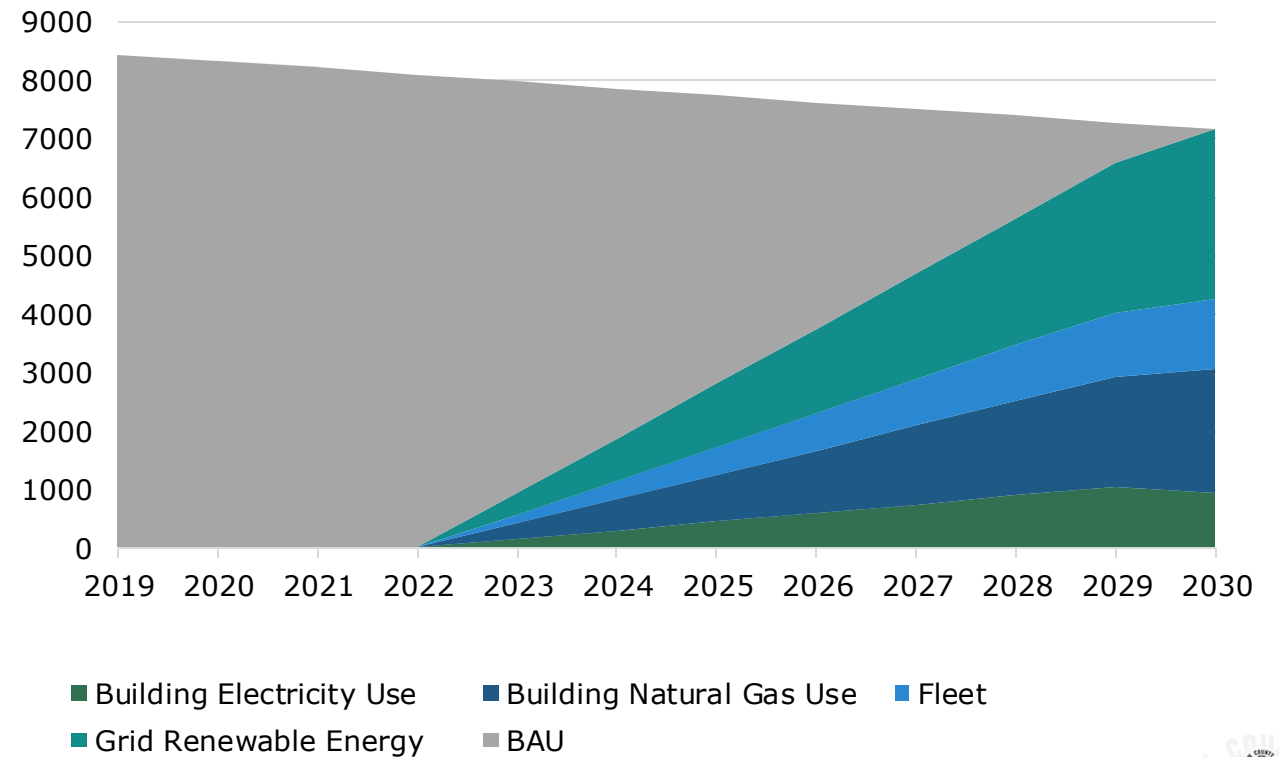


County Operations Wedge Analysis

The County has set a goal of reaching carbon neutrality by 2030. The current mix of actions in the plan lead towards reductions from the BAU forecast. The graph shows where different wedges of emissions will be reduced from the BAU forecast through 2030.

~35% of remaining emissions will come from grid-supplied electricity. To eliminate these emissions, actions to offset through renewable energy credits may be required.

COUNTY GOVERNMENT EMISSIONS WEDGE REDUCTIONS TO ACHIEVE CARBON NEUTRALITY BY 2030 (MTCO₂E)



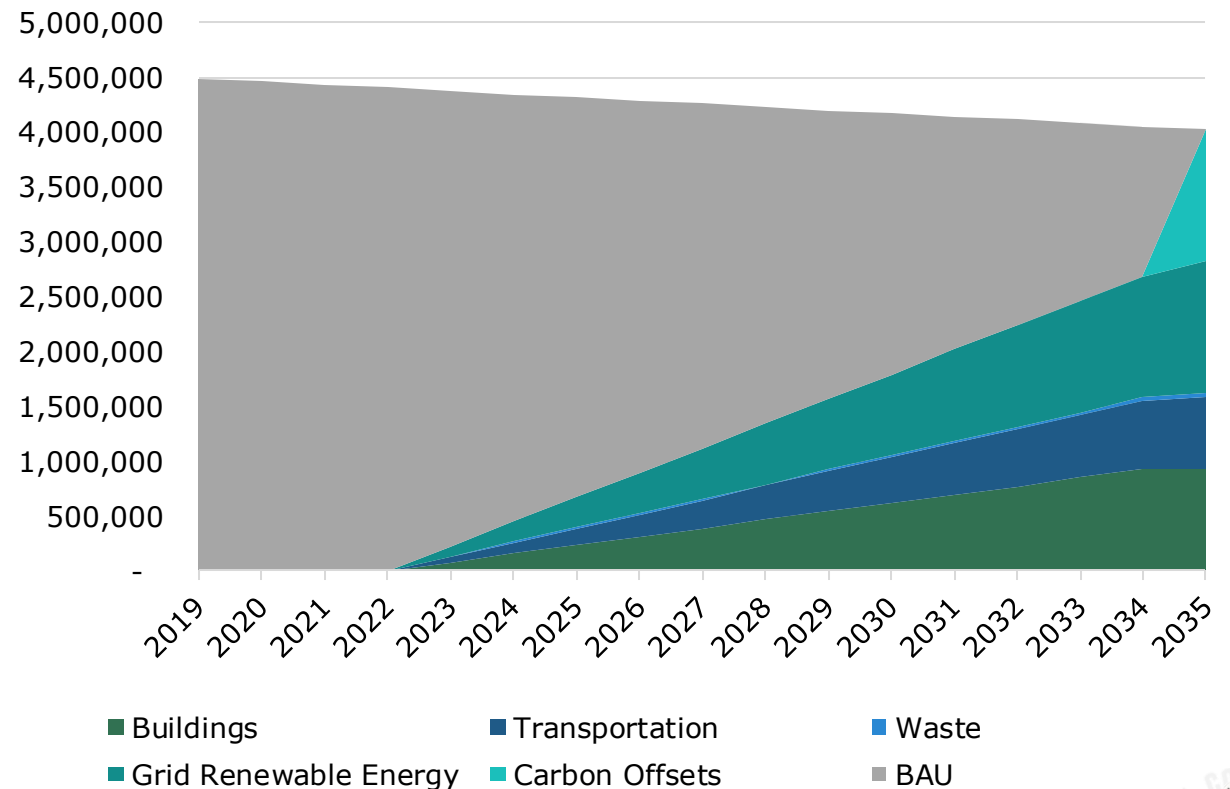
Community-wide Wedge Analysis

We have set a community-wide goal of carbon neutrality by 2035. The current mix of actions in this plan reach towards reductions from the BAU forecast. The graph shows where different wedges of emissions will be reduced from the BAU forecast through 2035.

~30% of remaining emissions will come from grid-supplied electricity. To eliminate these emissions, actions to offset through renewable energy credits may be required.

Another ~30% of remaining emissions come from fossil fuels or waste. These emissions can only be reduced through the purchase of carbon offsets.

COMMUNITYWIDE EMISSIONS WEDGE REDUCTIONS TO ACHIEVE CARBON NEUTRALITY BY 2035 (MTCO₂e)



County Stats to Consider from 2021

SOLAR GENERATION SYSTEMS CONNECTED TO GRID (DTE ONLY)

Residential – 1,358 out of 151,753 Single, Multi-Unit and Mobile Homes in the County

Commercial – 101

Industrial – 4

TOTAL SOLAR CAPACITY IN KW (DTE ONLY)

Residential – 9,015

Commercial – 2,763

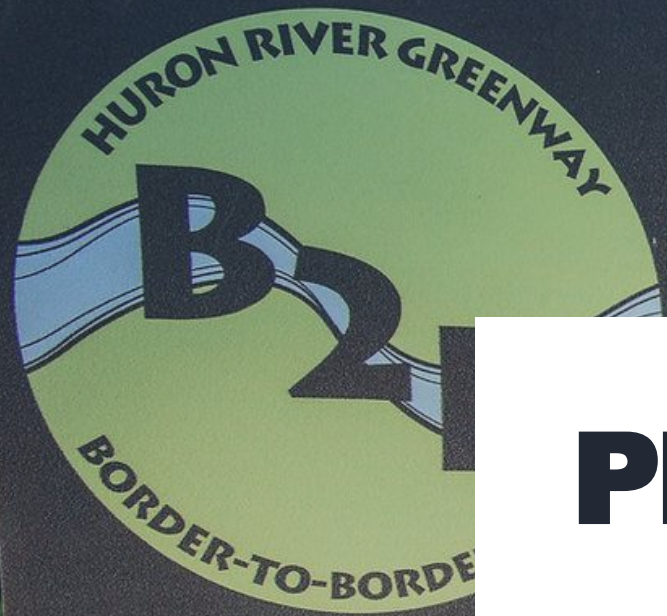
Industrial – 342

TOTAL CUSTOMERS ON EV RATES (CONSUMERS AND DTE)

Residential Chargers – 158 out of 151,753 Single, Multi-Unit and Mobile Homes in the County

Commercial Level 2 Ports – 43

DC Fast Chargers - 10



b2b.ewashtenaw.org

PLAN FRAMEWORK



Plan Framework



The Resilient Washtenaw Plan is aligned with a series of Goals, Principles, Strategies, and Actions. The Goals have been established by the County Board of Commissioners to reach Carbon Neutrality by specified dates. Principles are County priorities such as Racial Equity and Resilient Economy that must be supported as part of any County Action. Strategies are the major categories of Resilient Washtenaw Actions including Health and Energy Transition. Actions are the specific projects or programs needed to achieve the Resilient Washtenaw Plan goals.

The Resilient Washtenaw Team developed the Principles and Strategies with the County Environmental Council and Staff Steering Committee early in the project. Each of these four plan elements is described in the following section of the report.

Plan Framework



Goals: The outcomes that the plan is designed to achieve.

For the County, Climate Action Plan the goals have been established by the Board of Commissioners who desire that Washtenaw County as an organization be carbon neutral by 2030, and that the entire County be carbon neutral by 2035.

Principles: Other desired priorities beyond carbon neutrality which are important to the County.

Principles include other community and organizational priorities and have been developed from discussion and input with the general public and interested partners. The County is interested in a climate action plan that is complementary to and consistent with other planning happening in the County, and that the climate action plan should support those other priorities when possible and appropriate.

Strategies: The broad categories of actions necessary to achieve the goals of carbon neutrality.

The specific strategies proposed have been developed through public and internal engagement, in consideration of the sources of emissions and opportunities available for emissions reduction and climate adaptation, to be in alignment with other climate action plans, and to be thoughtful of the responsibilities and programs of the County. Strategies are included as a component of the plan framework to bring organization to the plan and its implementation

Actions: The specific projects, program, or policies needed to achieve goals.

Actions can be defined, assigned, and monitored. Actions will address both mitigation (reducing emissions in order to slow the pace of climate change) and adaptation (investing in systems and changes which will lessen the harmful impacts of climate change on Washtenaw County residents). Cumulatively the emissions reductions of the actions if implemented would total the emissions from the County and would be sufficient to meet the carbon neutrality goals.

Plan Goals



GOALS

Goals are the outcomes that the plan is designed to achieve.

- *Washtenaw County as an organization will be carbon neutral by 2030*
- *The entire County will be carbon neutral by 2035*

Plan Principles



RACIAL EQUITY AND ENVIRONMENTAL JUSTICE

Racial equity means the development of policies, practices, and strategic investments to reverse racial disparity trends, eliminate institutional racism, impact structural racism, and ensure that outcome and opportunities for all people are no longer predictable by race.

Environmental justice is the equitable treatment and meaningful involvement of all people, regardless of race, color, national origin, ability, or income in the development and application of laws, regulations, and policies that affect the environment.

The climate action plan should be considerate of past decisions which have worsened racial disparities with regards to vulnerabilities to climate change and should support investments that promote racial equity, and which focus on minimizing the harm from climate change to the most vulnerable in Washtenaw County.

JUST TRANSITION

Just transition is the concept that the transition from fossil fuels to clean energy consider impacts to workers.

The climate action plan should consider and try to make whole workers who lose their jobs due to this transition, that workers and communities impacted by the climate crisis should receive targeted support, and that the jobs created carry out this plan should be good jobs with good benefits, and which can support a good life in Washtenaw County.

Plan Principles



RESILIENT ECONOMY

Resilient economy is the idea that the transition will impact existing companies and will provide opportunities for economic development.

The climate action plan should consider impacts to companies engaged in a fossil fuel economy, look to help companies transition, and should attempt to support companies working to address climate change within and beyond Washtenaw County.

HEALTH

All residents of Washtenaw County should have the opportunity to achieve optimal health and well being.

Climate change will impact this opportunity for the most vulnerable in the community due to the increase in average temperatures and more extreme weather events.

The climate action plan should consider these impacts and should propose actions which mitigate negative health impacts for the most vulnerable and the least able to adapt to a warming climate.

Plan Principles



COMMUNITY PARTNERSHIP

Climate change is a complex, urgent problem requiring attention and action of all organizations to appropriately address, and is one of many important issues of concern, and day to day responsibilities of organizations must be met while climate action is pursued.

The climate action plan should be built upon partnership and collaboration with all parts of the Washtenaw County community to take advantage of all resources and opportunities available, to engage many people in this work, to develop the best ideas and actions, and to make the deep changes necessary to successfully transition from fossil fuels.

SUSTAINED COMMUNICATIONS

The climate action plan should include frequent, easy to access, and understandable communication.

This is necessary to sustain interest, attention and action to plan and its goals amidst known and future competing priorities.

Plan Strategies



ENERGY TRANSITION

- Increase renewable energy, energy efficiency, and electrification in all buildings

MOBILITY AND ACCESS

- Reduce emissions from transportation
- Support mobility modes that eliminate fossil fuel use over time

HOUSING

- Equitable Decarbonization
- Preservation of Affordability

HEALTH

- Provide opportunities to achieve optimal health and well-being and prevent negative public health impacts from changing climate
- Reduce heat islands and expand and maintain County tree canopy
- Plan and prepare for responses to climate caused emergencies

Plan Strategies



PRESERVE WORKING LANDS AND NATURAL AREAS

- Preserve 30% of Washtenaw County as working farms or ecologically significant natural areas by 2030
- Protect County watersheds, surface water, ground water, and agricultural soils

INFRASTRUCTURE

- Plan for and build public improvements that reduce dependency on fossil fuels and prepare the County for more frequent and intense weather events.

