# HURON-CLINTON METROPARKS CLIMATE ACTION PLAN

October 2023

HURON-CLINTON METROPARKS

METROPARKS.COM

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# LAND ACKNOWLEDGEMENT

The Metroparks acknowledge that our parks are located on the ancestral, traditional, and contemporary lands of the Fox, Kickapoo, Ojibwa, Potawatomi, Sac, and Wyandot Nations.

We acknowledge the sovereignty of Michigan's Indigenous nations and the historic communities that have inhabited this land, both present and those who were forcibly displaced from their original territories.

We would like to express our gratitude and appreciation to the Indigenous peoples who have lived on and cared for this land from time immemorial, and who continue to be an integral part of this place.

We embrace the environmental stewardship practices rooted in the traditions of the Indigenous nations, recognizing their importance in fulfilling the mission of the Metroparks.

# FROM THE DIRECTOR

More than 80 years ago, a visionary group of individuals imagined a connected network of parks that would offer residents of Wayne, Washtenaw, Oakland, Macomb, and Livingston counties the opportunity to engage with nature through activities such as swimming, hiking, biking, paddling, boating, and learning about the environment. Today, these parks, known as the Huron-Clinton Metroparks, have conserved nearly 25,000 acres of natural areas, educated countless children and families about the environment, improved air quality, managed stormwater, fought against invasive species, and protected endangered plants and animals in the region. In many ways, the Metroparks can be seen as the original Climate Action Plan for southeastern Michigan.

As weather events in our corner of the region become more extreme, air and water quality become increasingly worrisome, and the residents of our region become interested in actively combatting the impact of climate change on our daily lives, it's time for the Metroparks to act with intention and focus.  To lead where we are best positioned to lead and to partner with public and private organizations that are already doing impressive work in this arena.

Our first formal Climate Action Plan is centered on addressing the needs of our region, both within our park boundaries and in the communities we serve. To ensure that our goals align with the concerns and interests of our region, we actively sought input from residents and partners. We listened to their concerns, needs, and ideas.

Over the next five years, we will concentrate on five key areas that reflect our region's priorities and leverage our organizational strengths: Education and Engagement, Preservation and Conservation, Water Quality, Transportation, and Waste Management, Recycling, and Composting. We are committed to providing regular progress reports to keep you informed of our achievements.

While the Huron-Clinton Metroparks may not have all the answers to the challenges posed by climate change in southeastern Michigan and beyond, we are dedicated to taking every possible action to mitigate its impact on our region. We invite you to join us in our efforts as we continue to serve the people of southeastern Michigan.

Amy McMillan, Director

# EXECUTIVE SUMMARY

This Climate Action Plan ('CAP') is the Huron-Clinton Metroparks' formal plan for explicitly focusing on climate impacts the Metroparks have and how we will work toward a climate-positive future. This document is structured to lead a reader through the reasoning behind creating a CAP, the climate actions the Metroparks will take, and additional resources. Specifically, the content sections address: context, vision, methods, goals and actions, updates, involvement, resources and supplemental information.

## THE NEED

In the recent years, Michiganders have experienced climate events unlike ever before. Memorable examples include experiencing flooding and heavy rain events, where 3-5 inches fall across the region in less than 24 hours. In August 2023, more rain fell in the metro Detroit area in one day than what is normally seen throughout the entire month. This concentrated rainfall causes sewer overflows and backups into household basements, and water run-off into streets and parking lots. Shifts in winter weather are also causing unexpected changes and damage. In February 2023, a major ice storm in southeast Michigan caused infrastructure damage and power outages across the region, while high winds and ice interrupted the winter holiday in 2022. We are experiencing forest fires in the state and also combatting bad air quality concerns from major fires happening across Canada. July 2023 was the hottest July on record. We present this plan with these events in recent memory and knowing that these types of events have become increasingly common across our region.

Our communities and the Metroparks are both experiencing these events and concerned about the threat they pose to our state. Community members have shared these concerns with us – concerns of how to plan for the weather uncertainty being experienced; concerns for the health of themselves and loved ones; and concerns about being unable to enjoy beloved activities regularly such as hiking, cross country skiing, or swimming due to seasonal changes.

The Metroparks are a part of the southeast Michigan community, and are experiencing similar challenges as our neighbors, including flooding, infrastructure damage, health concerns, and disruptions to everyday activities. Although we face similar challenges, the Metroparks are also able to take action to increase resilience and protect our region from the uncertain changes ahead. Climate action is difficult, yet necessary, and takes strength and commitment to create change and ensure a healthy future.

We are taking action to protect our communities and strengthen our region to navigate an uncertain future. This action does not just protect our parks, but protects our communities and the people who live and thrive within them. The Metroparks were always envisioned as a conservation response to current needs. At the time of their creation, landscape-level changes necessitated the parks' creation to preserve land from development, protect flora and fauna, provide public access to nature, and teach people about the natural world. This CAP, recognizing the landscape-level climate changes we are experiencing and moves us to climate action for the future, as our needs for addressing climate changes and impacts becomes more urgent.

Indeed, climate action is central to fulfilling our mission of bringing the benefits of parks and recreation to all the people of southeast Michigan for all their lives. We live in a time of climatic

uncertainty, with changes to our resources, both globally and locally, and how we interact with them. To maintain the benefits of the Metroparks during climate change long-term, for people and for the integrity of the ecosystems our parks protect, we must adapt our organization's practices. This CAP provides a roadmap of goals, objectives, actions, and metrics of success for specific adaptations over the next five years (2023-2028).

## THE CONTENT

Our goals and actions reflect our strengths in topics of education, natural resources and biodiversity conservation, stormwater management and water conservation, transportation, waste management and recycling. Collectively, our climate actions within these topics also speak to embedded aspects of the Metroparks related to parks and green spaces management; sustainable land use; facilities, amenities, and infrastructure; equipment; recreation; public health and safety; partnerships; economic development; and internal governance. This set of goals and actions speaks to the critical themes of providing and enhancing park benefits in our mission. They also provide other regional parks systems and similar entities an example of pursuing action on the complex issue of climate change.

We prioritized five goals for this plan. Each is detailed below, with two key action highlights per goal, along with the impact of this goal for the Metroparks and the region. This is followed by a listing of the specific objectives within each goal.

**Education and Engagement**. Increase and embed climate action education across all areas of the Metroparks through sharing of knowledge, engaging with others, collaborating with partners, and forming connections with stakeholders, to make real world difference across the Metroparks and throughout our region.

- **Action Highlights**: Providing communication about climate change and climate actions internally and externally; Building a strong base of climate literacy and action
- **Metroparks Impact**: Channels the strength of the Metroparks' interpretation and education programming toward climate literacy, action, and inspiration
- **Regional Impact**: Provides knowledge and information for others in the region, highlighting the capacity of the Metroparks to do so and speaking to visitor and community members' concerns

**Preservation and Conservation of Natural Resources**. Protect and enhance natural resources to ensure longevity of important ecosystems in a changing climate, to preserve these resources for the benefit of future generations.

- **Action Highlights**: Learning about and adopting best management practices and climate-adaptive management strategies; Recognizing the Metroparks' natural resources as unique and valued regionally
- **Metroparks Impact**: Centers preservation and conservation as vital to protecting the Metroparks' resources, which is a top concern for visitors and partnering organizations
- **Regional Impact**: Sustains the benefits of the Metroparks in the region and its residents into the future, which is a top concern for visitors, community members, and partnering organizations

**Water Quality**. Enhance built and natural stormwater infrastructure in preparation for increasingly intense storms and promote the protection of water quality.

- **Action Highlights**: Engaging in collaborative, regional stormwater management; Learning about and providing complementary climate change-informed water quality planning efforts
- **Metroparks Impact**: Capitalizes on the Metroparks' green and gray stormwater infrastructure to encourage water quality in the parks and speaks to a key concern for visitors
- **Regional Impact**: Enhances the role of the Metroparks as a stormwater collaborator, fulfilling a needed and visible role to benefit the region and speaking to a key concern for community members

**Transportation**. Reduce carbon emissions associated with transportation vehicle miles traveled and provide equitable transportation options to and within the Metroparks to help mitigate the impacts of climate change.

- **Action Highlights**: Exploring the viability of electric vehicles in the Metroparks' fleet and implementing infrastructure for visitors' EV use; Examining and enhancing connectivity (especially non-motorized) to and within the parks with partnering organizations
- **Metroparks Impact**: Addresses a key area of visitor and partnering organization feedback
- **Regional Impact**: Focuses on the Metroparks within a transportation network and strengthening the equitable and climate-friendly attributes of these networks

**Waste Management, Recycling, and Composting**. Decrease the amount of waste going to landfills by increasing efforts internally and with the public to refuse, reduce, reuse, repurpose, and recycle materials.

- **Action Highlights**: Examining ways to refuse, reduce, reuse, repurpose, and recycle that speaks to the Metroparks as living, learning laboratories; Detailing lifespan analyses and related actions
- **Metroparks Impact**: Speaks to staff concerns and a primary area for internal education and process efforts
- **Regional Impact**: Reduces the Metroparks' climate footprint and in the region through intentional waste stream analysis

In total, these five goals contain 24 objectives and 130 specific actions. We will accomplish 89 of these actions over the timeline of this CAP (near-term), and make progress on the other 41 actions (long-term). This CAP acknowledges the financial landscape of the Metroparks and of climate-related work. Each goal contains rationale for its selection (including relevant data points) and associated diversity, equity, and inclusion (DEI) considerations. Near-term actions, which will be accomplished over the next five years, are accompanied by metrics of success to evaluate achievement and ensure accountability. We recognize the time and financial commitments for this CAP's efforts overall and within each goal. Overall, financial commitments will be examined and detailed early in the plan's timeline, and will be a continual check-in point for action prioritization and feasibility studies. We are taking a general approach of climate progress and curiosity with this CAP, centering learning, feasibility analyses, pilot areas, and ensuing actions / redirections as we implement actions and learn about their interactions.

## CLIMATE ACTION PLAN GOALS AND OBJECTIVES AT-A-GLANCE

| | |
|---|---|
| **Goal 1. Education and Engagement:** Increase and embed climate action education across all areas of the Metroparks through sharing of knowledge, engaging with others, collaborating with partners, and forming connections with stakeholders, to make real world difference across the Metroparks and throughout our region. | |
| Objective 1. | Beginning in 2024, provide annual education to all Metroparks staff on issues of climate resilience, climate equity, stewardship, and adaptation. |
| Objective 2. | Beginning in 2024, provide collective engagement tools across every department within the Metroparks on issues of climate resilience, climate equity, stewardship, and adaptation on an annual basis. |
| Objective 3. | Integrate concepts of climate change into existing and new programs at the Metroparks and throughout our region. |
| Objective 4. | By 2028, host an Interpretive Regional Climate Action Conference, encouraging Interpreters and educators from across the region to attend and present on climate-related programming that they conduct. This would introduce staff to potentially new, innovative ways of presenting climate programming. |
| **Goal 2. Preservation and Conservation of Natural Resources:** Protect and enhance natural resources to ensure longevity of important ecosystems in a changing climate, to preserve these resources for the benefit of future generations. | |
| Objective 5. | Protect important natural resources elements, including threatened and endangered species, and preserve biodiversity of ecosystems facing the pressures of climate change. |
| Objective 6. | Integrate our land management best practices to align with the changing climate and adapt habitat management strategies and plans for on-the-ground work consistent with best management practices |
| Objective 7. | Enhance, expand, and restore natural areas and strengthen the ability of ecosystems to combat pressures of climate change. |
| Objective 8. | Protect existing and acquire additional undeveloped lands as a resource to buffer ecosystems and infrastructure from the pressures of surrounding land use and effects of climate change. Consider divestment of undesired parcels and reinvestment in acquisition of critical parcels |
| Objective 9. | Build strategies into all “existing and future” plans to incorporate climate adaptation resilience. |
| Objective 10. | Increase capacity for carbon storage in natural areas and pursue projects for the intentional storage of carbon |

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| **Goal 3. Water Quality:** Enhance built and natural stormwater infrastructure in preparation for increasingly intense storms, and support the protection of water quality. | |
| Objective 11. | Beginning in 2024, provide annual education opportunities to staff on issues of stormwater management and water conservation. |
| Objective 12. | Adopt innovative strategies to capture and manage stormwater in preparation for more severe storms and educate the public about these efforts. |
| Objective 13. | Become a prominent stormwater management partner in the region. |
| Objective 14. | Adopt a practice of strategic water usage that minimizes stress on and protects regional water resources. |
| Objective 15. | Monitor and protect quality of water resources adjacent to and in close proximity to the Metroparks from pollution, erosion, contamination, and other detrimental effects exacerbated (i.e., accelerated or increased) by climate change. |
| Objective 16. | Partner with regional organizations, including government agencies, watershed councils, non-profits, and corporate and philanthropic organizations to identify alignment and advance mutual goals of water quality protection in a changing climate. |
| Objective 17. | Advocate for the protection of water resources. |
| **Goal 4. Transportation:** Reduce carbon emissions associated with transportation vehicle miles traveled and provide equitable transportation options to and within the Metroparks to help mitigate the impacts of climate change. | |
| Objective 18. | Identify and evaluate efforts to reduce the vehicle miles traveled by Metroparks staff and reduce current levels of carbon emissions emitted. |

| | |
|---|---|
| Objective 19. | Explore the viability of using an EV fleet and developing EV charging infrastructure by 2033. |
| Objective 20. | Increase connectivity within our parks. |
| Objective 21. | Increase access to the Metroparks by centering environmental justice through every transit investment. |
| Objective 22. | Create internal EV transit system within the Metroparks that have the highest vehicle counts. |
| Objective 23. | Explore the viability of micro-mobility modes of transportation within Metroparks. |
| **Goal 5. Waste Management, Recycling, and Composting**: Decrease the amount of waste going to landfills by increasing efforts internally and with the public to refuse, reduce, reuse, repurpose, and recycle materials. | |
| Objective 24. | Increase waste diversion rates internally, including vendors, through reducing, reusing, and recycling. |

## THE APPROACH

This plan builds on many efforts and voices. In considering all the potential climate actions, we focused this plan on those that were feasible and appropriate, representing different levels of challenge, different themes within Metroparks management, and different timelines for achievement. Working as a collaborative team representing multiple Metroparks departments, leadership, and research assistance from Michigan State University – Department of Community Sustainability, we engaged in 18 months of work sessions and community input to:

- Understand the content and approaches in other climate plans across southeast Michigan and from park systems nationwide;
- Gather perspectives from southeast Michigan residents, Metroparks Board of Commissioners, staff, visitors, and partnering organizations; and
- Refine possible areas for climate action in this initial plan into a concise set of final goals and actions.

We examined current climate action plans from across the region and other park systems similar to the Metroparks, to see how climate actions have (and have not) been framed and started to examine the roles that we might fill. From initial findings on main themes, we then sought input from Metroparks visitors, Metroparks staff, partnering organizations, and residents from across the region. Through focus groups and region-wide surveys, we gathered input on the benefits visitors and residents receive from and would like preserved in the Metroparks, climate changes they have noticed and are concerned about in the region and the Metroparks, and (for staff) specifically where they would like to see and engage with Metroparks' actions.

This CAP is a "living document," meaning that adjustments are expected and encouraged as the work progresses and we learn how to refine our efforts in future plan versions. This plan is meant to be flexible and amenable to the uncertainty of climate change in the years to come. We will monitor progress on these actions and toward these goals with continuous tracking, re-evaluation, and updates. Progress on Metroparks staffs' overall climate-positive awareness, engagement, and behaviors will be assessed as well. Financial metrics and considerations will be tracked annually and considered in action updates. In 2027, a progress report and evaluation will be compiled to inform the direction of the 2028 Climate Action Plan,

and to identify any changes or needed shifts in major areas of focus. The CAP will be updated every five years (e.g., 2028, 2033, 2038), aligning with planning standards set by the National Recreation and Park Association's Commission for Accreditation of Park and Recreation Agencies (CAPRA).