CIRCULAR ECONOMY

- Build an equitable, low-carbon, and resilient circular economy that manages materials streams for their highest and best use. A circular economy is one that designs out waste, keeps materials in use, and which regenerates natural systems

VULNERABILITY ASSESSMENT

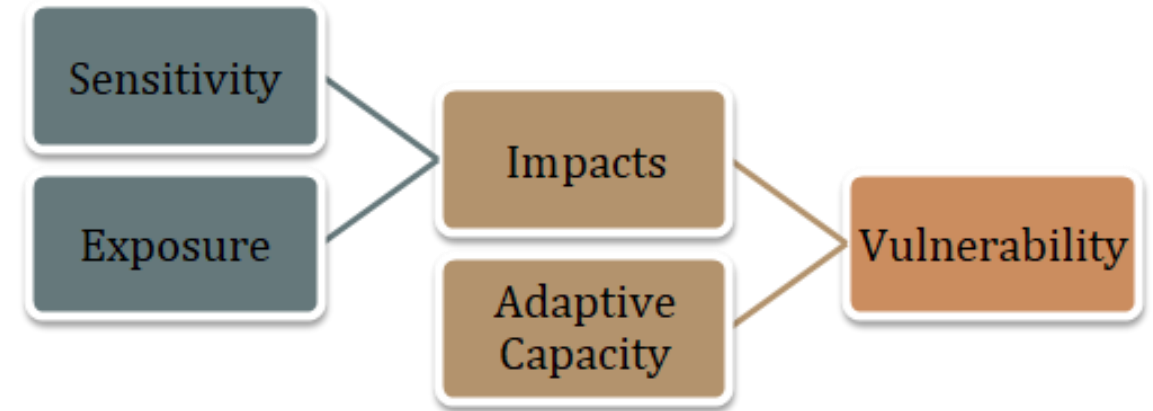
What is Climate Vulnerability?

Definition of Terms:

Exposure: The presence of people, livelihoods, species or ecosystems, environmental functions, services and resources, infrastructure, or economic, social or cultural assets in places and settings that could be adversely affected (IPCC, 2014).

Sensitivity: The degree to which a system or species is affected, either adversely or beneficially, by climate variability or change. The effect may be a direct (e.g., change in crop yield in response to a change in the mean range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise) (IPCC, 2014).

Impact: Effect on natural and human systems such as lives, livelihoods, health, ecosystems, economics, societies, cultures, services and infrastructure (IPCC, 2014).



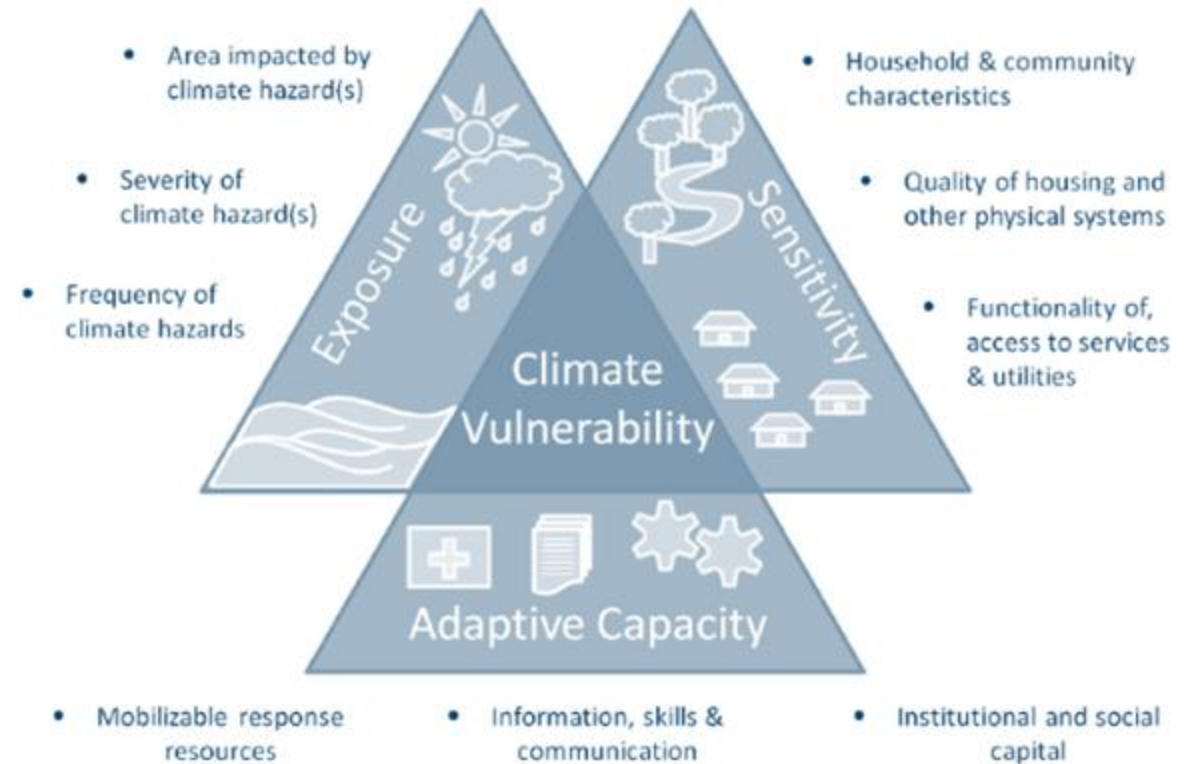
Adaptive Capacity: The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (IPCC, 2014).

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt (IPCC, 2014).

Climate Vulnerability Analysis (CVA)

By the end of the 21st century, Southeast Michigan is expected to have more extreme weather events caused by climate change, and this will lead to our most vulnerable communities at risk of extreme heat, flooding, and poor air quality.

Climate vulnerability indicators are a combination of climate risks and socio-economic risks. To assist the community and decision-makers in identifying the intersection of these risks, we have created a Climate Vulnerability Map that shows different indicators of climate risk in relations to Washtenaw County's Opportunity Index.

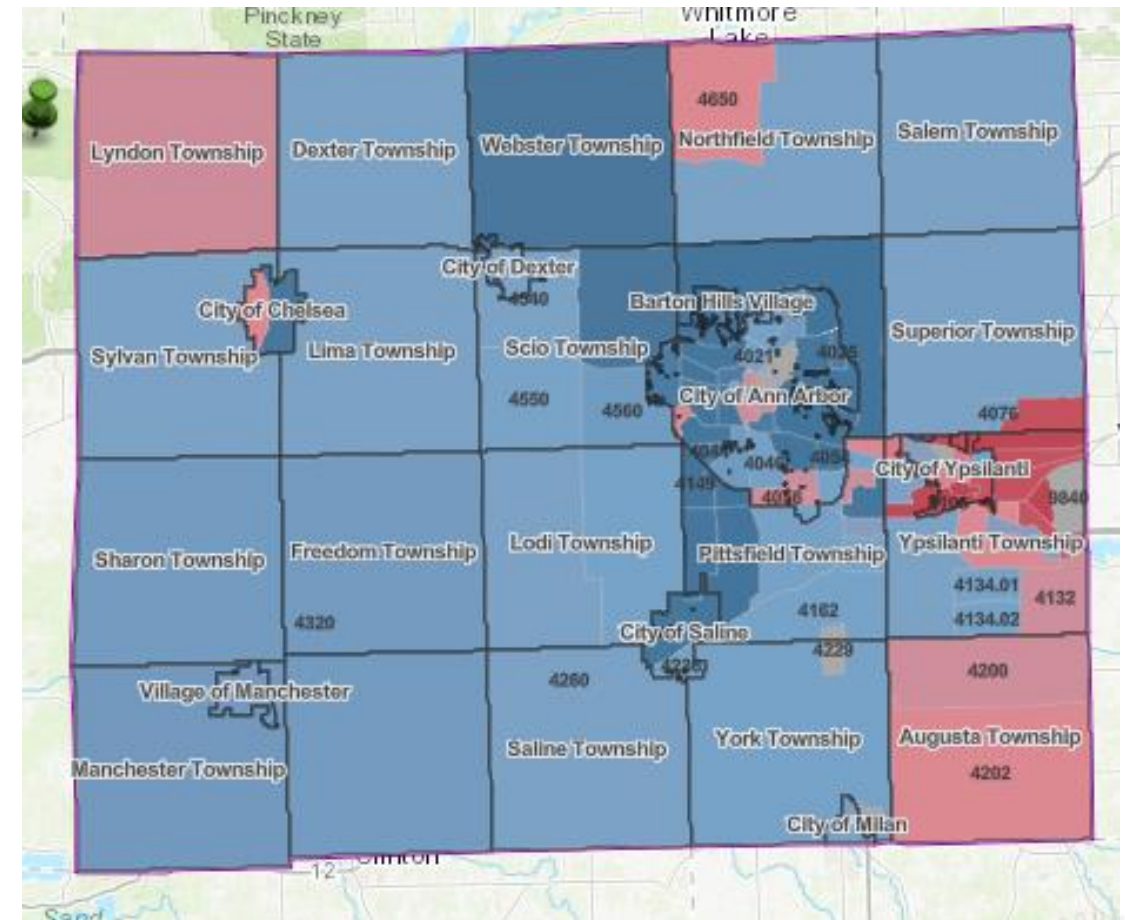


Who and What is Most at Risk From a Changing Climate?

CLIMATE VULNERABILITY

Any County-wide measure of climate vulnerability is a snapshot in time of available socioeconomic and data available on climate risk. There are many tools available to Washtenaw County as they develop implementation plans and better integrate climate mitigation and adaptation into future plans. Several tools are highlighted in this document and are available for the public to explore as well. Each tool is designed to answer specific questions, and no one tool adequately captures all of the available data. Resilient Washtenaw has brought together some of the best available tools in 2022 to help inform climate vulnerability across the County. This effort builds on the existing work by the County to identify areas of low and high opportunity.

The Washtenaw Opportunity Index is a tool to benchmark opportunity in the community. In developing the index, the County seeks to illustrate where there is and isn't access to opportunity across Washtenaw County. The Opportunity Index is part of Washtenaw County's broader efforts to increase racial equity. Areas of very low opportunity are shown in dark red.



We Must Plan to Adapt for the Future

The impacts of extreme heat, air quality, and flooding will not be felt uniformly across Washtenaw County. Some areas and populations are more vulnerable to these climate risks and have more exposure, higher sensitivity, and lower adaptive capacity. Regardless of the work to mitigate emissions and slow climate change, the County and community of Washtenaw will need to work together to protect those most vulnerable to expected changes in our climate.

To help build communitywide awareness of climate vulnerability and direct adaptation and resilience investments to where they will be most impactful, we have aggregated the best data resources available for Washtenaw County stakeholders and decision-makers to utilize in the development of adaptation and resilience programs and services.



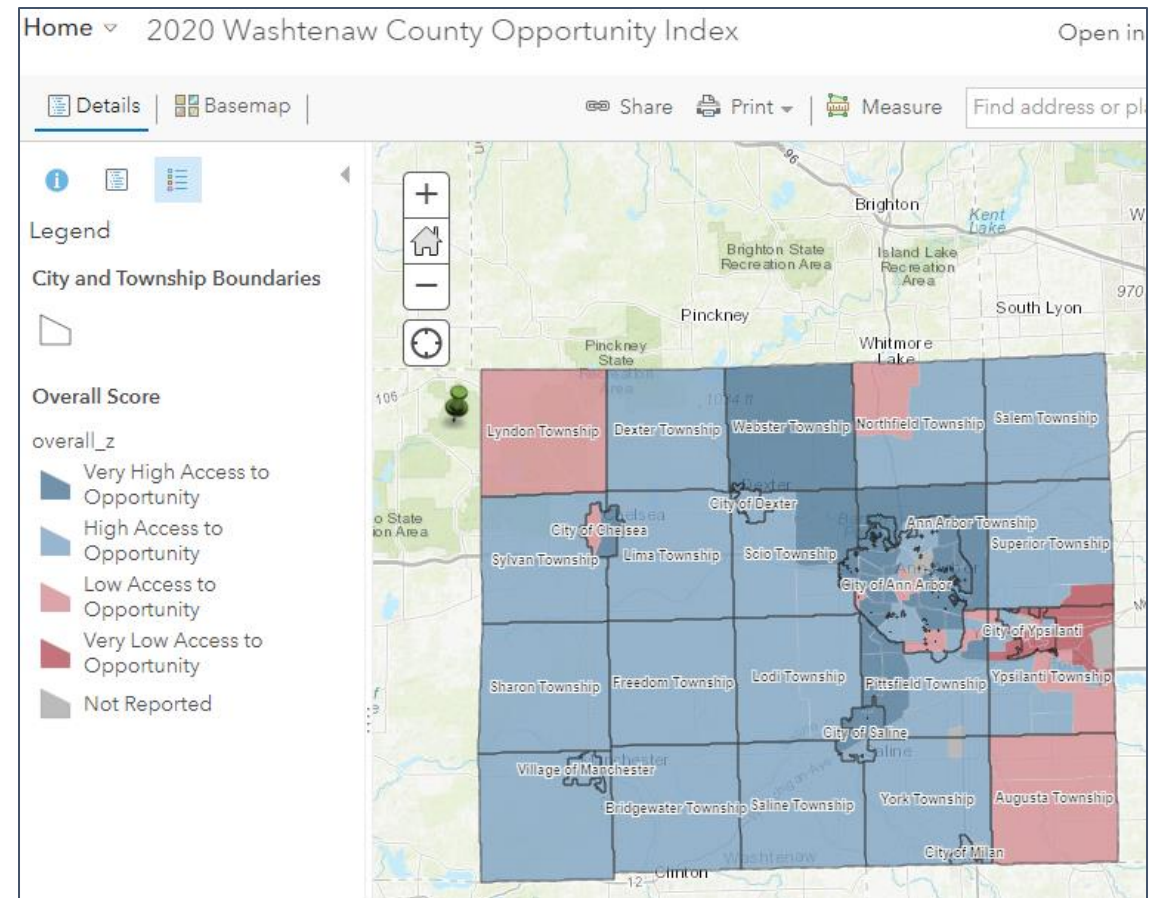
Flooding in Ann Arbor's Bryant Neighborhood

Climate Vulnerability Analysis - Background

Washtenaw County has created a local map that aligns with CVA methodology, the Opportunity Index. This map illustrates where there is and isn't access to opportunity across Washtenaw County; helps identify where to target programs and resources through an "opportunity lens;" and gives the community a common, understandable framework by which to make decisions.

A CVA is intended to do much of the same functions as the Opportunity Index, but through a climate vulnerability lens. For this reason, the project team decided to build on the opportunity index for some visualizations of primary climate risks to vulnerable communities. We also reviewed dozens of mapping resources that are publicly available and regularly updated and have provided an easy way to access them alongside the CVA map.

With these tools, the intersections of climate risks with social vulnerabilities can be broken down into data that informs local decisions; is utilized in proposals to state, federal, philanthropic and corporate funders; and provides a consistent framework for evaluation and metrics reporting.



Washtenaw County Opportunity Index

Climate Vulnerability Analysis - Background

THE CVA MAP SHOWS THE INTERSECTION OF THE OPPORTUNITY INDEX WITH 5 INDICATORS:

- **Energy Burden** – The percentage of income households spend on their energy bills. A high energy burden indicates high sensitivity to climate risks because they likely have inefficient housing and limited resources.
- **Areas Lacking Tree Canopy** – Trees provide shade and can mitigate some heat island impacts, so a lack of tree canopy contributes to exposure to extreme heat
- **Properties with Flood Risk** – Properties built in floodplains or that do not have adequate water management have high exposure to extreme rain events. Over time, this can lead to health issues related to moisture in households like mold, mildew, and structural issues.
- **Areas in 500-Year Floodplains** – With increased intensity of precipitation events, 500-year floods are become more likely. Areas in these floodplains could face significant risk of loss of property, prosperity, and life.
- **Areas with Impervious Surfaces** – Areas with concentrated streets, sidewalks, concrete and buildings lead to heat islands that can expose people to extreme heat. These surfaces also lead to water runoff during rain events that can contribute to flood risks.

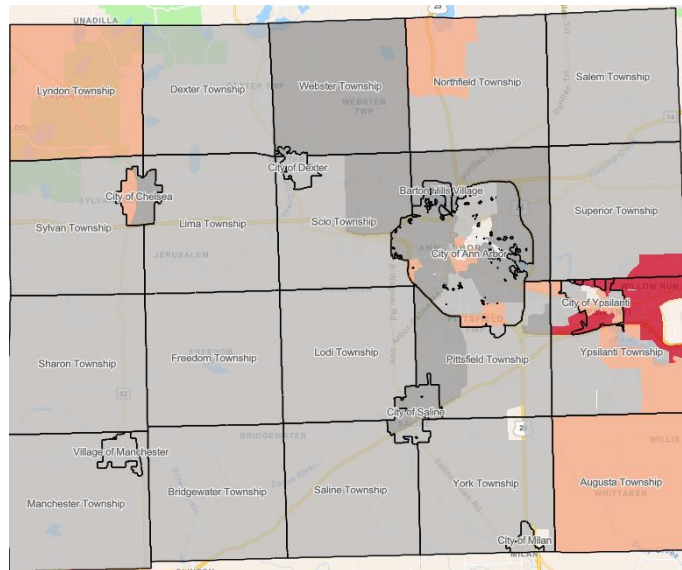
Climate Vulnerability Indicators	Extreme Heat and Cold Risk	Flood Risk	Poor Air Quality Risk
Energy Burden	X		X
Lack of Tree Canopy	X	X	X
Properties with Flood Risk		X	
Areas in 500-Year Floodplain		X	
Areas with Impervious Surfaces	X	X	X

VULNERABILITY ANALYSIS

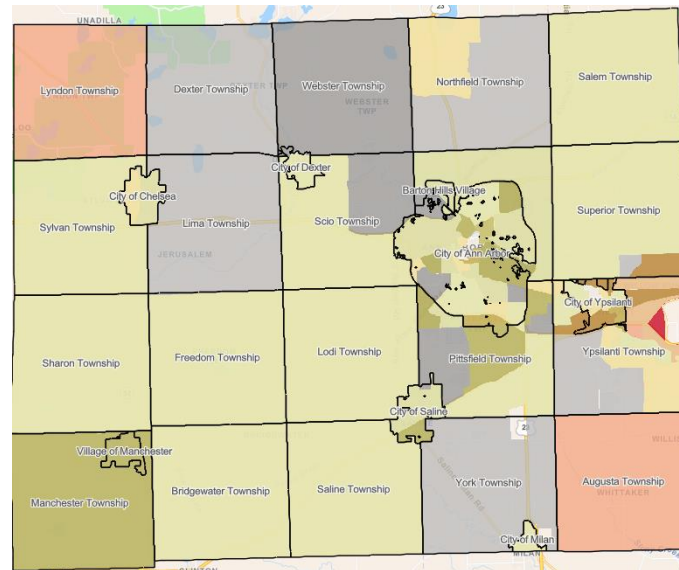
CVA Tools

The Resilient Washtenaw CVA Map allows users to visually identify the intersections of socioeconomic vulnerability and climate vulnerability. The below example shows the intersection of the Opportunity Index with Energy Burden. Based on the color scales of the maps, you can see areas of Northfield Township, southeast Ann Arbor, southern Superior Township, and areas of Ypsilanti and Ypsilanti Township have both low opportunity and high energy burden. These areas should be prioritized for further research and targeted investments in energy efficiency

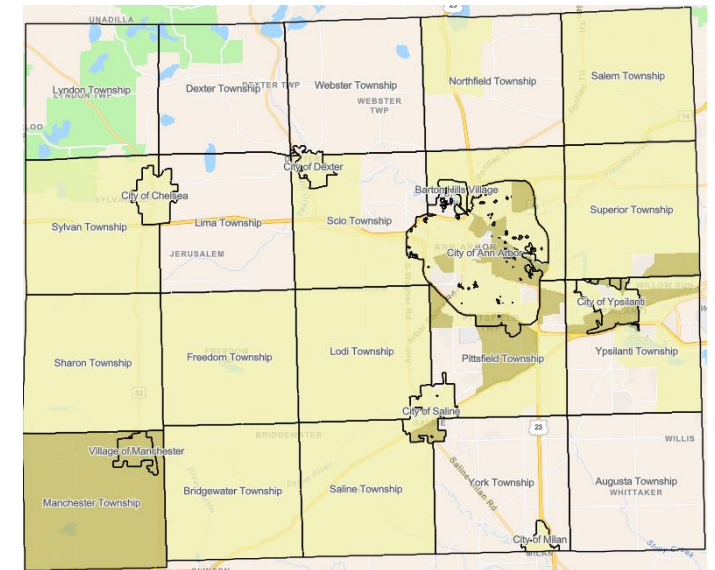
Resilient Washtenaw Opportunity Index map layer showing low-opportunity areas in progressively darker shades of red



Resilient Washtenaw Opportunity Index and Energy Burden map layers showing intersection of low-opportunity and high energy burden



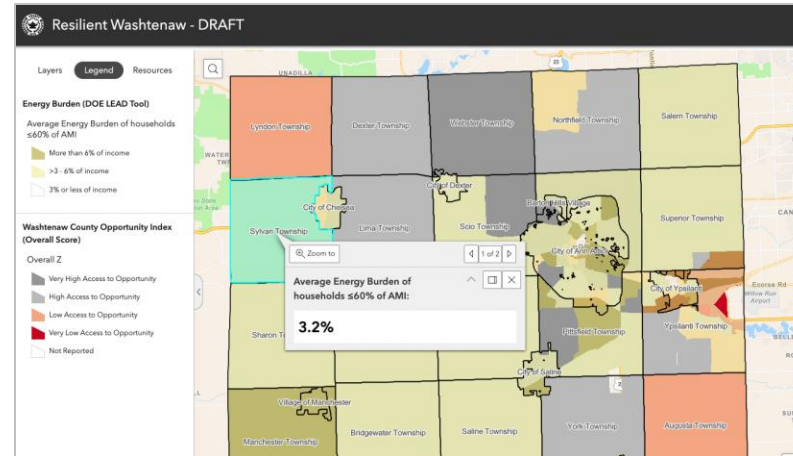
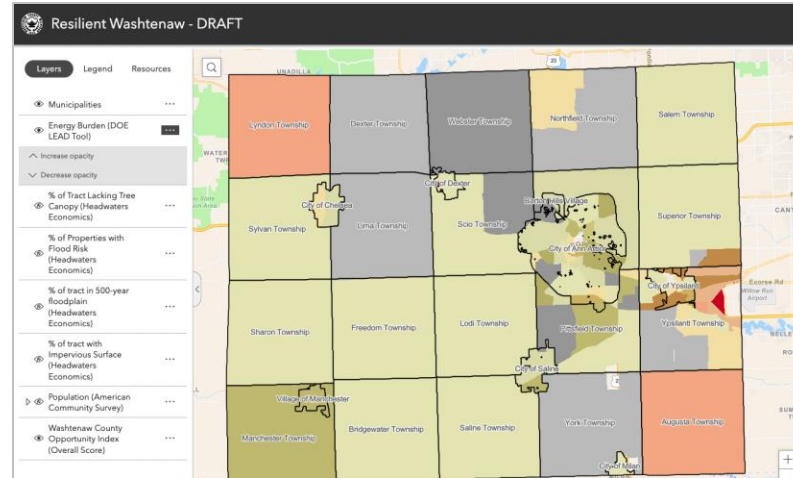
Resilient Washtenaw Energy Burden map layer showing higher energy burden in progressively darker shades of yellow



CVA Tools

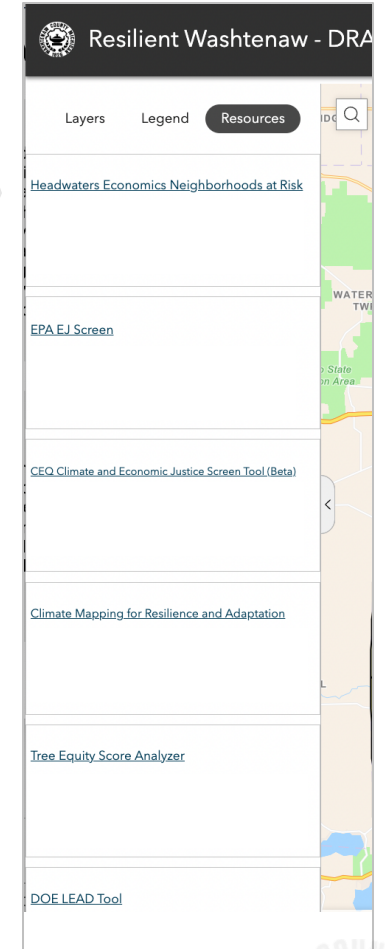
When different layers of the map are activated, users can adjust transparency to help them see how other layers blend and identify "hot spots" of climate vulnerability. Switching over to the Legend tab at the top of the menu will show what the color scales on the map mean.

Switching over to the Legend tab at the top of the menu will show what the color scales on the map mean and clicking on the census tract will bring up the data for the selected layers.



Switching over to the Resources tab will bring up a list of mapping and data sources related to climate vulnerability, with a brief explanation of what the data is, so users can find more information to help inform their decisions on where to target climate resilience and adaptation investments

[LINK TO CLIMATE VULNERABILITY MAP](#)



WASHTENAW COUNTY



PARKS & RECREATION

ACTIONS

ACTION #	STRATEGY	ACTION TITLE
1.01	Implementation	On-going Climate Education and Public Engagement
1.02	Implementation	Create a Regional Resilience Authority
1.03	Implementation	Carbon Pricing in Decision Making
1.04	Implementation	Create a County-Based Carbon Offset Program
2.01	Energy Transition	100% Renewable Energy Options for Everyone
2.02	Energy Transition	Create Countywide Energy Concierge
2.03	Energy Transition	Expand Bulk Purchase Programs
2.04	Energy Transition	Expand Weatherization Programs
2.05	Energy Transition	Update Building Codes
2.06	Energy Transition	Time of Marketing Energy Rating Disclosure
2.07	Energy Transition	100% Renewable Energy and Energy Efficiency Upgrades for All County Operations
3.01	Housing	Infill Housing and Increased Density
3.02	Housing	Model Zoning Ordinances and Policies
3.03	Housing	Emissions Accounting Mechanism
4.01	Mobility and Access	Electric Mobility Options Hub
4.02	Mobility and Access	Improve Transit County-wide
4.03	Mobility and Access	Build All Season County-wide Non-Motorized Transportation Network
4.04	Mobility and Access	Support Regional Transportation Options (RTA)
4.05	Mobility and Access	Reduce VMTs
4.06	Mobility and Access	Improve MPG and MPGE throughout Community-wide Fleet
4.07	Mobility and Access	Expand on Work from Home and Remote Service Access for County Operations
4.08	Mobility and Access	Provide Financial Incentives to Employees to Walk, Bike, or Use Transit
4.09	Mobility and Access	Support More Efficient School Transportation
5.01	Health	Update the County's Hazard Mitigation Plan
5.02	Health	Create Resilience Hubs Network
5.03	Health	Reduce Heat Islands
5.04	Health	Expand and Maintain County Tree Canopy
5.05	Health	Expand County Education and Outreach Programs
5.06	Health	Create Opportunities for Local Food Production on County Properties
5.07	Health	Prepare Health System for Climate Emergencies
6.01	Preserve Working Lands and Natural Areas	Natural Area Preservation
6.02	Preserve Working Lands and Natural Areas	Farmland Preservation
7.01	Infrastructure	Provide Comment on Infrastructure Agency Planning Projects
7.02	Infrastructure	Prioritize Public Projects that Reduce Fossil Fuel Use and Prepare for More Extreme Weather
7.03	Infrastructure	Urbanized Area Storm Vulnerability Assessment and Prioritization
7.04	Infrastructure	County-wide Stormwater Basin Inspection and Retrofit
7.05	Infrastructure	Expand Rain Garden Program
7.06	Infrastructure	Update Stormwater Regulations
8.01	Circular Economy	Build an Equitable, Low-carbon, and Resilient Circular Economy
8.02	Circular Economy	Develop a County Wide Organics/Compost Program
8.03	Circular Economy	Support and Grow the Washtenaw Regional Resource Management Authority (WRRMA)
8.04	Circular Economy	Build a Multi-dimensional Public Education and Promotion Plan for the Circular Economy
8.05	Circular Economy	Diversify Funding for Circular Economy Work
8.06	Circular Economy	Policy Initiatives to Expand Circular Economy Scope and Infrastructure
8.07	Circular Economy	Incentivize Local Food Production

STRATEGY

PRIORITY: LOW TO HIGH
TIMELINE: SHORT TO LONG

IMPACT: LOW TO HIGH
DIFFICULTY: EASY TO HARD

Action Title

Action Description

What am I looking at? These are draft actions. Each action starts with a slide like this that identifies some key information about what the action is, why it's important, and who should be involved in planning, funding, and implementation. If there is a lot more to explain, a second slide is added to capture that information

Supporting actions costs are included in Overarching Actions and Actions with direct GHG Impacts

Some actions are Over-arching, Supportive of GHG reductions Resilience and Adaptation actions do not reduce GHGs

Goals and Evaluation Metrics:

- What goals should we have?
- What metrics should we use to evaluate achieving our goals?

Implementation/Lead Dept.