*Climate action[1]: Efforts taken to combat climate change and its impacts. These efforts involve reducing greenhouse gas emissions (climate mitigation) and/or taking action to prepare for and adjust to both the current effects of climate change and the predicted impacts in the future (climate adaptation).*

*Climate change[2]: Long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. However, scientific evidence points to rapid changes happening due to human influence, such as burning of fossil fuels and the release of greenhouse gasses into the atmosphere.*

# INTRODUCTION

## THE ISSUE

**Weather** refers to the atmospheric conditions that we experience day to day[2]. Weather changes quickly over the short term, including changes in temperature, precipitation, wind, humidity, and cloud cover.

**Climate** refers to weather patterns over long periods of time[2]. While the weather changes hour by hour, climate changes are not so easily noticed and happen over time spans of 30 or 40 years.

**Climate change** is the set of long-term changes in the Earth's climate, which happens globally, regionally, and locally. Climate change is a natural phenomenon, and scientific evidence has pointed to climate variability throughout Earth's history. Despite this natural process, climate change is now happening at a faster pace[3]. This is largely due to human activities including the burning of **fossil fuels** and the release of concentrated **greenhouse gas** emissions.

The **greenhouse effect** is a natural phenomenon in Earth's atmosphere that makes our planet habitable. The atmosphere traps a portion of the heat that is reflected or released from the Earth's surface to keep the planet at a temperature to sustain human life[4]. **Greenhouse gasses** are the collection of gasses in the atmosphere that make this phenomenon possible and include water vapor ($H_20$), carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_20$). Since the start of the Industrial Revolution (mid-1800s), the burning of **fossil fuels (e.g., coal, oil, natural gas)** has rapidly increased the amount of greenhouse gasses being emitted and the heat that is being trapped in the atmosphere[4].

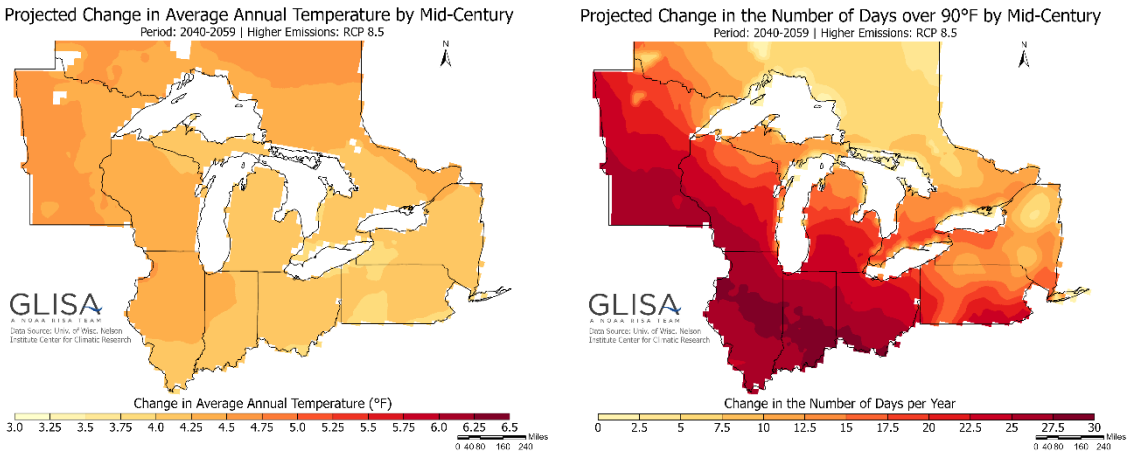
*Greenhouse gasses[4]: Gasses that trap heat in the atmosphere. These collections of gasses create the greenhouse effect, which is the phenomenon that ensures Earth is habitable. There are four main greenhouse gasses (GHGs): water vapor ($H_20$), carbon dioxide ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_20$). Greenhouse gasses are naturally occurring, and essential to life on the planet, though due to human activity the levels of greenhouse gasses in the atmosphere are drastically increasing. This increase is causing rapid warming (**global warming**) of Earth, creating dangerous and severe impacts.*

Over the last 150 years, the global average temperature has risen about 2°F, and the 10 warmest years ever recorded have occurred in the last two decades[3]. These rising temperatures impact more than the air and surface temperature. They also influence

precipitation patterns impacting growing seasons, habitats, and much more. A warmer atmosphere means a more energetic atmosphere, creating stronger, larger, and more unpredictable storm systems (e.g., winter storms, hurricanes, derechos, tornadoes).

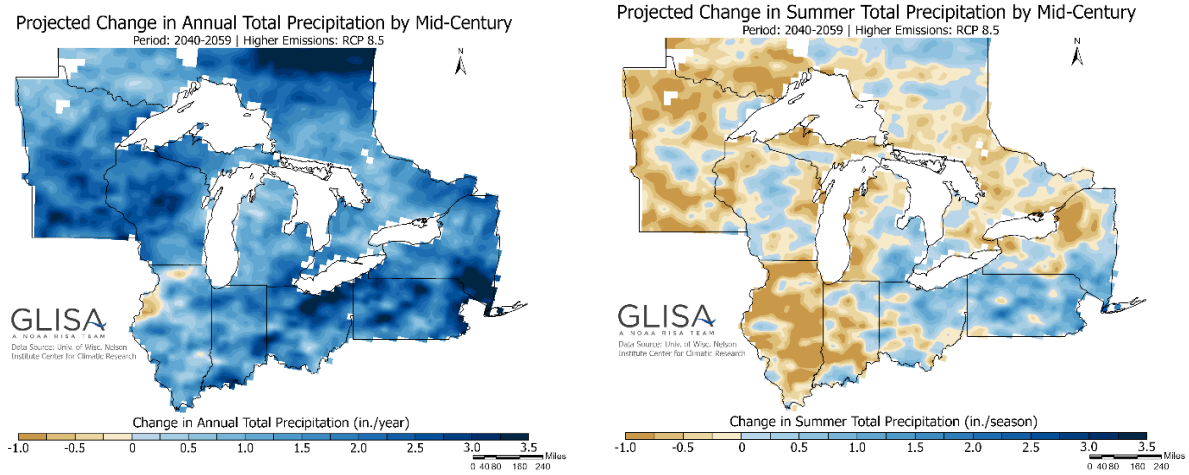
### What These Changes Mean

These climate changes are creating varied impacts globally, including sea level rise, less access to freshwater, agricultural concerns, increasing public health concerns, and increasing temperatures. In Michigan, specifically southeast Michigan, we are seeing increasing temperatures and changes in precipitation events. Overall, the average annual temperatures across the state have risen 3°F since 1900[5]. The number of days over 90°F (**extreme heat events**) is also increasing drastically. In southeast Michigan, the Great Lakes Integrated Sciences and Assessments (GLISA) projects that by 2050, the region will be seeing an estimated 20 more days with temperatures reaching over 90 °F[5].




*Regional maps on projected changes to average annual temperatures (left) and days above 90°F (right), produced by the Great Lakes Integrated Sciences and Assessments (glisa.umich.edu) using data from the University of Wisconsin Nelson Institute Center for Climatic Research[5].*

The state is also experiencing increases in **heavy precipitation events**. According to GLISA, these events have risen by 14% since 1951[5]. **Heavy precipitation events** are defined by days that received precipitation (rain, snow, sleet, etc.) of 2-inches or more[5]. These are expected to become more frequent, causing threats for increased flooding, **stormwater management** concerns, and public health issues.



*Regional maps on projected changes to annual precipitation (left) and summer-specific precipitation (right), produced by the Great Lakes Integrated Sciences and Assessments (glisa.umich.edu) using data from the University of Wisconsin Nelson Institute Center for Climatic Research[5].*

In metro-Detroit, flooding has become a major issue and concern for residents across the region. Community members face sewer back-ups into basements and backyards, and stormwater overflows through neighborhood streets and infrastructure[6,7]. This change in rain patterns alongside temperature increases also creates potential concerns for the agricultural industry, a prominent one across Michigan. These combined climate changes could potentially alter growing seasons, the types of crops able to be sustained, and pest and disease management issues[8].

Habitat and water quality is at risk too, due to these changes. With changing temperatures, **invasive, non-native species** are able to thrive and overcome native species. Some of these species are more drought resistant or do not die off in the winter months, due to the lack of snow cover or freezing temperatures[9]. Water quality is also impacted, allowing for algae and aquatic weeds to thrive in increasing temperatures, while fluctuating water levels create infrastructure and habitat concerns.

*Invasive species[10]: An organism that is not indigenous or native to a particular area. Invasive species can cause economic and environmental harm to the new area.*

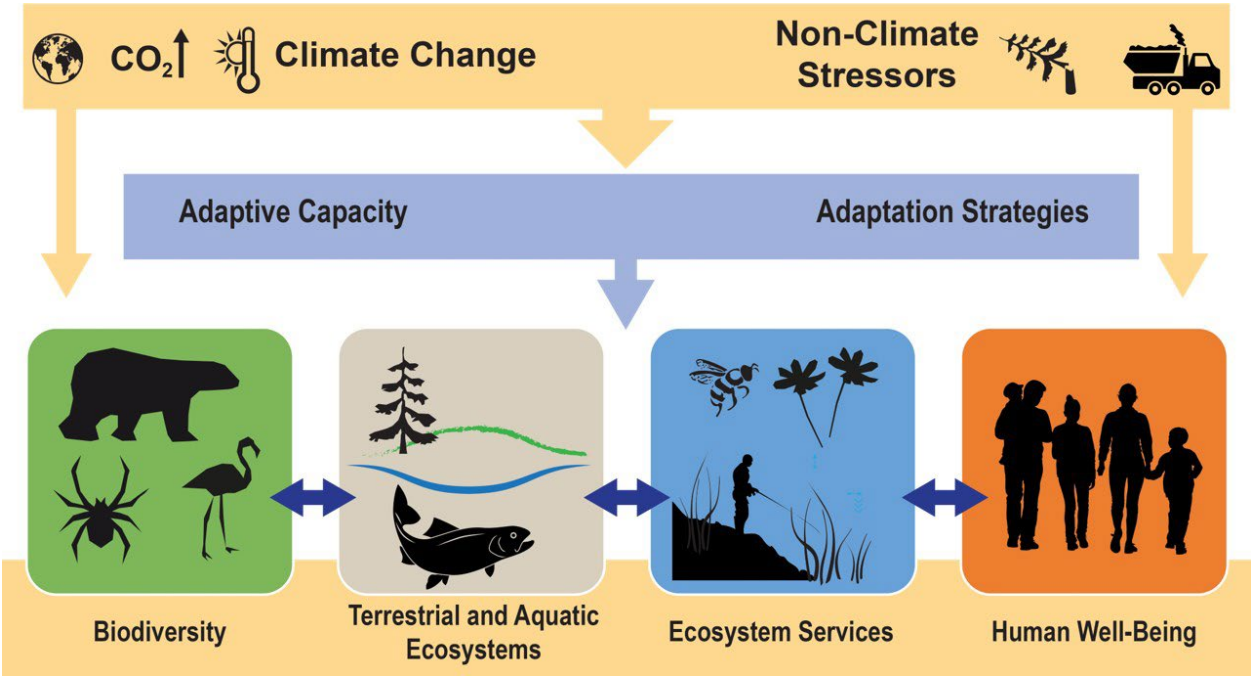
## THE ROLE OF PARKS

Parks and green spaces play an essential role in mitigating the effects of climate change[11]. Tree canopy and water bodies offer important resources for **carbon sequestration,** or the absorption of $CO_2$ from the atmosphere[12,13]. These natural resources also create cool zones in urban areas, mitigating impacts from the **urban heat island effect**[14]**.** Parks, especially in urban areas or densely populated regions, are essential for conserving sensitive species' populations and functioning as resources that help manage the effects of climate change.

Parks are also facing climate change impacts and have an important role to play in mitigating these impacts. With changing temperatures and climate patterns, increasing visitor use and different types of recreation are being recorded[15,16]. In urban spaces, parks can provide a sense of relief in everyday life from increasing temperatures and can filter pollutants and particulates in the air[17]. As traditional seasons shift, so will the recreation seasons. This can result in longer periods of time visitors will be able to recreate outdoors and changes in recreation activities[1]. For example, the conditions for traditional summer activities (e.g., bicycling, picnicking, swimming, ball sports) may be available earlier in the spring and later in the fall than they have been previously, while the conditions for traditional winter activities (e.g., ice skating, cross-country skiing, sledding) may be available for only a portion of what it had been previously. Participation in water activities in rivers, lakes, pools, and splash pads is expected to increase, as seasonal shifts lengthen the amount of time that water is accessible and hotter days and nights make such access more desirable. These changes in park

recreation have implications such as considering changes in seasonal staffing, resource protection, managing conflict and crowding, and maintaining accessibility.

Beyond recreation, parks provide many other benefits. The above examples showcase some of these benefits and how they are at risk with climate change. Other benefits of parks include their roles in conserving vital functions of the environment (e.g., the carbon cycle), regulating disturbances (e.g., buffers to manage flooding), providing goods and products (e.g., firewood, maple syrup), and in serving as a place to create and enhance our connections with the environment and each other. These benefits are collectively called ecosystem services[18]. The Ecosystem Services framework provides checkpoints for ensuring that benefits are considered, maintained, and enhanced in decision-making when managing places like parks and/or when responding to a threat like climate change. For more information on the Ecosystem Services framework and its applicability to this CAP, see Appendix A.




*Relationships among the environment, people, climate change, and other stressors. These relationships are present generally and in the Metroparks. Figure publicly available from U.S. Global Change Research Program, 2018*[19].

## THE ROLE OF THE METROPARKS IN SOUTHEAST MICHIGAN

Southeast Michigan is home to almost half of the entire state's population, as well as the US's tenth largest metro area, Detroit[20]. The Huron-Clinton Metroparks, located strategically around this major metro center, provide 25,000 acres of green space to over 7 million visitors annually. As a regional park system, a vast array of recreational opportunities exist within their borders, including nature trails, picnic areas, educational programming, swimming and boating, winter recreation, and biking or mountain biking. Established in 1940, the Metroparks are beloved and have been an impactful place for generations of Michiganders[21].

The Metroparks are of increasing importance as the effects of climate change worsen in the region. With an increasing number of extreme heat events, the Metroparks can provide relief to residents, whether through the 14 miles of access to Great Lake shoreline, 3,634 acres of inland lakes, or the multiple pools and splash pads. The valuable green space and trees provide shade and natural cooling microclimates, providing relief to the region that is otherwise heavily developed. The Metroparks act as natural filters and can assist with the stormwater management issues with which the region is struggling. With the high number of green spaces and their acreage, the parks naturally absorb precipitation to reduce runoff and inland flooding. These important roles played by the Metroparks create not just ecological benefits, but community-wide mental and public health benefits as well.