Who is leading from the County?

Community Partners

Who from the community should be involved?

Funding

Where could funding come from?

Staffing

Where will staff or contractors be and how many will we need?

Approval(s)

Which governing bodies will need to approve?



What is the Budget, Cost or Return on Investment?



When do we start? For how long?



What level of GHGs can this reduce?



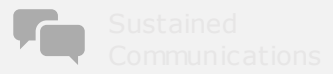
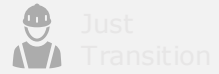
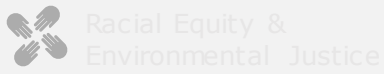
Does this apply to the County, Community or CVTs?



What mechanism is used to enable this?

Relevant Principles are Highlighted

RELEVANT PRINCIPLES



Description of Methodology

PRIORITY: LOW-MEDIUM-HIGH

Prioritization is determined by a number of factors including positive impact on County residents, potential state and federal funding sources, partnerships, ease of implementation, or foundational nature of the action which enables additional actions.

IMPACT: LOW-MEDIUM-HIGH

Impact is determined by examining the actions impacts on emissions reductions, ROI, and principles

DIFFICULTY: EASY-MODERATE-HARD

Difficulty is determined using a subjective lens. Actions requiring significant behavioral or political changes are considered hard. Actions requiring a Board of Commissioners resolution, for example, are considered easy.

TIMELINE: SHORT-MID-AND LONG-TERM

This illustrates when an action starts and completes. A short-term timeline is an action that can happen within 1-3 years. Mid-term is 3-5 years. Long term is 5-13 years. All actions have been assigned timelines based on the Goal of achieving County-wide carbon neutrality by 2035.

Description of Methodology

ACTION IMPACTS

Action Impact estimates are meant to show an economy of scale based on a set of reasonable assumptions around GHG Impact, Government Investment, Net Returns to the Community, and the Social Cost of Carbon. As programs to implement actions are designed and funded at different scales and time periods, the specific impacts of those programs can be more fully outlined and estimated.

GOVERNMENT INVESTMENT:

Government Investment is the amount of funding the County, Cities, Villages, Townships, School Districts, etc., will need to direct towards climate action. This funding could come through the existing funding resources that local units of government can raise, but could also come from state, federal, philanthropic and public-private partnerships.

NET RETURN TO COMMUNITY:

Net Return to Community measures the total return on investments made towards climate action. These returns may be direct returns, like spending money on an electric vehicle and having an overall lower lifecycle cost compared to driving a gas-powered vehicle, or indirect returns like lowered healthcare costs due to mode shifting to bicycling more often and improving your personal health. This does not measure the economic impacts (jobs) created through investments, which will be quite significant with the level of investment from Government and the community.

SOCIAL COST OF CARBON

The social cost of carbon is a critical metric that measures the economic damages, in dollars, that result from the emission of one additional ton of carbon dioxide into the atmosphere. A high social cost of carbon can motivate more stringent climate policies, as it increases the estimated benefits of reducing greenhouse gases. We utilize the most updated estimate of the average social cost of carbon - \$185/MTCO_{2e}

RETURN ON INVESTMENT (ROI/MTCO_{2E}):

ROI/MTCO_{2e} evaluates the net return on investment from an action over the amount of greenhouse gases it reduces. The number combines the Government Investment, the Net Return to Community, and the Social Cost of Carbon and then divides by the total MTCO_{2e} reduced by that action. However, it differs from traditional definitions of ROI in that it evaluates a net return to the community, overall. For example:

- It could be direct, such as the County investing in solar on its facilities and receiving a ROI on an investment of their capital.
- Or, it could be indirect, such as the County investing money into a program that helps the community get solar at a lower price and each member of the community that participates has a higher ROI on the investment of their capital.

ACTION SUMMARY TABLE

1. IMPLEMENTATION	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
On-going Climate Education and Public Engagement		Overarching Action	\$5,850,000			
Create a Regional Resilience Authority		Overarching Action	\$13,000,000			
Carbon Pricing in Decision Making		Overarching Action	\$0			
Create a County-Based Carbon Offset Program		Overarching Action	\$6,069,455			

ACTION SUMMARY TABLE

2. ENERGY TRANSITION	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
100% Renewable Energy Options for Everyone*	2,447	1,148,168				
Create Countywide Energy Concierge		446,582	\$16,108,068	\$280,483,670	\$82,617,815	\$849
Expand Bulk Purchase Programs		492,638	\$6,970,989	\$419,893,937	\$91,137,953	\$1,051
Expand Weatherization Programs		28,246	\$4,646,651	\$32,526,560	\$5,225,601	\$1,337
Update Building Codes		27,844	\$8,564,932	(\$83,411,388)	\$5,151,074	(\$3,118)
Create Time of Sale Reporting of Energy Use and Costs		Supporting Action				
100% Renewable Energy and Energy Efficiency Upgrades for All County Operations	4,260		\$13,426,826	\$6,597,575	\$788,188	\$1,734

ACTION SUMMARY TABLE

3. HOUSING	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
Infill Housing and Increased Density	Supporting Action					
Model Zoning	Supporting Action					
Emissions Accounting Mechanism	Supporting Action					

ACTION SUMMARY TABLE

4. MOBILITY AND ACCESS	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
Electric Mobility Options Hub		389,466	\$19,823,002	\$2,110,109,393	\$72,051,207	\$5,552
Improve Transit County-wide		5,512	\$35,186,797	\$35,490,612	\$1,019,651	\$240
Build All Season County-wide Non-Motorized Transportation Network		34,295	\$110,371,781	\$338,365,839	\$6,344,546	\$6,648
Support Regional Transportation Options (RTA)	Supporting Action					
Reduce VMTs Caused by Road Expansion and Sprawl		137,179	\$2,179,274,515	\$3,002,101,006	\$25,378,183	\$22,069
Improve MPG and MPGE throughout Community-wide Fleet		112,887	\$8,788,005	\$403,354,943	\$20,884,130	\$3,680
Expand on Work from Home and Remote Service Access	Supporting Action					
Provide Financial Incentives to Employees to Walk, Bike, or Use Transit	Supporting Action					
Support More Efficient School Transportation	Supporting Action					

ACTION SUMMARY TABLE

5. HEALTH	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
Update the County's Hazard Mitigation Plan	Resilience / Adaptation					
Create Resilience Hubs Network	Resilience / Adaptation					
Reduce Heat Islands	Resilience / Adaptation					
Expand and Maintain County Tree Canopy	Resilience / Adaptation					
Expand County Education and Outreach Programs	Resilience / Adaptation					
Create Opportunities for Local Food Production on County Properties	Resilience / Adaptation					
Prepare Health System for Climate Emergencies	Resilience / Adaptation					

Resilience and Adaptation Actions are evaluated on the cost of future climate risk, which is estimated at \$15,592,468 from 2023-2035

ACTION SUMMARY TABLE

6. PRESERVE WORKING LANDS AND NATURAL AREAS	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
Natural Area Preservation	Supporting Action					
Farmland Preservation	Supporting Action					

ACTION SUMMARY TABLE

7. INFRASTRUCTURE	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
Provide Comment on Infrastructure Agency Planning Projects		Resilience / Adaptation				
Prioritize Public Projects that Reduce Fossil Fuel Use and Prepare for More Extreme Weather		Resilience / Adaptation				
Urbanized Area Storm Vulnerability Assessment and Prioritization		Resilience / Adaptation				
County-wide Stormwater Basin Inspection and Retrofit		Resilience / Adaptation				
Expand Rain Garden Program		Resilience / Adaptation				
Update Stormwater Regulations		Resilience / Adaptation				

Resilience and Adaptation Actions are evaluated on the cost of future climate risk, which is estimated at \$15,592,468 from 2023-2035

ACTION SUMMARY TABLE

8. CIRCULAR ECONOMY	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
Build an Equitable, Low-carbon, and Resilient Circular Economy		22,981		\$55,155,949	\$4,251,477	\$2,583
Develop a County Wide Organics/Compost Program		11,115		\$21,683,605	\$2,056,340	\$2,136
Support and Grow the Washtenaw Regional Resource Management Authority (WRRMA)	Supporting Action					
Build a Multi-dimensional Public Education and Promotion Plan for the Circular Economy	Supporting Action					
Diversify Funding for Circular Economy Work	Supporting Action					
Policy Initiatives to Expand Circular Economy Scope and Infrastructure	Supporting Action					
Incentivize Local Food Production	Supporting Action					

ACTION SUMMARY TABLE

TOTALS	County GHG Reduction	Community GHG Reduction	Government Investment	Net Return to Community	Social Cost of Carbon	ROI/ MT CO2e
Total for Non-Grid Electricity and Non-Offset Actions	4,260	1,708,745	\$2,443,673,490	\$6,622,311,702	\$316,906,167	\$4,051
Net GHG Emissions After Actions	2,897	2,315,371				
% Reduction from 2019	66%	48%				
% Reduction from BAU	60%	42%				
Grid Electricity GHGs to Address with Renewable Energy Options	2,447	1,148,168		We assume the County and Community achieves this as cost-neutral through a variety of options outlined in Action 2.01		
Remaining Non-Electricity Emissions to Address with Offsets or Otherwise	450	1,167,203		Expected Offset costs could range from \$20M-\$260M per year depending on purchasing from voluntary market or investing locally in carbon removal solutions		



1

IMPLEMENTATION

Putting Plans into Action

1. On-going Climate Education and Public Engagement
2. Create a Regional Resilience Authority
3. Carbon Pricing in Decision Making
4. Local Carbon Offset Program

IMPLEMENTATION

PRIORITY: HIGH
TIMELINE: SHORT TERM

IMPACT: HIGH
DIFFICULTY: HARD

On-going Climate Education and Public Engagement

The County needs to provide on-going climate education and work directly with communities. One lesson of the Resilient Washtenaw plan development is that vulnerable and disadvantaged communities need to be directly engaged to identify both the location of on-the-ground impacts of climate change (i.e., flooding, extreme cold and extreme heat, energy cost burden) and to identify potential adaptation projects. Further, the direct outreach is essential to identify community organization partners, identify participants (particularly for home weatherization and electrification projects) and to assist in continuing climate education

Implementation/Lead Dept.
Board of Commissioners

Community Partners
Community Organizations, Non-profits and Advocacy Groups, Labor, Cities, Villages, and Townships

Funding
County General Fund

Staffing
New Staff Required

Approval(s)
Board of Commissioners, CVTs

Goals and Evaluation Metrics:

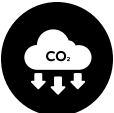
- Create climate education and outreach program by 2023
- Identify key community partners and organizations by March 2023
- Host a resource library of model codes and policies to advance climate smart policies across the County



\$5.85M COST



ONGOING



OVER-ARCHING ACTION



COUNTY



NONE

IMPLEMENTATIONPRIORITY: HIGH
TIMELINE: SHORT TERMIMPACT: HIGH
DIFFICULTY: HARD

Create a Regional Resilience Authority

Washtenaw County will bring together common interests among the 28 units of local governments, nonprofits, local and regional labor, and key County employers to explore collaborative solutions that scale significant carbon reduction projects and leverage funds across partners to reduce implementation costs and staff burden.

Implementation/Lead Dept.

Board of Commissioners

Community Partners

Cities, Villages, Townships, Nonprofits, Employers, and Labor

Funding

Membership Fees, Bonds

Staffing

New Staff Required (5-10)

Approval(s)

Board of Commissioners, CVTs

Goals and Evaluation Metrics:

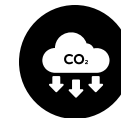
- Create Regional Resilience Authority by 2024



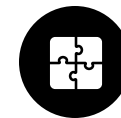
\$13M COST



2023



OVER-ARCHING ACTION



COUNTY & CVTs



INTERLOCAL AGREEMENT

RELEVANT PRINCIPLES

Racial Equity & Environmental Justice



Just Transition



Health



Resilient Economy



Community Partnership



Sustained Communications

IMPLEMENTATION

Create a Regional Resilience Authority

Using national climate partnerships and local service collaborations as a guide, the Regional Resilience Authority is tasked with the following:

- Promoting and encouraging institutional and municipal adoption of climate goals and plans.
- Develop and share tools of best climate mitigation and adaptation practices including sample ordinances and operational standards including but not limited to carbon reduction actions, permitting and fees for solar and electrification projects, zoning (housing, site planning, solar and renewable generation), land preservation, operations, finance, and governance.
- Build broad regional public support for actions.
- Coordinate actions and implementation.
- Provide a mechanism for funding projects of common interest.
- Tracking and recording of GHG data related to transportation, land use, infrastructure, and buildings.

IMPLEMENTATION

PRIORITY: HIGH
TIMELINE: SHORT TERMIMPACT: HIGH
DIFFICULTY: HARD

Carbon Pricing in Decision Making

The transition to a low carbon economy includes significant trade-offs. Setting an internal price on carbon enables units of government to address the risks they face, ensure they choose a productive path for long-term, sustainable success. Using a carefully selected cost of carbon enables acceleration toward the transition to a zero-carbon, sustainable world.

Implementation/Lead Dept.

Board of Commissioners

Community Partners

Cities, Villages, Townships, and Labor

Funding

None Needed

Staffing

Finance

Approval(s)

Board of Commissioners, CVTs

Goals and Evaluation Metrics:

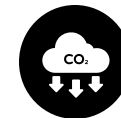
- Set a Social Cost of Carbon that the County Utilizes for Decision Making for both Internal and Community Projects
- CVTs Adopt the County's Social Cost of Carbon in their Decision Making
- Establish an Internal Carbon Tax so Projects Realize their Carbon Impacts and the Tax Funds an Internal Decarbonization Revolving Fund
- CVTs Adopt the County's Internal Carbon Tax and Create their Own Decarbonization Revolving Fund



\$0 COST



2023-2035



OVER-ARCHING ACTION



COUNTY & CVTs



INTERNAL POLICIES

RELEVANT PRINCIPLES



Racial Equity & Environmental Justice



Just Transition



Health



Resilient Economy



Community Partnership



Sustained Communications

IMPLEMENTATION

Carbon Pricing in Decision Making

Social Cost of Carbon - The social cost of carbon is an estimate of the economic costs, or damages, of emitting one additional ton of carbon dioxide into the atmosphere, and thus the benefits of reducing emissions. This cost can be factored into cost-benefit analyses in decision making so both internal capital planning and approval of external development projects realize their full impact on the community. Cost of carbon factors could include public health impacts, species loss, property damage/loss, agricultural productivity loss, increased food prices, eco-system service damage, and social/international conflict.