## WHAT WE'RE DOING AND WHY

The Metroparks continues to aim toward more complementary and inclusive planning efforts. The work presented in this plan builds on work already underway. In the near-term, multiple planning projects will complement and support one another in accomplishing goals and necessary action steps for the preservation and enhancement of the Metroparks.

| Metroparks Plan / Initiative | Published Date |
|---|---|
| Mowing Plan | August 2018 |
| Sustainability at the Metroparks | November 2018 |
| Park Access Plan | July 2020 |
| Deer Herd and Ecosystem Management Plan 2022-2026 | December 2021 |
| 2023-2027 Community Recreation Plan | January 2023 |
| Diversity, Equity, and Inclusion Plan 2023-2026 | April 2023 |
| Strategic Plan 2023-2026 | December 2022 |
| *In Development:* | *Projected Completion:* |
| Comprehensive Stormwater Management Plan | Spring 2024 |

## ENVISIONING THE FUTURE OF THE METROPARKS

The vision for this CAP aligns with how Metroparks visitors, partnering organizations, staff, and residents of the counties we serve also envision a climate-positive future of the Metroparks. As a part of the CAP planning process, these stakeholders were encouraged to participate in focus groups and a survey (see "Creating the Climate Action Plan" and Appendix D). This provided an opportunity for them to provide input, express concerns, and share their values about the Metroparks. Two areas of questioning in particular – what they treasure most within the Metroparks and what they envision for the future of the Metroparks – helped to guide the overall vision for this CAP.

*What are the most treasured experiences in the Metroparks?* The most common responses were opportunities to recreate or enjoy leisure time activities. These included activities such

as walking, biking, kayaking/canoeing, and swimming. Beyond recreation, a wealth of responses illustrated Metroparks connections. These inform us of benefits to maintain.

- Out of 118 participants in *focus groups,* the top 5 most common treasured experience was:
  - Recreation / Leisure Time (59.9%)
  - Building / Strengthening Social Relationships (16.8%)
  - Appreciation of Beauty (9.0%)
  - Education (7.4%)
  - Sense of Place (6.9%)
- Out of 4,220 responses in *surveys,* the top 5 most common treasured experience was:
  - Recreation / Leisure Time (26.9%)
  - Mental Health Benefits (23.3%)
  - Appreciation of Beauty (23.2%)
  - Satisfying Knowledge that the Metroparks are Protected (14.8%)
  - Conservation for Future Generations (11.8%)

*What is envisioned as the future of the Metroparks?* Participants shared their visions for the Metroparks of 2073, and what they would like to see preserved. Visitors have been recreating in the Metroparks for generations. One of the top desired visions is that future generations will also be able to enjoy the parks to their fullest extent. This CAP steers toward that aim. We embrace these visions for the future of the Metroparks and situate this CAP as progress toward these broader goals.

- Out of 118 participants in *focus groups,* the top 5 most common vision was:
  - Recreation / Leisure Time (30.9%)
  - Education (20.1%)
  - Satisfying Knowledge that the Metroparks are Protected (16.5%)
  - Building / Strengthening Social Relationships (12.9%)
  - Miscellaneous (10.8%)
- Out of 4,220 responses in *surveys,* the top 5 most common vision was:
  - Conservation for Future Generations (23.4%)
  - Recreation / Leisure Time (22.7%)
  - Physical / Mental Health Benefits (18.6%)
  - Satisfying Knowledge that the Metroparks are Protected (18.1%)
  - Appreciation of Beauty (17.3%)

Comments from focus group participants further elaborated on these visions, such as:

- “[I like the idea of]...parks as a garden. A place where kids can find species not necessarily in their own backyards, and realize the importance of taking care of the garden and responsibility.”
- “[I would continue to]...enjoy family activities while still being able to include nature trails and centers. [We can] continue to learn about plants and animals native to the area, as well as weather and climate.”
- “[Even though] things are going to change, [I] hope the Metroparks will continue to expand while offering the same opportunities…”

“[I want to] still experience everything! [I would like] to still enjoy the things we enjoy today.”

# CREATING THE CLIMATE ACTION PLAN

This CAP represents a collaborative effort between the Huron-Clinton Metroparks and Michigan State University (the "CAP Team"). The content of this plan was informed by the needs and capacities of the Metroparks and framed with a community-engaged research approach[16,22,23]. A team was assembled representing leadership in the different departments of the Metroparks (20 personnel) and researchers in Michigan State University's Department of Community Sustainability (a faculty member and a graduate student). Within this, a core team of six department heads lead the conversations between the researchers and other Metroparks staff. This team was periodically assisted by additional Metroparks staff, a facilitation consultant, and Michigan State University graduate and undergraduate research assistants.

Together, we collaboratively created and implemented an 18-month series of work sessions to:

- Understand the content and approaches in other climate plans across southeast Michigan and from park systems nationwide;
- Gather perspectives from southeast Michigan residents and Metroparks Board of Commissioners, staff, partnering organizations, and visitors; and
- Refine possible areas for climate action in this initial plan into a concise set of final goals and actions.

Throughout this work, we refer to "southeast Michigan" as our general region. Southeast Michigan is typically understood as the region encompassing Genesee, Lapeer, Lenawee, Livingston, Macomb, Monroe, Oakland, Saint Clair, Washtenaw, and Wayne counties. Within this general region, we explicitly included voices from those within the counties where one or more of our 13 parks are located: Livingston, Macomb, Oakland, Washtenaw, and Wayne counties. Because of this, our descriptions of southeast Michigan mainly relate to our service area of these five counties in particular.

## CLIMATE PLANS LITERATURE REVIEW

To understand how the Metroparks' CAP might support existing climate actions, and complement these existing climate actions with park-specific ones, we examined 35 publicly available climate plans. These were from cities across southeast Michigan, similar park systems nationwide, and National Park Service units. Each plan contained localized framing, goals, and actions that helped the CAP Team identify common CAP components. A full list of plans reviewed can be found in Appendix B. We analyzed the content of these plans' climate actions, synthesizing main themes to provide information about others' current climate actions for the Metroparks' inspiration. This highlighted 43 common themes.

We discussed these 43 themes within the CAP Team and then engaged in an internal collaborative process of making sense of them for the Metroparks' particular resources and concerns. Concurrently, we conducted a staff survey, in which 108 staff lent perspectives on what the Metroparks' internal and regional responsibilities are regarding climate change.

From these efforts, a final list of 16 themes was created and defined (see Appendix C), representing key areas for climate action consideration. We then reexamined the climate plans, grouping the climate actions under these 16 themes as appropriate, to provide examples and inspiration for climate action. Though a primary theme was identified for each action, other secondary themes were often present, indicating the interrelationships among them.

"Water" provides a specific example of how this review informed the CAP. Water resources and related climate actions were discussed in the majority of climate plans generally as a public utility, and perhaps not detailed to the extent that might be expected in such a water-defined geography such as southeast Michigan[11]. This allowed the CAP Team to focus explicitly on addressing a need for "water quality" climate action that encompassed multiple water ecosystem benefits and capitalized on the strengths of the Metroparks as a park system in this region.

## INCORPORATING MULTIPLE AUDIENCES' PERSPECTIVES

After this literature review, the CAP Team gathered perspectives from multiple interested audiences about climate change impacts and desired Metroparks actions. Appendix D provides further details on those research efforts – summaries, methods, and results. In brief, we held focus groups (online and in-person) with Metroparks visitors, staff, and partnering organizations (fall 2022); conducted online surveys for Metroparks visitors, Metroparks staff, and southeast Michigan residents (winter 2022/2023); and engaged in listening sessions with Metroparks Board of Commissioners members (fall 2022). As a CAP Team, we co-defined all approaches and content to maximize scientific structure and planning utility.

The 18 focus groups (2-2.5 hours each) engaged 203 participants in total: 118 community members (110 visitors and 8 partnering organizations) and 85 staff. All community members received a 2023 Metroparks pass in appreciation of their attendance. Sessions began with an interpretive program by Metroparks staff about climate change in the Metroparks. This provided additional value to participants for attending and eased them into the climate-focused sessions with place-based storytelling about climate change, providing a segue for participants to start considering the details of their own experiences. Questions in each session then asked about these details, focusing on personal, treasured experiences in the Metroparks and climate-related changes participants 1) have observed and 2) are concerned about in the region and specifically in the Metroparks. A final, "visioning" question concluded the sessions: visitors were asked what they would like to see preserved, maintained, and/or enhanced in the Metroparks in 50 years; partnering organizations were asked what climate actions they were currently taking or plan to take and how the Metroparks might assist them with these actions; and staff were asked what climate-related actions they would be enthused to take a personal role in at the Metroparks.