Internal Carbon Tax - Washtenaw County will explore an internal carbon tax that clearly signals to staff the full cost of carbon and generate a pool of funds that will be used within and across departments to support the County carbon neutrality goals. The County will share this method with other interested CVTs. The tax can:

- De-risk Public Investments
- Provide Transparency to Citizens and Stakeholders
- Provide Common Metrics to Track and Measure Success
- Create Finance Mechanisms to Reduce Emissions

IMPLEMENTATION

PRIORITY: HIGH
TIMELINE: SHORT TERM

IMPACT: HIGH
DIFFICULTY: MODERATE

Prioritize Local Carbon Offsets

Even with all the impactful actions in the Resilient Washtenaw plan and other city and township climate plans, it is not possible to get to carbon neutrality by 2035 for the County without using carbon offsets. The intent is not to create a system that continues to rely on offsets but to use offsets as a short- and near-term bridge to get to carbon neutrality as behaviors, technologies, and conditions evolve.

We will prioritize local carbon offsets to ensure we are investing in projects that create a carbon sink as close to our community's emissions as possible. The Regional Resilience Authority can coordinate this local offset market and help residents, businesses, and local units of government offset their emissions in impactful local projects.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

CVTs, Businesses, Labor, and Residents

Funding

Carbon Offset Purchases

Staffing

Regional Resilience Authority

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

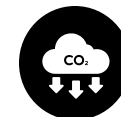
- Establish Local Offset Program
- Identify targeted high vulnerability areas for tree plantings, solar installations, weatherization, and building electrification by 2023
- Identify potential methane capture opportunities and track CCF of captured methane by 2023
- Create a database of the number of trees planted and carbon sequestration value of these trees
- Biodiversity of ecosystems where additional tree planting and carbon farming is targeted
- Increase amount of privately owned natural areas and farmland that are permanently protected



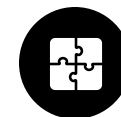
\$6.07M COST



2023-2035



OVER-ARCHING ACTION



COMMUNITY, COUNTY & CVTs



VOLUNTARY

IMPLEMENTATION

Prioritize Local Carbon Offsets

This program would use payments from individuals, companies, and organizations who require carbon offsets to meet their own climate goals to fund investments in Washtenaw County to reduce carbon emissions and/or sequester carbon to reduce emissions in Washtenaw County.

Such a program will require start-up funds from the County but will operate as an enterprise fund.

Potential projects could include:

- Building electrification/weatherization
- Renewable energy projects and installations
- Ecologically sound reforestation, forest management, and natural area preservation
- Carbon farming/soil carbon sequestration
- Local food and consumer product production
- Methane capture

2

ENERGY TRANSITION

Increase Renewable Energy,
Energy Efficiency, and
Electrification in all Buildings

1. 100% Renewable Energy Options for Everyone
2. County-wide Energy Concierge
3. Community Bulk Buy for Solar and Building Electrification
4. Expand Weatherization
5. Update Building Codes
6. Time of Marketing Energy Rating Disclosure
7. 100% Renewable Energy and Energy Efficiency for County Operations

100% Renewable Energy Options for Everyone

To fully decarbonize the energy system, residents and businesses must have equitable access to 100% renewable energy options from the grid. There are multiple pathways to achieve this (Community Choice Aggregation (CCA) which requires a change in state law and Sustainable Energy Utilities (SEU). The City of Ann Arbor has set 2027 for their target of providing 100% renewable energy, but it will require a coordinated effort at all levels of government and with community support to meet this target

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

Cities, Townships, Villages, Utilities, Businesses, Residents, Labor

Funding

TBD

Staffing

TBD

Approval(s)

Board of Commissioners, CVTs, Michigan Public Services Commission

Goals and Evaluation Metrics:

- 100% Renewable Energy Options Available to All Residents, Businesses, and Local Units of Government
- Renewable Energy Options Available at or Below Current Cost of Electricity
- Renewable Energy comes from Local Sources



COST
NEUTRAL



2027



1,148,168
MTCO₂e



COUNTY,
COMMUNITY
& CVTs



INTERLOCAL
AGREEMENT

ENERGY TRANSITION

100% Renewable Energy Options for Everyone

There are multiple pathways to achieve 100% renewable energy options for everyone, including:

Community Choice Aggregation (CCA) – CCA requires legislation at the state level to enable communities to aggregate into Joint Power Authorities (JPAs). JPAs become the default purchaser of electricity supply for their community, allowing them to offer 100% renewable energy as an alternative to the grid mix of their utility.

Sustainable Energy Utilities (SEUs) – Municipalities can create SEUs to provide a hyper-local alternative to grid-supplied energy via distributed energy, district energy, and community microgrids. Currently, this is allowed by state law for only cities and villages.

Community Solar (CS) – CS allows residents and businesses to buy into a large solar project in their community and receive credits on their utility bill for the energy production. CS is allowed by state law, but at the discretion of the utilities. Legislation is required to enable communities to demand community solar.

Utility Green Pricing Programs (GPPs) – Utilities currently offer GPPs, but the cost of green pricing has only recently come down in cost to be equal to the kWh cost of fossil fuel generated electricity. To achieve equitable access to clean energy, GPPs should be offered at the same or ideally lower price than energy derived from fossil fuels.

County-wide Energy Concierge

Washtenaw County will partner with the City of Ann Arbor Office of Sustainability and Innovation to grow a County-wide energy concierge and public engagement program, using its extensive outreach and education programs to support all citizens, especially vulnerable residents, lower-income households, disadvantaged businesses, and local units of government in their energy transition.

Implementation/Lead Dept:

Board of Commissioners, Administration

Community Partners

City of Ann Arbor Office of Sustainability and Innovation, CVTs, Contractors/Manufacturers, Labor

Funding

CDBG, Federal Programs, General Fund

Staffing

Regional Resilience Authority

Approval

Board of Commissioners, CVTs

Goals and Evaluation Metrics:

- Create interlocal agreement by December 2023
- Develop outreach and marketing materials by December 2023
- Develop database of service providers, contractors, and product types - including information on whether these are union or non-union service providers or contractors, and whether the County's living wage is paid by non-union service providers or contractors - by December 2023



\$849/
MTCO₂e



2023-2035



446,582
MTCO₂e



COUNTY,
COMMUNITY
& CITY OF
ANN ARBOR



INTERLOCAL
AGREEMENT

ENERGY TRANSITION

County-wide Energy Concierge

A concierge-style program creates a one-stop-shop for all community members and institutions, and tailors its services to needs of different groups, such as:

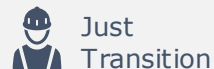
Local Units of Government – provide evaluation and expert consultation on ways to transition away from fossil fuels and access 100% clean and affordable energy.

The General Public – inform residents and businesses of all available services, financing, and incentives to transition to 100% clean and affordable energy.

Vulnerable and Resource-limited Residents – provide evaluation and connect residents most in need to all available programs to improve their housing, lower their energy burden, access clean and affordable energy, and understand opportunities to work in the clean energy industry.

Disadvantaged Business Enterprises (DBEs) – provide evaluation and connect disadvantaged businesses to all available programs to lower their energy burden and access clean and affordable energy. For DBEs in the trades, help connect them to programs and opportunities in the clean energy economy.

RELEVANT PRINCIPLES



Community Bulk Buy for Solar and Building Electrification

Expand on successful Solarize program to create bulk buy programs to bring solar installation, heat pumps, geothermal systems, and electric appliances to residents and businesses across the County. Target multi-family and commercial properties in addition to single- and two-family homes and businesses.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

City of Ann Arbor Office of Sustainability and Innovation, Labor, Michigan Saves, MEECA, Michigan Minority Contractors Association, and Washtenaw Contractors Association

Funding

Federal Funds, General Fund, CVTs

Staffing

Regional Resilience Authority

Approval(s)

Board of Commissioners, CVTs

Goals and Evaluation Metrics:

- Sign Interlocal Agreement by December 2023
- Conduct at least One Group-Buy per Commission District Annually
- Conduct at least One Group-Buy in Low to Moderate Income Neighborhoods Annually along with Subsidy
- Expand Network of Approved Contractors and Vendors to Include more Disadvantaged Business Enterprises



\$1,051/
MTCO₂e



2023-2035



492,638
MTCO₂e



COUNTY,
COMMUNITY
& CVTs



INTERLOCAL
AGREEMENT

ENERGY TRANSITION

PRIORITY: HIGH
TIMELINE: SHORT TERM

IMPACT: HIGH
DIFFICULTY: MODERATE

Expand Weatherization Program

Building emissions are responsible for two-thirds of emissions in Washtenaw County. Washtenaw County will greatly expand the current weatherization program to 1,000 homes per year and raise the income limit for eligibility to 300% of the federal poverty level. This program is designed to meet the needs of low-income homeowners and renters and to support the County goal of reducing the energy burden among the housed with the most needs. The program should also strive to grow the number of local MWBE Contractors delivering weatherization services to the community. This program will work to leverage the work being done by other municipalities and by DTE through their Energy Efficiency Assistance program.

Implementation/Lead Dept.

OCED

Community Partners

CVTs, Labor, Faith-based Organizations, Service Providers, Habitat for Humanity, City of Ann Arbor Office of Sustainability and Innovation, DTE

Funding

Michigan Energy Office, Federal Funds (ARPA, IIJA, IRA, LIHEAP, WAP), General Funds, CVTs, Bonds

Staffing

OCED, Local Contractors, Local MWBE Contractors

Approval(s)

Board of Commissioners, OCED

Goals and Evaluation Metrics:

- 12,000 Households Weatherized by 2035
- Weatherize 1,000 Households per year, on average
- Raise Income Threshold to 300% of Federal Poverty Level
- Include Rental Properties and Multifamily Buildings
- Increase Participation by MWBE Contractors



\$1,337/
MTCO₂e



2023-2035



28,246
MTCO₂e



COUNTY,
COMMUNITY
& CVTs



NONE

ENERGY TRANSITION

PRIORITY: HIGH
TIMELINE: SHORT TERM

IMPACT: HIGH
DIFFICULTY: HARD

Update Energy Building Codes

A history of weak state energy building codes have placed a long-term energy burden on building owners and renters. Washtenaw County will work to support strong energy codes that improve building efficiency and include renewable energy while reducing operation and maintenance costs for owners and tenants. Work with lobbyists, trade groups, professional organizations, and local governments to rapidly adopt the latest IECC model Residential and Commercial Energy Codes including the "Zero Code" appendices to require all new construction to be more energy efficient and procure on-site and or offsite renewable energy approximately equal to the building's total energy consumption.

Implementation/Lead Dept.

Building Dept; Administration

Community Partners

CVTs, Labor, Michigan Energy Innovation Business Council, Sierra Club, Rocky Mountain Institute, Michigan Environmental Council

Funding

DOE, General Funds, CVTs, Bonds

Staffing

Lobbyists, 501(c)4 Associations

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- State Adopts most current IECC model residential and commercial energy codes with Zero Code Appendices
- Develop Training and Enforcement Programs to Ensure Compliance by 2023
- CVTs uniformly enforce state adopted residential and commercial energy codes
- CVT adoption of the ICC model Building Maintenance Codes and implementation of rental housing inspection.



(\$3,118)/
MTCO₂e



2023



27,844
MTCO₂e



COUNTY &
CVTs



INTERLOCAL
AGREEMENT



Time of Marketing Energy Rating Disclosure

Washtenaw County will continue its legacy of waste prevention and right-to-know leadership through a time of marketing energy rating disclosure program for homes and businesses. For potential homebuyers, this information is necessary so that financing energy improvements can be included in mortgages.

The County will also explore a rental housing energy disclosure program so renters know the full cost of housing and energy, and a time of marketing electrification prescription program so new home buyers know the costs and benefits of low carbon investments.

Implementation/Lead Dept.

Board of Commissioners

Community Partners

CVTs; REALTORS

Funding

General Fund

Staffing

Building Department

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- 100% of homes and commercial buildings marketed for sale or lease provide and energy rating as a part of the real estate listing by 2027
- Increase the number of new home buyers utilizing Green Mortgages to retrofit their homes by TBD% by 2030
- Rental Licenses with CVTs require an energy disclosure to tenants before signing a lease
- REALTORS include energy rating on all property listings by 2027



SUPPORTING ACTION



2023



SUPPORTING ACTION



COUNTY & CVTs



ORDINANCE

100% Renewable Energy for County Operations

Washtenaw County will build efficiency and renewable energy investments into capital budgets and other facility planning with a goal of 100% of County energy use from renewable sources by 2030. The County will support the County Operation Carbon Neutrality goal by electrifying all new and existing buildings as well as build fleet electrification into the County budget, capital planning, and asset management programs. Facilities staff will identify County locations with grid and panel capacity for new charging and where panel upgrades may be necessary. Co-locating new EV charging with new renewable energy installations will be a priority.

Implementation/ Lead Dept.

Facilities; WCDPW

Community Partners

DTE; CVTs

Funding

Federal Sources, State Energy Office, Capital Providers

Staffing

Facilities and Consultants

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Electrified buildings will improve indoor air quality for employees and customers
- Washtenaw County will recognize the co-benefits of fleet electrification including resilience, emission and particulate reductions, maintenance savings, and operator comfort.
- 100% of all new construction is all-electric, renewable energy-ready, energy storage-ready, and EV-ready starting with projects planned in 2023
- 100% renewable energy for all County Operations by 2030
- Procure 100% Renewable Energy for all Electric Needs by 2030
- Install EV charging stations at all County facilities and fleet storage areas by 2027
- Switch from internal combustion to electric for all equipment and vehicles by 2030
- Electrify 100% of County light-duty vehicles by 2030
- Convert all existing buildings to all-electric, renewable energy-ready, energy storage-ready, and EV-ready by 2030
- Maximize onsite solar development on County properties
- Evaluate space needs for County Operations and right-size the building portfolio to reduce total square feet of energy-using office space
- Track and explore opportunities to cost-effectively replace heavy-duty vehicles with EVs by 2035
- Negotiate labor contract changes to create positions for servicing electric vehicles by 2026



\$1,734/
MTCO2e



2023-2035



4,260
MTCO2e



COUNTY



INTERNAL
POLICY

3

Housing

Equitable Decarbonization and
Preservation of Affordability

1. Infill Housing and Increased Density
2. Model Zoning Ordinances and Policies
3. Create Emissions Accounting Mechanism

Infill Housing and Increased Density

The County's best opportunity for significant emission reductions is to create new infill housing that is closer to job centers and along transit lines. Partner with local governments to incentivize infill housing and increase density within the existing built environment. Work with local government and housing agencies to increase the number of housing units, particularly affordable housing units overall, with a preference for increased housing along principal active transportation and transit routes. Affordable housing minimizes the sum of mortgage/rent costs + utility costs + transportation costs + the opportunity cost of commuting time. Further, VMTs decrease when housing is created in close proximity to major job centers.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

CVTs, School Districts, Housing Agencies, Labor

Funding

General Fund

Staffing

Regional Resilience Authority

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Net increase in new net zero housing units in population centers and along transit lines
- Net increase in new affordable housing units
- Housing units per square mile increased through density
- Increase the percentage of construction for new housing done by MWBE contractors
- Create a housing subsidy for County-employees for housing on a direct transit connection, or within walking/biking distance of their primary job location



SUPPORTING ACTION



2023-2035



SUPPORTING ACTION



COUNTY & CVTs



INTERLOCAL AGREEMENT

Model Zoning Ordinances and Policies

Create model zoning ordinance language that will reduce GHGs, mitigate climate change and build community resilience to share with local governments. The model ordinances/policies will be best practices for renewable electricity and renewable siting, energy efficiency and electrification, infill housing, transit-oriented development, walkability, urban service areas, natural area and farmland preservation, open space and landscaping, green infrastructure, parking, and building materials. Create model policies to help other public organizations (CVTs, School Districts, WCRC) implement organization policies and directives to reduce emissions and improve resilience.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

CVTs, Consultants

Funding

Regional Resilience Authority

Staffing

Regional Resilience Authority; Consultants

Approval(s)

CVTs

Goals and Evaluation Metrics:

- Database of Model Ordinance/Policy Language covering at a minimum:
 - Infill Housing and Transit Oriented Development (TOD)
 - Building materials and design
 - Renewable energy generation & siting requirements
 - Walkability
 - Green stormwater infrastructure
 - Parking and EV charging
 - Electrification and energy efficiency
 - Solid waste and recycling
 - Solar permitting and fees
- 75% of CVTs adopting model zoning language or zoning amendments that meet the spirit of the model zoning language created



SUPPORTING ACTION



2023-2035



SUPPORTING ACTION



COUNTY & CVTs



CVT Zoning

Emissions Accounting Mechanism

Ensure that any housing which must be built outside of existing service boundaries (existing water, sewer, transit service) plan for and report the emissions and climate impact from the construction of buildings and associated infrastructure. These projects should provide preliminary estimates of transportation, construction, and building emissions and report the GHG impact of the loss of natural areas, wetlands and trees and the cost of the carbon emissions should be considered by municipal agencies.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

CVTs, Labor

Funding

Regional Resilience Authority

Staffing

Regional Resilience Authority; Consultants

Approval(s)

CVTs

Goals and Evaluation Metrics:

- Create an emissions formula for new developments to calculate emissions to be used by the County and CVTs for evaluating the emissions of all new development by 2023
- Formula integrated into review process for new housing developments



SUPPORTING ACTION



2023



SUPPORTING ACTION



COUNTY & CVTs



ADVISORY

4

MOBILITY AND ACCESS

Reduce emissions from transportation and support mobility modes that eliminate fossil fuel use and reduce total VMTs by 50%

1. Electric Mobility Options Hub
2. Improve Transit County-wide
3. Build All-Season County-wide Non-Motorized Transportation Network
4. Support Regional Transportation Authority (RTA)
5. Reduce VMTs
6. Improve MPG and MPGE throughout Community-wide Fleet
7. Expand on Work from Home and Remote Service Access for County Operations
8. Provide Financial Incentives to Employees to Mode Shift
9. Support More Efficient School Transportation

Electric Mobility Options Hub

Provide incentives, education, and guidance to help the community move to electric mobility options for commuting, commercial fleets, and off-road purposes (e.g., farming, construction, recreation). Assist all owners of electric mobility options to utilize onsite and/or public renewable energy powered charging.

Implementation/Lead Dept.

Regional Resilience Authority and/or Energy Concierge

Community Partners

City of Ann Arbor Office of Sustainability and Innovation, Dealerships, Fleet Owners, CVTs, WATS, Labor

Funding

Federal Grants, State Grants, Local Philanthropy

Staffing

Regional Resilience Authority

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Increase share of vehicle miles travelled with electric mobility options by 10% annually
- Increase share of electric use by electric mobility options that is powered by onsite renewable electricity
- Track and report on EV ownership/use in the County by 2024



\$5,552/
MTCO₂e



2023-2035



389,466
MTCO₂e



COUNTY,
COMMUNITY
& CVTs



INTERLOCAL
AGREEMENT

Improve Transit County-wide

Explore opportunities to partner with The Ride (AAATA), Regional Transit Authority (RTA), AMTRAK, bikeshare providers and Cities, Villages, and Townships (CVTs) to provide more frequent and consistent transit service on principal commuting corridors between population centers. The County can facilitate on-going analyses and discussion of routes, frequency and types of transportation options offered in Washtenaw County while prioritizing connection to low opportunity index and vulnerable neighborhoods with employment, commerce, education and health care. Convenient and frequent regional transit options are foundational for reducing VMTs.

Implementation/Lead Dept.

Board of Commissioners

Community Partners

AAATA, CVTs, RTA, AMTRAK, Bikeshare Providers, Labor

Funding

Federal Grants, State Grants, Local Philanthropy, Transit Millage

Staffing

Community Partners

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Increase number of trips per route per hour with service along major corridors every 5-15 minutes during peak times
- Expanded daily, weekend and holiday bus service hours along major routes
- Increased service between cities and villages and regional transit centers in Ann Arbor and Ypsilanti



\$240/
MTCO2e



2030



5,512
MTCO2e



COUNTY,
COMMUNITY
& CVTs



INTERLOCAL
AGREEMENT

Complete All Season County-wide Active Transportation Network

Washtenaw County recognizes the goal of reducing vehicle miles traveled using a variety of infrastructure investments and incentives. The County will explore opportunities to create connected paths (both on-road facilities and off-road paths) and to support the use of active transportation routes as commuting corridors between population centers. Together with its partners, the County will plan and implement an interconnected system of on-road and off-road non-motorized facilities that provide bicyclists, pedestrians, and wheelchair users with safe access to all destinations accessible by car.

Implementation/Lead Dept.
WCPRC, WCRC

Community Partners
The Ride, CVTs, MDOT, MDNR, Labor

Funding
Multiple Sources – Federal, State and Local; Private Foundations, Non-Profits, and Advocacy Groups

Staffing
WCPRC

Approval(s)
Board of Commissioners, WCPRC, WCRC

Goals and Evaluation Metrics:

- Complete the Border-to-Border Trail by 2030
- Connect 75% of neighborhoods to the Border-to-Border trail (or equivalent system/trail) by 2035.
- 100% of WCRC projects include active transportation improvements by 2025.
- Double the number of linear miles of marked and/or protected bicycle lanes by 2030.
- Incentivize or require developers to include non-motorized features in new housing stock.
- Set goals for use of MWBE Contractors on Projects by 2024.



\$6,648/
MTCO2e



2023



34,295
MTCO2e



COUNTY,
COMMUNITY
& CVTs



INTERLOCAL
AGREEMENT

MOBILITY AND ACCESS

Support Regional Transportation Options

Continue to support the Regional Transit Authority’s work to create a public transit system that connects all of Washtenaw, Wayne and Oakland Counties. This includes on-going support for funding and prioritizing connections that provide frequent and consistent service to Washtenaw County residents.

Implementation/Lead Dept.
Board of Commissioners

Community Partners
The Ride (AAATA), RTA, Labor

Funding
RTA Millage

Staffing
RTA

Approval(s)
Board of Commissioners

Goals and Evaluation Metrics:

- Expansion of RTA-connected services to connect to all portions of Washtenaw County
- Increased access to job centers and destinations for high vulnerability neighborhoods.



SUPPORTING ACTION



2023-2035



SUPPORTING ACTION

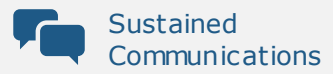


COUNTY & CVTs



BOARD RESOLUTION

RELEVANT PRINCIPLES



Reduce Vehicle Miles Traveled (VMTs)

Track and report the number of VMTs that are produced by road expansions and suburban sprawl developments. Track and report the number of VMTs by sector to better calculate the emissions and develop strategy to reduce residential, commercial, industrial, and agricultural emissions. Calculate the emissions and consider a carbon price be assigned to all road expansion projects and transportation sectors.

Implementation/Lead Dept.

Administration, WCRC

Community Partners

Washtenaw Area Transportation Study (WATS)

Funding

WATS, WCRC, SEMCOG

Staffing

WATS, WCRC

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Reduce total Countywide VMTs by 50% by 2035.
- Establish a database for VMTs and associated emissions and changes due to road expansions (and/or lane reductions) and new development by 2024.
- Use VMT calculations to consider carbon price as a part of all road projects and proposed developments.
- Implement County-wide “anti-idling” policy by 2024.



\$22,069/
MTCO2e



2024



137,179
MTCO2e



COUNTY &
CVTs



INTERNAL
POLICY

Improve MPG and MPGE Throughout Community-wide Fleet

Track and improve the MPG and MPGE (miles per gallon equivalent) community-wide fleet (public and private fleets).

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

Washtenaw Area Transportation Study (WATS)

Funding

WATS, SEMCOG, Federal and State Government

Staffing

WATS, SEMCOG, Regional Resilience Authority

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Establish a baseline target average for total fleet MPG and MPGE by 2024.
- Electrify all County light-duty vehicles by 2030.



\$3,680/
MTCO₂e



2024-2035



112,887
MTCO₂e



WATS &
SEMCOG



INTERNAL
POLICY

Expand on Work from Home and Remote Service Access for County Operations

Expand and refine work from home options for staff and provide remote service centers and service delivery options to access County services.

Implementation/Lead Dept.

Administration; Regional Resilience Authority

Community Partners

CVTs

Funding

General Fund

Staffing

Department Heads

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Revise certain job descriptions to include work from home options by 2023.
- Increase locations for remote service centers that provide access to all County services (permitting, licenses, District Court).
- Determine the GHG cost of commuting for all County departments by 2023.
- Financial Incentivize use of mass transit and non-motorized community approaches and carpools (two or more passengers per vehicle) for staff.
- Develop and Provide GHG cost of commuting tracking tools to private employers by 2023.



SUPPORTING ACTION



2025



SUPPORTING ACTION



COUNTY



INTERNAL POLICY

Provide Financial Incentives to Employees to Walk, Bike, or Use Transit

Create benefits to promote biking, walking, and transit use for staff.

Negotiate an end to subsidized parking for staff.

Implementation/Lead Dept.

Administration

Community Partners

County Bargaining Units

Funding

General Fund

Staffing

Labor Relations

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Develop bike/ebike and transit pass benefit for County Employees by 2024.
- Increase the percentage of the County Workforce that commutes primarily via transit, biking, or walking to 50% of the County workforce by 2030.
- Increase car/vanpool participation so that of those who commute primarily by car, 50% are ridesharing by 2030.
- Provide parking benefits only to car/vanpools by 2026.



SUPPORTING ACTION



2024



SUPPORTING ACTION



COUNTY



INTERNAL POLICY

MOBILITY AND ACCESS

Support Efficient School Transportation

In recent years, school districts across the County have cut back bussing options for students which has resulted in an exponential increase in the number of individual families driving students to schools – even to neighborhood schools. The County should provide support to Washtenaw Intermediate School District (WISD) and the nine individual school districts to expand bussing options and Safe Routes to School infrastructure, bus electrification, local job creation, and to discourage driving and reduce overall VMTs caused by transportation of students to and from school.

Implementation/Lead Dept.
Administration

Community Partners
WISD, School Districts, AAATA

Funding
General Fund

Staffing
WISD

Approval(s)
Board of Commissioners

Goals and Evaluation Metrics:

- Increase bussing options and safe routes to school for biking and walking in every school district so that all students have the ability to safely walk, bike, or ride the bus to school by 2030.
- Track bus ridership, walking and biking and individual car transportation by school and district by 2025.
- Provide Annual School Transportation Emissions Impact Report by the end of 2024.



SUPPORTING ACTION



2030



SUPPORTING ACTION



COUNTY & CVTs



BOARD RESOLUTION/
STATE ENABLING LEGISLATION



5 HEALTH

1. Update County's Hazard Mitigation Plan
2. Create Resilience Hubs Countywide
3. Reduce Heat Island Effect
4. Expand And Maintain County Tree Canopy.
5. Expand County Education/Outreach Programs
6. Create Opportunities For Local Food Production On County Properties
7. Prepare Health System For Climate Emergencies

Update the County's Hazard Mitigation Plan

The County should update the Hazard Mitigation Plan to better address equity and climate-related emergencies. This includes preparing the health system for disease migration, preparing reactions to climate-caused emergencies (extreme heat/cold, flooding, storms, power outages), and identifying threats to drinking water and air quality. All departmental hazard plans should be updated and incorporated into the Hazard Mitigation Plan.

Implementation/Lead Dept.

Emergency Management

Community Partners

CVTs, GLISA

Funding

General Fund

Staffing

Emergency Management and WCHD

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Reduce population that is vulnerable to high heat, flooding, and high energy costs
- Develop action plan to react to climate-caused emergencies (disease outbreaks, floods, storms, drought, wildfire, extreme temperatures) by 2024



\$15.6M
BUDGET FOR
R/A ACTIONS



2024



RESILIENCE/
ADAPTATION



COUNTY



PLAN

Create Resilience Hubs County-wide

Resilience hubs are multi-purpose community-serving facilities designed to support residents, distribute resources (food, information, heating, cooling), reduce carbon emissions, and to help coordinate emergency response. Resilience hubs can be staged in community centers, recreation centers, government buildings, or other trusted community spaces. These hubs provide access to electricity, heating and cooling; food, water, tools, and sometimes shelter; communications; logistical support for community partners; and access to basic health and medical supplies.

Implementation/Lead Dept.
Emergency Management

Community Partners
CVTs, Faith-based Organizations, Community-based Organizations, School Districts, Public-Private Partnerships, Labor

Funding
General Fund, Federal and State Funds

Staffing
Emergency Management, Consultant

Approval(s)
Board of Commissioners

Goals and Evaluation Metrics:

- Connect Emergency Management to network of CBOs and CVTs with Resilience Hub Sites, to plan service mix, and hold community meetings to get feedback. Develop Resilience Hub implementation plan targeting vulnerable populations/neighborhoods by 2024.
- Evaluate potential sites for energy efficiency, renewable energy, backup storage, and internet and communications access by 2024.
- Expand network of resilience hubs in vulnerable communities to be within 2 miles of all households in urbanized areas and within 5 miles of rural areas by 2035.
- Create Staffing Plans For Each Resilience Hub by 2025.