The survey effort yielded 4,220 responses: 2,385 via invitations sent to the Metroparks' email list; 1,684 via a purchased panel of residents within the Metroparks' five counties (Livingston, Macomb, Oakland, Washtenaw, and Wayne), including a Detroit-specific quota; and 151 via email requests to Metroparks employees for participation. The purchased panel of residents had certain considerations placed on it to ensure a representative sample of southeast Michiganders were surveyed. These included race, income, and gender. The community

survey questions asked about recreation use, demographics, ecosystem services, place attachments, and – following the themes reported in the focus groups – climate-related changes participants 1) have observed and 2) are concerned about in the region and specifically in the Metroparks. Place attachment questions related to the emotional bonds that visitors hold with the Metroparks or recreational opportunities within them. Questions were generally close-ended (e.g., checkboxes, response scales). The staff survey did not include the recreation use questions and added open-ended questions on climate-related actions they would both support and personally engage with in their work with the Metroparks.

Optional one-on-one listening sessions were held with members of the Board of Commissioners. Commissioners participated in independent conversations with the members of the CAP Team about climate action planning, the role of the Metroparks regarding climate action and responsibilities to the people and places of southeast Michigan, desirable goals and actions, and external sources of information and guidance.

Following the collections in the fall and winter of 2022 – 2023, these extensive data sets were discussed and refined. This included ensuring research protocols and good practices were closely followed for qualitative and quantitative data analysis and reporting. In workshops in winter 2022/2023, the CAP Team further refined the data presentations to a useful format for meaning-making and prioritization to define actions and goals.

## CREATING GOALS, OBJECTIVES AND ACTIONS

Based on the 16 themes, the results from the data collections from multiple audiences, and CAP Team conversations and workshops, we determined a set of five goals in spring 2023. This process involved examining which themes might be overarching priorities for this plan, and which other themes could be acknowledged through specific objectives/actions within these goals. Once determined, the CAP Team worked with specific resources (data points, inspiration from other plans, etc.) relevant to each goal. Metroparks staff, led by members of the CAP Team, worked internally as goal-specific project teams to list and define objectives, actions, timelines, and metrics of success within each goal. The CAP Team provided check-ins and guidance to the drafting of these details, as everyone worked toward a suite of actions that accomplished distinct yet interrelated goals, incorporated a variety of levels of challenge for the Metroparks, and considered a breadth of ecosystem services.

# CONSIDERATIONS

## DIVERSITY, EQUITY, AND INCLUSION (DEI)

Diversity, Equity, and Inclusion (DEI) is vital to the Metroparks. Our Board of Commissioners considers it a priority and it is deeply embedded in our guiding documents such as our mission, vision, and core values. Consequently, it is the responsibility of every Metroparks employee to uphold these principles.

In relation to the CAP, we acknowledge that climate change disproportionately affects under-resourced and historically marginalized communities. We believe that we have a role to play in mitigating these impacts. In this plan, we focus on the following areas:

**Impact Management**: As a park system, we recognize the importance of undertaking certain processes to benefit park ecosystems. However, some activities may have direct and indirect effects on the communities we serve. Therefore, the Metroparks is committed to carefully considering these impacts and exploring alternatives whenever possible before engaging in such activities.

**Communication:** Communication helps bridge the gap between scientific research and public understanding. Climate science can be complex and technical, but by translating scientific findings into accessible language, we can empower individuals to make informed decisions and support evidence-based climate policies and practices. The Metroparks is committed to providing climate information that is factual, relevant, and accessible.

**Education:** Internal and external education are vital components of this CAP. Educating staff about environmental sustainability and educating the public about the necessary steps and actions needed to achieve climate resilience are critical to the success of this plan. We are committed to providing educational content that not only focuses on climate-related topics but also highlights our strategies for and dedication to justice, equity, and mitigating community-based impacts.

By emphasizing impact management, communication, and education, we will address the challenges posed by climate change and ensure that our efforts are inclusive and equitable for the communities we serve. Together, we can accelerate progress toward a more just, equitable, sustainable, and resilient future for the Metroparks.

## FINANCIAL

The financial impacts of the Metroparks' climate actions are being considered across the suite of efforts, as well as for individual actions. However, significant financial considerations and detailing are needed both in this initial stage and over the five years of climate action outlined in this plan. We recognize this and will act on four main areas of financial planning to support the work of this plan in an intentional manner. These efforts will be led by the Finance Department.

First, we aim to build the capacity of the Finance department to support the CAP goals. This will include seeking training on financing climate actions and educating Metroparks staff on the connections between climate action innovation and financing.

Second, we will create a financial plan for the CAP, in winter 2023/2024. This will be based on a detailed review of the goals and actions and the estimated costs of implementing them. Doing so may highlight groups of actions within each timeline that can be supported together. These types of considerations will be communicated to the CAP Team, Metroparks governance, and staff as appropriate, for adjustments and prioritizations in implementing the actions. Budgeting efforts will be identified in support of this financial plan, such as reserving allotted amounts for climate goals, evaluating capital and major maintenance impacts resulting from this plan, and evaluating the savings/additional costs regarding climate actions to determine the net costs. Within this financial plan, we recognize the ongoing impacts of climate change and will try to account for these. For example, longer summers and shorter winters will change the needs and operating dates of facilities. We will consider the impact that changing seasons have on operations when budgeting staff and material expenses and operating revenues each year.

Third, we will explore alternate sources of funding for our climate actions. At this initial stage of exploration, examples of those sources might be revenue bonds and/or grants. It also includes evaluating the potential for subsidizing climate actions with funding from revenue-generating projects. We will consider in what ways the Metroparks might pursue alternate sources of income to offset tolling losses with increased public transportation. We will also assess investments and financial institutions for climate-related risks and take steps to mitigate those risks.

Fourth, we will revise the Metroparks' purchasing policy. This will include updates to incorporate our climate goals, partnerships in support of these, and incentives for companies with a climate-smart practice. When purchasing, we will consider and promote climate-friendly options, taking into consideration climate impacts, waste generated, and per unit costs. For example, we will encourage buying in bulk, buying low packaging options, and buying green options.

As the work of the CAP progresses and these financial steps are taken and evaluated, we will look toward longer-term goals. For example, buildings are a large source of expense at the Metroparks, and further thought needs to be given on how and when we replace or improve buildings in climate-responsive and proactive ways. This includes discussion on and plans for historic buildings, the climate tradeoffs between preservation and restoration of these structures, and when we opt for targeted and intentional preservation versus full restoration of structures (e.g., The Mill). Because climate work with buildings is a large and complex inquiry, it exemplifies the type of ongoing conversation we will be having as an organization in addition to the known actions listed in this CAP. Our aim is to consider what would be needed for a set of goals and actions for buildings and then prioritize areas for action now and in the next version of the CAP.

# WHAT WE PLAN TO DO

This CAP contains a suite of goals, objectives, and actions. Each goal may be read as an independent effort. Yet, this CAP is structured to recognize the relationships among efforts and work toward the vision of a climate-responsive park system. This plan builds on many actions and initiatives already present in the Metroparks. Appendix E contains a list of all current actions, plans, and initiatives that contribute to climate action as related to the following five goals. Below are some of the overarching elements across the goals, followed by the goals, objectives, and actions themselves.

## HOW THE CLIMATE GOALS ARE ORGANIZED

The climate goals and their associated objectives and actions are detailed in a common format. The CAP Team determined checkpoints within and across the goals, as described below.

Each goal relates to a primary theme, which is named in the goal and described beneath it as a statement about desired conditions. Though each goal has a distinct focus and justification based on the need for this focus, each also ties into other climate-related themes. These connections illustrate how, collectively, the five goals cover all 16 themes of the Metroparks' climate work. Though the prioritization effort is never easy, the current five goals efficiently integrate many themes.