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2025



RESILIENCE/
ADAPTATION



COUNTY,
COMMUNITY
& CVTs



INTERLOCAL
AGREEMENT

Reduce Heat Island Effect

Heat islands are created in urban areas where buildings, roads and impervious surfaces absorb and re-emit solar heat. Reducing the impact of this effect requires better urban planning to incorporate tree canopy, green space, and water. Building material and color considerations also play a huge role in reducing the heat island effect. Effort should concentrate on high vulnerability neighborhoods and areas.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

WCWRC, CVTs, Faith-based Organizations, School Districts, CBOs, University of Michigan, Eastern Michigan University, Washtenaw Community College, Michigan Medicine, St. Joseph Mercy Health System, Labor

Funding

Foundations, Federal and State Grants

Staffing

Regional Resilience Authority

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Create inventory of trees/tree canopies in areas with a high vulnerability index by 2024.
- Develop full tree canopy inventory for the full County by 2025.
- Increase in the amount of tree canopy by 25% in vulnerable areas by 2030.
- Monitor day and nighttime temperatures in vulnerable communities to identify hot spots.
- Reduction in temperature differentiation between urban and outlying portions of the County
- Develop a toolbox of zoning, building, parking lot, and urban design best practice ordinances to reduce impervious and dark surfaces as a part of model zoning ordinance language (Action 3.02) by 2024



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION



COUNTY,
COMMUNITY
& CVTs



PLANNING

Increase Tree Canopy County-wide

Tree canopy is an essential tool to reduce vulnerability to extreme heat, particularly in urban areas. Studies show that vulnerable populations typically have substantially less tree canopy in their neighborhoods, which creates more extreme heat conditions and exacerbates the heat island effect. Significant tree planting is needed on both public and private property. The benefits of tree plantings are typically realized 10-20 years after planting. This effort should be focused in urban areas.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

CVTs, Faith-based Organizations, School Districts, CBOs, County Soil Conservation District, Michigan State University Extension, Private Foundations, Labor

Funding

General Fund, Foundations, Federal and State Grants

Staffing

Regional Resilience Authority

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Identify native and non-invasive species that will thrive in the current climate as well as in warming conditions by 2024.
- Create inventory of trees/tree canopies in areas with a high vulnerability index by 2024.
- Increase in the amount of tree canopy County-wide, focusing on vulnerable communities by 2030.
- Work with CVTs to develop tree planting initiatives in public right of way and provide revised building material, landscape, tree preservation and impervious surface ordinances by 2024.



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION



COUNTY,
COMMUNITY
& CVTs



NONE

Expand Education and Outreach Programs

Create partnerships between the County and community groups. Provide County staff support to community groups to develop, collect and maintain an on-going database of crowd-sourced environmental monitoring data (including but not limited to air and water quality, flooding, temperature, precipitation, and water levels) which is reported to the County and provided on a public dashboard.

Implementation/Lead Dept.

WCHD

Community Partners

CVTs, Faith-based Organizations, School Districts, CBOs

Funding

General Fund, Foundations, Federal and State Grants

Staffing

WCHD

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Increase the number and locations of monitoring activities for air quality, heat, water quality, and flooding and develop an on-line reporting dashboard by 2024
- Direct staff support for monitoring in vulnerable areas, and volunteer-led efforts across the County.
- Creation of data monitoring and reporting application and/or web-based dashboard



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION



COUNTY,
COMMUNITY
& CVTs



NONE

Expand Opportunities for Local Food Production and Distribution

Expand both the number of farms/producers providing inventory and the overall market for locally-sourced food. This builds resilience into the County's food systems and increases access to healthy foods for all residents.

Implementation/Lead Dept.

Regional Resilience Authority

Community Partners

MSU Extension, CVTs, Faith-based Organizations, School Districts, CBOs, Growing Hope, MSU SAFR,

Funding

General Fund, Foundations, USDA, EPA

Staffing

Regional Resilience Authority

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Encourage expanded "Buy Local" initiatives to support local food producers.
- Double the number of plots available to County residents for small scale food gardening by 2027.
- Develop a toolbox for CVTs of best zoning regulations to allow and promote local/home food growing/production by 2024.
- Update Health Department and zoning ordinances to enable more home production and sale of food by 2026.
- Strengthen link between farmers and food pantries to expand availability of food.
- Create local and County incentives for local farmers to produce food crops rather than commodity crops by 2030.



\$15.6M
BUDGET FOR
R/A ACTIONS



2026-2035



RESILIENCE/
ADAPTATION



COUNTY,
COMMUNITY
& CVTs



LAND LEASE



HEALTH

Prepare Health System For Climate Emergencies

Prepare the public health system so that food, water, medical care, and supplies can be distributed to vulnerable populations during any climate related emergency. Identify data and resources needed for surge capacity response activities and develop communications plan to compile and share information.

Implementation/Lead Dept.
WCHD

Community Partners
Hospitals, CVTs, Faith-based Organizations, School Districts, CBOs

Funding
General Fund, Foundations, State and Federal Sources

Staffing
WCHD

Approval(s)
Board of Commissioners

Goals and Evaluation Metrics:

- WCHD Staff work with Emergency Manager oversee update of County Hazard Mitigation Plan.
- Implement Resilience Hub development and deployment.
- Identify and publicize disease/infection migration and other public health threats.



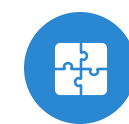
\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION



COUNTY &
CVTs



NONE

6

PRESERVE WORKING LANDS AND NATURAL AREAS

Protect 30% of natural areas by 2030, and 50% by 2050.

1. Natural Area Preservation
2. Farmland Preservation

Natural Area Preservation

Preserve sensitive and ecologically significant natural areas including wetlands and water bodies, riparian corridors, floodplains, native forests and forest fragments, sensitive ecosystems, key aquifer recharge areas. Partner with CVTs and NGOs to acquire land and conservation easements.

Implementation/Lead Dept.

NAPP/WCPRC

Community Partners

CVTs, Legacy Land Conservancy, SE Michigan Land Conservancy, TNC, Huron River Watershed Council, River Raisin Watershed Council, other locally funded Township programs

Funding

NAPP, Local Preservation Funding Programs, Clean Water and Drinking Water State Revolving Loan Funds, Regional Conservation Partnership Program (RCPP), Section 319 Grants

Staffing

NAPP/WCPRC/Conservancies and other similar CBOs

Approval(s)

WCPRC

Goals and Evaluation Metrics:

- Create an inventory of all protected natural areas within the County by 2023.
- Increase total acreage of natural areas protected to protect 30% of natural areas Countywide by 2030.
- Continue natural area acquisition through the County's Natural Areas Preservation Program (NAPP).
- Pursue FEMA funding to buy out homes and structures and permanently conserve land within the 100-year floodplain.
- Work with landowners to incorporate best conservation practices.
- Encourage landowners to participate in the USDA conservation programs.



SUPPORTING ACTION



2023-2035



SUPPORTING ACTION



COUNTY, COMMUNITY & CVTs



ORDINANCE

Farmland Preservation

Preserve high-quality farmland for active agricultural production with an emphasis on local food production and distribution. Work with the state to authorize a County-wide purchase/transfer of development rights program within Washtenaw County.

Implementation/Lead Dept.
WCPRC

Community Partners
City of Ann Arbor Greenbelt Program, CVTs, Land Trusts/Conservancies, MDARD, MSU Extension, USDA

Funding
USDA, CVTs

Staffing
TBD

Approval(s)
TBD

Goals and Evaluation Metrics:

- Quantity/Inventory of active working agricultural lands by 2023.
- Increase number of protected acres in active agriculture by 30% by 2030.
- Strengthen "Buy-Local" networks connecting farmers to local markets and food distribution networks.
- Increase participation in the State Farmland and Open Space Preservation Program by 20% by 2030.
- Encourage 25% of agricultural land to be engaged in regenerative agriculture by 2030.



SUPPORTING ACTION



2023-2035



SUPPORTING ACTION



COUNTY, COMMUNITY & CVTs



ORDINANCE

7

INFRASTRUCTURE

1. Provide Comment on Infrastructure Agency Planning Projects
2. Prioritize Public Projects That Reduce Fossil Fuel Use and Prepare For More Extreme Weather
3. Urbanized Area Storm Vulnerability Risk Assessment And Prioritization
4. Countywide Stormwater Basin Inspection And Retrofit
5. Expand Rain Garden Program
6. Develop New Stormwater Regulations

Provide Comment on Infrastructure Agency Planning Projects

Provide official comment on all infrastructure agency (WCRC, MDOT, WATS, SEMCOG) projects. Incorporate climate change scenarios in all infrastructure and building projects. Incorporate emissions from building materials and induced demand in project models

Implementation/Lead Dept.

Administration

Community Partners

CVTs, CBOs

Funding

WCWRC

Staffing

WCWRC

Approval(s)

WCWRC

Goals and Evaluation Metrics:

- Pass board resolution to provide official comment on all infrastructure agency projects by March of 2023.
- Develop evaluation model to identify emissions impacts of projects and building materials by 2023.
- Hire and/or designate staff (or contract with the Regional Resilience Authority) to provide analysis of all infrastructure proposals by 2024.
- Incorporate climate change scenarios (increased precipitation, extreme temperatures, population) into review of and planning for all infrastructure projects.
- Increase the use of Green Stormwater Infrastructure (GSI) in all public projects.



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION



COUNTY &
CVTs



POLICY

Prioritize Projects that Reduce Fossil Fuel Use and Prepare for More Extreme Weather

Capital improvement planning should prioritize capital projects that reduce fossil fuel use, emissions and also help to prepare the County for more extreme weather events. The projects should utilize green infrastructure to the best extent possible to lower emissions and create more resilient projects that are able to withstand the impacts of climate change.

Implementation/Lead Dept.

Finance

Community Partners

Resiliency Authority

Funding

General Fund

Staffing

Finance

Approval(s)

Finance

Goals and Evaluation Metrics:

- Incorporate fossil fuel use, projected emissions, and emissions of building materials into capital project scoring and budgeting by 2023.
- Develop a baseline that capital projects be designed to withstand weather impact of climate change (precipitation, temperature, storms).



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION



COUNTY



INTERNAL
POLICY

INFRASTRUCTURE

Urbanized Area Storm Vulnerability Risk Assessment and Prioritization

Outside of the City of Ann Arbor, it is unclear who is most vulnerable to storms exceeding the capacity of systems designed decades ago or what mitigation measures are most appropriate. While some of the most vulnerable areas and some improvements are clear, a majority are still likely unknown. Door-to-door investigation is needed to develop vulnerability and risk assessments on a more granular scale that is needed for implementing improvements and programs benefitting the most vulnerable communities.

Implementation/Lead Dept.

WCWRC

Community Partners

CVTs, CBOs

Funding

WCWRC

Staffing

WCWRC

Approval(s)

WCWRC

Goals and Evaluation Metrics:

- Develop County-wide Storm Vulnerability Risk Assessment and map by 2024.
- Work to develop street and lot-level maps of flooding and flood risk by 2025.
- Prioritize flood mitigation projects in vulnerable areas.



\$15.6M
BUDGET FOR
R/A ACTIONS



2024



RESILIENCE/
ADAPTATION



WCWRC



PLAN

INFRASTRUCTURE

Countywide Stormwater Basin Inspection and Retrofit

The most effective storm resilience program would be accomplished by upgrading existing stormwater basins in combination with increasing the protection of natural areas and wetlands. There over 1,500 stormwater basins associated with developments Countywide and many do not function as intended and a majority may be privately owned.

Implementation/Lead Dept.
WCWRC

Community Partners
CVTs, CBOs, Private Developments

Funding
WCWRC

Staffing
WCWRC

Approval(s)
WCWRC

Goals and Evaluation Metrics:

- Develop a toolbox of preferred GSI, wetland restoration, tree plantings, and landscaping improvements and retrofits for private basin owners/operators so that the basins can more closely resemble the form and function of naturally occurring green infrastructure by 2024.
- Prepare Countywide Basin Inventory and Assessment and Study by 2025.
- Develop an implementation plan, prioritizing the most vulnerable communities by 2026.
- Pursue incentive/match funding to implement improvements to private basins by 2027.



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION



WCWRC



INTERLOCAL
AGREEMENT

INFRASTRUCTURE

Expand Rain Garden Program

Expand the County rain garden program to focus on improvements in low-opportunity and high-vulnerability neighborhoods/areas. Coordinate rain garden development with Food Security and Pollinators Conservancy programs to provide additional opportunities to expand green stormwater and local food production in low-opportunity and high-vulnerability neighborhoods/areas.

Implementation/Lead Dept.
WCWRC

Community Partners
CVTs, CBO

Funding
WCWRC

Staffing
WCWRC

Approval(s)
WCWRC

Goals and Evaluation Metrics:

- Increase rain garden stormwater storage capability County-wide by 500% by 2035.
- Improve water quality by capturing contaminants.
- Expand rain garden program to coordinate installation of plants and vegetation that provide pollinator habitat and/or local food growing capabilities.



\$15.6M
BUDGET FOR
R/A ACTIONS



2023-2035



RESILIENCE/
ADAPTATION

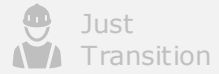


WCWRC



NONE

RELEVANT PRINCIPLES



Update Stormwater Regulations

Develop new stormwater regulations (for new development), based on a 500-year flood with a buffer that assumes more precipitation and more extreme storms. Explore more stringent stormwater upgrade requirements for existing development renovations. All County projects and infrastructure agency projects (WCRC, MDOT) should meet or exceed County stormwater requirements.

Implementation/Lead Dept.

WCWRC

Community Partners

CVTs

Funding

WCWRC

Staffing

WCWRC

Approval(s)

WCWRC

Goals and Evaluation Metrics:

- Revised Stormwater Regulations adopted by 2024.



\$15.6M
BUDGET FOR
R/A ACTIONS



2026



RESILIENCE/
ADAPTATION

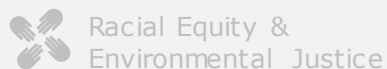


COUNTY &
CVTs

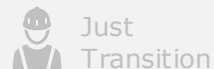


ORDINANCE

RELEVANT PRINCIPLES



Racial Equity &
Environmental Justice



Just
Transition



Health



Resilient
Economy



Community
Partnership



Sustained
Communications



8

CIRCULAR ECONOMY

1. Build an Equitable, Low-carbon, and Resilient Circular Economy
2. Develop a County Wide Organics/Compost Program
3. Support and Grow the Washtenaw Regional Resource Management Authority (WRRMA)
4. Build a Multi-dimensional Public Education and Promotion Plan for the Circular Economy
5. Diversify Funding for Circular Economy Work
6. Policy Initiatives to Expand Circular Economy Scope and Infrastructure
7. Incentivize Local Food Production

*A circular economy is one that designs out waste, keeps materials in use, and which regenerates natural systems (Ellen MacArthur Foundation)

Build an Equitable, Low-carbon, and Resilient Circular Economy

Manage material streams for their highest and best use to build an equitable, low-carbon, and resilient circular economy.

Implementation/Lead Dept.