DEI considerations for each goal are also described. Broadly, these considerations regard impact management, communication, and education. Specifically, they relate to 11 key areas: accessibility, affordability, awareness and education, community engagement, cultural relevance, environmental justice and advocacy, equity, inclusivity, partnerships and collaboration, safety, and traditional knowledge and indigenous perspectives.

The five goals each then have an "About" section. This details the definitions used for the goal and the relevance and importance of the goal to the Metroparks' work and broader concerns (e.g., environmental protections, access for all). Each goal also includes compelling points from the data collections, which were used to consider what to prioritize for this plan. Together, this suite of information provides more context for why these goals and their objectives and actions were chosen for inclusion.

At the more specific "objective" level, the relevance of each objective for inclusion in this plan is provided and the actions related to each objective are listed. Each goal contains 1-7 objectives, and each objective contains 1-11 actions.

This plan contains 130 actions we will undertake to address climate change. Actions are specific tasks or activities that need to be completed to achieve the objective, goal, and ultimately, climate adaptation and mitigation progress. Our actions listed are ones that can be tracked and evaluated, have a deadline for completion, and list responsible parties as appropriate to complete or lead progress on the action.

Actions are grouped by timeline (near or long-term) and represent a range of time commitments. Near-term actions (89 actions) are slated to be accomplished within the five-year planning period. Actions indicated as long-term (41 actions) will be *started* within the next five years, and be the first to be revisited and finalized in the following five-year period (2028-2033).

Near-term actions are accompanied by metrics of success. Metrics of success provide clarity on when we will know that an action has had progress or has been attained. Metrics of success have been drafted with our best knowledge from within the Metroparks and in considering similar goals in others' climate plans. They represent a range of levels of challenge, as we have crafted this plan in both ambitious and accomplishable terms.

# GOAL 1. EDUCATION & ENGAGEMENT

**Increase and embed climate action education across all areas of the Metroparks through sharing of knowledge, engaging with others, collaborating with partners, and forming connections with stakeholders, to make real world difference across the Metroparks and throughout our region.**

Themes Integrated
Partnerships, Education

DEI Considerations

- **Accessibility**: Providing inclusive materials and offering alternative formats for individuals with different needs.
- **Inclusivity**: Featuring diverse voices and perspectives in educational materials, incorporating stories and experiences from different cultures, and promoting a sense of belonging for all visitors.
- **Equity**: Addressing, through climate education, the unequal impacts of climate change on different communities. This involves acknowledging and addressing systematic inequalities, such as socioeconomic, racial and gender disparities and environmental injustice.
- **Cultural Relevance**: Tailoring climate education to the local context and cultural backgrounds of park visitors to enhance engagement and understanding.
- **Community Engagement**: Involving community members in the planning and development of educational programs, seeking input and feedback, and fostering partnerships to ensure that the education provided aligns with the needs and aspirations of the community.

*Stakeholder[1]: An individual, organization, or group of people who would participate in, be affected by, benefit from, or be burdened by a system, process, or decision.*

## ABOUT GOAL 1. EDUCATION AND ENGAGEMENT

**Education** is the process of training and developing knowledge, skill, mind, and character, through formal and informal learning; teaching; and/or training. **Engagement** is the interaction and collaboration between the Metroparks and all parts of the wider community (local, regional, national, and global) for the collectively beneficial exchange of knowledge and resources in a context of partnership and reciprocity.

It is also important to model the kind of change we want others to embrace and develop an emotional connection with the environment that will eventually lead staff and visitors alike to action. This can be accomplished by connecting staff, facilities, visitors, and participants to environmental education with a climate action focus. Additionally, as we form collaborative partnerships with regional organizations, the Metroparks can help to provide environmental education to southeast Michigan stakeholders with emphasis on equity zone districts.

Education and engagement were fundamental themes within the data collections supporting this CAP's creation. For example, in imagining the future of the Metroparks and what is important to preserve, strengthen, or develop, 29.5% of focus group responses pertained to education and engagement. On average, survey respondents "agreed" to "strongly agreed" that it is important to maintain/enhance opportunities for learning about the Metroparks and their environmental processes. Beyond these explicit themes, many other responses were built on education and engagement, such as facilitating connections to these settings. Quotes exemplifying facilitation of climate education and engagement in the Metroparks include:

- "[Having opportunities] to enjoy family activities while still being able to access nature trails and centers, and to continue to learn about plants and animals native to the area, as well as weather and climate."
- "We really enjoy the programs that teach the kids about nature, and the issues it's facing, but it also leaves them without knowing much of WHAT to do about it. Having more programs centered around the kids getting together to figure out what they can do, groups to write to organizations, setting up clean up groups, etc. I think the parks are a perfect place to have that be where they can meet up to do that."

## Objective 1: Beginning in 2024, provide an annual education to all Metroparks staff on issues of climate resilience, climate equity, stewardship, and adaptation.

Importance/Relevance

To understand climate action, we must be educated about it. We must recognize how climate is impacting the lands entrusted to us and consider solutions that will ensure these lands will be accessible to southeast Michigan for generations to come. The Metroparks is committed to ensuring our staff has access to the most current and innovative information available. We will dedicate the resources necessary to ensure our staff remain on the cutting edge of climate resilience, and thus climate action.

Near-term Actions

- Action 1.1: Identify topics and trainers for staff training.
- Action 1.2: Offer in-house training in collaboration with partners, opportunities to attend webinars or other local conferences, and access to climate education resources for the purpose of expanding knowledge to incorporate into daily work.
- Action 1.3: Hold workshops for staff and speaker series to educate why climate smart practices are implemented.

Metrics of Success

- Four educational workshops (speaker series) will be provided about climate initiatives, conducted by industry leaders, and aimed to increase the knowledge of Metroparks staff, regardless of job classification.
- Metroparks staff will participate in at least one workshop/webinar/continuing education seminar with a climate initiative focus that pertains to their department. Training will be selected by departmental lead or designated committees.
- By 2025, two Learning Management System (LMS) trainings will be identified and made available for staff.

## Objective 2: Beginning in 2024, provide collective engagement tools across every department within the Metroparks on issues of climate resilience, climate equity, stewardship, and adaptation on an annual basis.

Importance/Relevance

Collective engagement fosters participation. It enables the exchange of ideas, knowledge, and expertise between different stakeholders. By centering this engagement strategy, we can harness the collective wisdom and creativity necessary to develop innovative solutions for mitigating and adapting to climate change at the Metroparks.

Near-term Actions

- Action 2.1: Create storytelling pieces around why the Metroparks have adopted a CAP, to be shared on all communication channels. Example engagement tools include public events in underrepresented communities, blogs, surveys, story maps, and social media and traditional communication strategies. These will incorporate stories/engagements from the public and be developed by every department.
- Action 2.2: Collaborate with other departments, partners, and the community to create an annual story collection process about topics including but not limited to: Ozone Action Days, prescribed burns, burning tree debris, environmental justice, mental health and wellness, composting/food waste, recycling, Leave No Trace campaigns, and reducing energy and fuel consumption.

Metrics of Success

- Collaboratively create a monthly engagement, combined annually as a story collection (12 stories).
- Provide four educational workshops or speaker series events about climate initiatives, conducted by industry leaders, aimed to increase the knowledge of Metroparks staff and visitors.

## Objective 3: Integrate concepts of climate change into existing and new programs at the Metroparks and throughout our region.

Importance/Relevance

Climate education plays a vital role in this plan. It encompasses various projects that explore the evolving climate and the outdoor environment. The objective is to connect these topics to educational standards and utilize students' engagement with the natural world to foster learning across different subject areas. These programs will also address climate justice concerns, including the disproportionate social impacts of environmental issues. The ultimate goal is to contribute to the development of pro-environmental attitudes over time.