WCDPW

Community Partners

Recycle Ann Arbor, Western Washtenaw Recycling Authority,

Funding

Tipfees, commodity sales revenue, and bonding capital

Staffing

Privatized

Approval

WCDPW/Water Resource Commissioner, Board of Commissioners, CVTs

Goals and Evaluation Metrics:

- Set and achieve a goal of 45% diversion of waste by 2030 and 60% by 2050
- \$36M circular economy investment
- 5,000 new jobs
- \$324M annually in additional labor income



\$2,583/
MTCO₂e



2023 - 2050



22,981
MTCO₂e



COMMUNITY,
COUNTY, CVTs



INTERLOCAL
AGREEMENT,
CONTRACTS

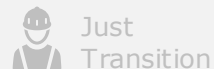
CIRCULAR ECONOMY

Build an Equitable, Low-carbon, and Resilient Circular Economy

Using an accelerator approach to leverage private and public investment, raising the overall recycling rate from the current rate of 25% to 45% and then to 60%, enables the best ideas of both the private and public sectors to coalesce in a fashion that enables big changes in our overall recycling rates.

A blend of single stream curbside collection, commercial collection, and rural extended drop-off creates a comprehensive County-wide collection infrastructure to support higher overall recovery.

Support in the form of infrastructure investment and organizational structures (e.g., recycling and waste authority) at the County level will enable services to be fairly distributed across the County from traditionally underserved urban multi-family housing-based communities to affluent urban/suburban to rural and lower density farming communities.

**RELEVANT
PRINCIPLES**

Develop a County Wide Organics/Compost Program

Recovery of organic material through digestion (aerobic or anaerobic) produces soil amendments and conditioners that divert methane producing materials from organics and sequester carbon in the soil after use. This “double-win” makes composting a critical component of a circular economy initiative.

Implementation/Lead Dept.

WCDPW

Community Partners

CVTs; Private waste haulers, Recycle Ann Arbor, NextCycle

Funding

Tip fees, material sales, private investment

Staffing

WCDPW, Private Contractors

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Expand curbside/drop-off organic collection to the entire County by 2030.
- Leverage existing yard waste collection programs for co-collection of residential FW.
- Expand organic collections for food service businesses.
- Expand organic collection to multi-family housing by 2030.
- Leverage local unit WWTP plants AD digestors to produce renewable natural gas.



\$2,136/
MTCO₂e



2023 - 2025



11,115
MTCO₂e



COUNTY AND
CVTs



INTERLOCAL
AGREEMENT

CIRCULAR ECONOMY

Develop a County Wide Organics/Compost Program

Several avenues exist for substantial increase in organics recovery. They include:

Donation - Aggressive promotion of food donation to food rescue organizations for the purpose of feeding people.

Animal Feed - Promotion of informal relationships between farmers to deliver select streams of material for animal feed. Spent malt from breweries are an established stream of animal feed in areas near brewing operations.

Residential Food Waste Collection - "piggy backing" residential food waste (FW) recovery from single family homes on existing yard waste (YW) collection programs. This collection approach has a marginal cost of nearly zero but requires the ability of local YW composting sites to accept FW in small quantities (usually less than 10 – 15% of total volume).

Commercial Organics Collection - Establishing commercial collection routes in urban environments to recover FW from restaurants, grocery establishments, and other food preparation entities. Exploration of the use of degradable food service ware can enhance these activities in certain situations.

Anaerobic Digesters (AD) - Encouraging liquification of pre- and post-consumer food within institutions (university, school kitchens, jail, places of worship) for delivery to WWTP for digestion.

Prevention Approaches - Promotion of economic solutions that enable organics waste prevention and other activities through the use of app-based activities like reusable takeaway containers.

Support and Grow the Washtenaw Regional Resource Management Authority (WRRMA)

Washtenaw County formed a resource management authority in 2019. While organization efforts have moved forward and include a significant majority of County-wide population and geography, this effort needs to accelerate and grow its capabilities as a key part of the County sustainability effort.

Implementation/Lead Dept.

WCDPW

Community Partners

CVTs; Private waste haulers, Recycle Ann Arbor

Funding

Tip fees, commodity sales, private investment, bonding capital

Staffing

WCDPW, privatized

Approval(s)

WCDPW, Board of Commissioners, CVTs

Goals and Evaluation Metrics:

- Set and achieve a goal of 45% diversion of waste by 2030 and 60% by 2050
- \$36.0M Circular economy investment
- 5,000 new jobs
- \$324M annually in additional labor income



SUPPORTING ACTION



2023 - 2030



SUPPORTING ACTION



COUNTY AND CVTs



INTERLOCAL AGREEMENT, CONTRACTS

Support and Grow the Washtenaw Regional Resource Management Authority (WRRMA)

City of Ann Arbor MRF – The current facility (operated and partially owned by RAA) is old with temporary equipment upgrades allowing it to operate more efficiently. The upgrade is not a long-term solution to the city’s needs and requires a larger and more sophisticated facility (~\$50M Capital Expense). The current facility can serve in the interim, but the Authority should effectuate a transition to a newer and larger regional facility as high priority.

Organics Recovery – As referenced previously, more capability is required for comprehensive recovery of organics. The capability should complement existing services (e.g., current YW sites), leverage WWTP digester capacity (i.e., bring liquified FW to existing plants), develop green field facilities as required, implement comprehensive source separated collection programs, and build markets for digestate and composted soil products.

Construction and Demolition (C&D) Recovery Facility – A major area of opportunity for greater recovery and landfill diversion comes from the reuse and recovery of waste flows from construction and demolition sites.. Most likely these efforts will require marketplace development for streams like gypsum board and other lower value materials. Policy initiatives would also provide incentives for the private sector to participate in C&D material diversion.

Comprehensive Collection - Integration of a County-wide collection system should accompany new facility (s) development. Employing “hub and spoke” approaches, comprehensive rural drop-off, and upgraded multi-family collection will need to accompany the already established urban and suburban curbside collection programs. Policy initiatives like enhanced bottle bill and EPR would accelerate progress in this area.

Build a Multi-dimensional Public Education and Promotion Plan for the Circular Economy

Expand on existing programs to support local business decarbonization and resilience. Implement Restaurant Pledge program, and Energy Concierge. Create group purchasing opportunities, promote reusable and compostable container use, and build County-wide commercial recovery through composting.

Implementation/Lead Dept.

WCDPW, WasteKnot, Pollution Prevention (P2) and Clean Streams

Community Partners

Resilient Washtenaw Green Business program, DDAs, RAA, Chambers of Commerce

Funding

EGLE, County Recycling Authority, Landfill host community fee

Staffing

WCDPW, RAA, CVT Staff

Approval(s)

WCDPW, Board of Commissioners, CVTs

Goals and Evaluation Metrics:

- Provide organized grease collections supported by DDA's in urban areas.
- Leverage awards to engage chefs/ owners in recovery activities.
- Provide multi-lingual training materials to support business organizations.



SUPPORTING ACTION



2023



SUPPORTING ACTION



COMMUNITY, COUNTY, CVTs



INTERLOCAL AGREEMENT, CONTRACTS

CIRCULAR ECONOMY

Build a Multi-dimensional Public Education and Promotion Plan for the Circular Economy

Education and Promotion programs increase overall community recovery AND reduces contamination in recycling streams. Both vary widely: Best performing communities see recovery as high as 800 lbs. per household/year and contamination rates at or less than 10%. Conversely, poorer performing communities experience recovery at 250 lbs. per household/year and contamination rates approaching 30% or higher.

Startup Funding - WRRMA will need a "jump start" programming to ensure program uptake as a new set of comprehensive circular economy services and infrastructure come online with budgets ~\$8.00 - \$10.00/household/year for the initial five-year period of program initiation. Current budget levels could be reallocated to cover a portion of the early publicity and training efforts, but supplemental funds from County budget, landfill host fees, and/or grant funds will be required to make up the difference.

Maintenance Funding – Ongoing efforts \$6.00/household/year, especially when services are diverse in nature and spread County-wide. Stable funding for this function is essential and decision-makers should be aware that these efforts are not "discretionary" because without them long-term consequences are fatal to the success of a circular economy program.

DEI Considerations – Delivery of circular economy services to disadvantaged communities is a trouble spot. With housing stock disproportionately made up of multi-family housing complexes, the relationship to traditional curbside collection gets broken and with it, the motivations to participate are severely limited. Service provisions is often left to the "free market" where responsible waste haulers invest minimally in recovery activities. Residents easily miss educational events if they are too infrequent and have little understanding of how to effectively participate in recovery efforts. And often convenience is limited, forcing community members to engage in harder work to participate in the system. Taken together, these factors often demonstrate systemic discrimination and exclusion from one of the most popular American means of engaging in sustainable activities.

Frequency, Consistency and Cultural Sophistication of Touch – A greater frequency is required to reach residents in housing where units turnover frequently. Whether low-income housing or student dwellings, the frequent education of residents and their landlords/facility managers is a requirement to gain even a basic level of participation. In the same manner, County-wide programmatic consistency will enable better resident behavior when they change residences. Finally, communication tools need to integrate different languages, universal icons, and other approaches that utilize a wide range of communication tools to ensure that each resident can be "spoken" to.

Diversify Funding for Circular Economy Work

Washtenaw County recognizes the environmental, economic, and equity benefits of investing in the circular economy. Building on the current investment offered to NextCycle Michigan teams, Washtenaw County will begin tracking metrics on the County's circular economy and explore an integrated staffing and funding approach with key partners including OCED, SPARK, EGLE, MEDC and other private sector partners.

Implementation/Lead Dept.

WCDPW, CVTs, State/Federal Agencies

Community Partners

SPARK, EGLE, MEDC

Funding

Impact investors, EGLE, WCDPW bonding, banks

Staffing

WCDPW, CVTs, Entrepreneurs

Approval(s)

WCDPW, Board of Commissioners, Investors, EGLE
Grants, MEDC

Goals and Evaluation Metrics:

- Create \$36M in investable projects
- Increase circular economy workforce by 5,000 individuals



SUPPORTING ACTION



2023 - 2050



SUPPORTING ACTION



COUNTY,
CVTs,
COMMUNITY



CONTRACTS

Diversify Funding for Circular Economy Work

The nature of circular economy investment has evolved in the last 20-years. New commercial lending institutions, and equity investors, philanthropic and impact investors have emerged and are seeking stable, long-term investments that can fulfill the requirements of their ownership and management teams. New participants in this investor class include:

State Environmental Agencies – State agencies have provided grants to support circular economy efforts in many situations. However, recently, those agencies are seeking to increase the impact of these grants and create long-term sustainable businesses. Together, this has forced agencies to get away from a granting mindset and instead seek an investment mindset that values underlying organization capability to identify and implement a successful business case. Simply put, things work better when a project (whether governmental, non-profit, or for-profit) has an opportunity make its revenues exceed its costs.

Impact Investors – Like their colleagues in the state agencies, a broader understanding of capital needs and deployment has spread to philanthropies, special purpose equity funds, institutional investors, and even family offices. In these cases, outcomes are measured not only by financial return (remains important), but by social and environmental outcomes. The emergence of equity funds like Closed Loop Partners and Generate Capital are augmented by smaller divisions in larger traditional funds that are seeking their own opportunities in the field.

Accelerators – There is a recognition that entrepreneurs of all stripes need help to make their dreams operational and profitable. To meet this need, purpose-built and existing high-tech accelerators and incubators are being deployed nationwide in an effort to curate better “Deal flow” and create support for entrepreneurial activities focused on building a circular economy. One such approach is NextCycle, an accelerator that is support in circular economy public, non-profit and for-profit entrepreneurs within four states (Colorado, Michigan, Washington, and Ohio). In the most mature of these efforts more than \$0.5B in investment has been made in more than 50 projects.

Federal Funding – Both infrastructure (Build Back Better) and Inflation Reduction Act (Climate bill) identify substantial funds (\$ billions) for the purpose of upgrading the infrastructure focused on circular economy development. Over the course of the next five years, these funds in the form of R&D support, regional acceleration, and low-interest loans will be increasingly available as the systems for their deployment come on-line.

Policy Initiatives to Expand Circular Economy Scope and Infrastructure

Extended Producer Responsibility (EPR), expanded container deposit ("Bottle Bills") plans, and eco-modulation are all policy tools that can dramatically increase waste diversion and use of recovered commodity streams. Formal programs are either in place or being implemented in 10 states with consideration of similar legislation in at least six more.

Implementation/Lead Dept.

WCDPW, Board of Commissioners

Community Partners

RAA, Signal Fire/RRS, Ecology Center

Funding

Corporate Stewards

Staffing

WC

Approval(s)

WCDPW, Board of Commissioners

Goals and Evaluation Metrics:

- Expand bottle bill to include non-carbonated drink containers, film plastic and flexible packaging
- Support EPR efforts to fund recovery efforts for all printed paper and packaging (PPP) materials in the waste stream
- Provide research and development opportunities for the recovery of additional components of the waste stream.



SUPPORTING ACTION



2023 - 2035



SUPPORTING ACTION



COMMUNITY



STATE LEGISLATION

Policy Initiatives to Expand Circular Economy Scope and Infrastructure

Supportive policy initiatives can both increase overall participation in the circular economy as well as provide a more stable stream of funding for development and operation of necessary circular economy infrastructure. Specific approaches include:

Deposit Systems - Expand to cover more packaging types ranging from non-carbonated beverage containers to flexible packaging.

Extended Producer Responsibility (EPR) – Product stewardship goes beyond extended producer responsibility (EPR), which involves producers taking physical or financial responsibility for managing the environmental impact of their products only at the post-consumer state of their life cycle. Successful legislative efforts in Oregon, Maine, Colorado and California along with proposed legislation in half a dozen more states suggest that EPR in some fashion will be spreading across the US. A major concern among the producer community is that EPR will be insufficiently harmonized and create substantial operational and economic friction.

Eco-Modulation - Eco-modulation is the concept of penalizing the use of materials that are less environmentally friendly and rewarding the use of those which are better - for example, through charging a higher rate of tax for products that are harder to recycle or offering fee reductions for materials which can be easily recycled.

Incentivize Local Food Production

Preserve high-quality farmland for active agricultural production with an emphasis on local food production and distribution. Work with the state to authorize a County-wide purchase/transfer of development rights program within Washtenaw County.

Implementation/Lead Dept.

Washtenaw County Food Policy Council

Community Partners

Washtenaw County Farm Council, Farm Bureau, MSU Extension, Labor

Funding

TBD

Staffing

TBD

Approval(s)

Board of Commissioners

Goals and Evaluation Metrics:

- Create "Buy-Local" connecting farmers to local markets and food distribution networks
- Develop potential financial incentives (property tax, tax credits etc.) the County can provide to encourage the production of food that is sold and distributed within Washtenaw County.
- Work with community partners to create mechanism to track production and distribution of food within Washtenaw County



SUPPORTING ACTION



2023-2035



SUPPORTING ACTION



COUNTY, COMMUNITY & CVTs



INTERLOCAL AGREEMENT