Near-term Actions

- Action 3.1: Increase Green School participants across the five-county region by 10% by 2028.
- Action 3.2: Increase teacher training opportunities by 10% by 2028, by offering accredited continuing professional development to improve teachers' personal understanding and ability to incorporate current data and science of our changing climate and its impacts into classroom instruction.

- Action 3.3: Collaboratively develop new programs by 2025, that allow students to research climate change effects (e.g., green-up/green-down, water quality, invasive species).
- Action 3.4: Beginning in 2024, address climate action in exhibits and programs.
- Action 3.5: Beginning in 2024, create an images-based community science project.
- Action 3.6: Beginning in 2024, staff will consider climate action best practices when planning and implementing programming.

*Exhibits and programs will examine complex, hidden, non-linear relationships. Non-linear relationship examples include ecology, which focuses on understanding the distribution and abundance of life on Earth and is a complex, nonlinear science. If environmental education is linear (e.g., teaching that recycling one beer bottle will save "x" gallons of water), people will not have the foundation to think about linkages or nonlinear relationships.*

Metrics of Success

- Number of Green School participants increased by 10%.
- Number of teacher education programming offered by 10%, and feedback received from participants.
- Internal audit conducted of interpretive programs and displays for climate relevant messaging.
- Conducted 50% programs annually as part of the center repertoire of public offerings.
- Climate change messaging incorporated in new interpretive exhibits as the feature of the exhibit or as a supplement to the core message.
- Photo station installed and activated, for visitors to take images within the parks over time.

**Objective 4: By 2028, host an Interpretive Regional Climate Action Conference, encouraging Interpreters and educators from across the region to attend and present on climate-related programming that they conduct. This would introduce staff to potentially new, innovative ways of presenting climate programming.**

Importance/Relevance

Increase educational opportunities for staff that could, in turn, be used to educate the public, while emerging as a leader in the region on climate change-related programming. Potential partners include National Association for Interpretation, Association of Nature Center Administrators, regional nature centers, and local colleges and universities. Hosting a regional climate action conference can be a powerful way for the Metroparks to enhance its climate actions. Such activities have the potential to bring together stakeholders from various sectors, including government, businesses, academia, and non-profit organizations, to exchange knowledge, share best practices, and collaborate on climate initiatives.

Near-term Actions

- Action 4.1: Work with partnering organizations to host a Climate Action Conference for formal and informal educators by 2028.

Metrics of Success

- Executed partner agreements that include the date(s), time, specific location of the conference, and the roles and contribution of each partner.
- Host climate action conference by 2028.
- Conference evaluation conducted.

Long-term Actions

- Action 4.2: Expand/ramp up Climate Action Conference based on feedback from previous conference to increase effectiveness and ensure learning-outcomes are up to date.

# GOAL 2. PRESERVATION AND CONSERVATION OF NATURAL RESOURCES

**Protect and enhance natural resources to ensure longevity of important ecosystems in a changing climate, to preserve these resources for the benefit of future generations.**

Themes Integrated

Sustainable Land Use, Transportation, Partnerships, Internal Governance (policy), Biodiversity, Education, Equipment, Recreation, Natural Resources, Parks and Green Spaces, Public Health and Safety

DEI Considerations

- **Environmental Justice and Advocacy**: Recognizing that marginalized communities often bear a disproportionate burden of environmental degradation and prioritizing the equitable distribution of benefits and mitigation of environmental harms.
- **Traditional Knowledge and Indigenous Perspectives**: Acknowledging, respecting, and incorporating Indigenous perspectives and practices to enhance the effectiveness of preservation and conservation efforts.

## ABOUT GOAL 2. PRESERVATION AND CONSERVATION OF NATURAL RESOURCES

Natural resources are resources present in nature, including soil, vegetation, wildlife, and natural waters and wetlands. **Preservation** focuses on maintaining the park's original state, protecting ecosystems, habitats, and historical features. This ensures that future generations can enjoy the park's unique beauty and learn from its historical significance. **Conservation** emphasizes sustainable use and management of park resources, balancing human activities with the park's long-term health. This includes responsible tourism, wildlife management, and promoting environmentally-friendly practices.

Preservation and conservation are essential for parks to maintain their natural beauty and protect them for future generations. By valuing and caring for our parks, we ensure their long-

term existence and the benefits they bring to people and the environment. Here are a few reasons why preservation and conservation are important for parks:

- *Biodiversity Protection*: Parks contain diverse plant and animal species. Preservation and conservation safeguard these ecosystems, protecting endangered species and maintaining a balanced environment.
- *Ecological Balance*: Preserving and conserving parks maintains ecological balance and prevents the loss of habitats, allowing plants and animals to thrive.
- *Cultural and Historical Significance*: Parks hold cultural and historical value with archeological sites and landmarks. Preservation efforts protect these features, connecting us with our past and heritage.
- *Recreation and Education*: Parks offer outdoor recreation and educational experiences. Preserving and conserving these areas allows us to continue activities like hiking and camping while learning about nature and conservation.
- *Climate Change Mitigation*: Parks act as carbon sinks and preserve habitats that store carbon, helping mitigate climate change. Protecting and conserving parks contributes to global efforts against climate change.

Preservation and conservation of natural resources emerged repeatedly as both a climate-related concern and an area of unique Metroparks climate action contribution. Across the public data collections, the presence and integrity of natural resources was stressed as a highlight of the Metroparks and where actions could be taken that have outsized positive impact across the region. Common themes in the focus groups related to noticing and being concerned about the impacts of climate change on:

- plants (e.g., more non-native or invasive species, changes in plant species compositions, shifting growing seasons, increased dead and downed trees);
- wildlife (e.g., changes in bird species presence and migratory patterns, changes in wildlife behavior, increases in human-wildlife conflict, more disease prevalence); and
- pest species, particularly mosquitoes, ticks, and invasive aquatic species.

Together, these resources were a top climate concern regionally (33.7% of focus group responses; 25.0% of survey responses) and in the Metroparks (30.8% of focus group responses; 29.7% of survey responses). Staff responses were similar to those of visitors and community members.

Importantly, preservation and conservation of natural resources was repeatedly mentioned in what visitors and community members would like maintained in the Metroparks in the future. These mentions centered specifics such as clean air and water, biodiversity, green space conservation, and sound natural resources management. They were also prioritized for maintaining / enhancing, second only to outdoor leisure and beauty (which rely in part on preservation and conservation of natural resources). Specific, highly valued cultural connections (averaging a response between “agree” to “strongly agree”) included knowing that these resources are protected and conserved for future generations and promoting habitat connectivity. The relationships among these resources and with others in the environment were repeatedly emphasized in the long-term vision of opportunities the Metroparks should provide. This is illustrated through expressions shared such as:

- “Tick situation controlled responsibly so we can hike and swim. A lot to hope for with maintaining what we have now!”
- “Parks have more focus on a diverse natural community – prairies, savannahs, etc. – diversity in the broad sense. We need diverse natural communities to withstand the issues climate change presents.”

- "I'd like to see connectedness throughout the parks, with a focus on the habitat and wildlife in the interconnectedness between parks."
- "I really like the idea of no-mow zones."

Partnering organizations also emphasized ways in which they would appreciate the Metroparks' collaboration on conservation and preservation of natural resources across the region. In particular, they saw benefit in Metroparks climate actions that would align or co-create natural resource programs regionally, protect additional lands to increase the extent of intact ecosystems, increase native vegetation (especially near water bodies), and reduce mowing.

## Objective 5: protect important natural resources elements, including threatened and endangered species, and preserve biodiversity of ecosystems facing the pressures of climate change.

Importance/Relevance

Protection of ecosystems and the biodiversity they contain is core to the Metroparks mission of providing the benefits of parks and recreation to the people of southeast Michigan. Protecting natural resources and biodiversity within parks benefits current park visitors and future generations, safeguards rare and endangered species, and provides people with opportunities to experience nature that can inspire conservation. As such, maintaining the ecological integrity of the Metroparks through resource stewardship and protection should remain a top priority for park managers and the public alike.

Near-term Actions

- Action 5.1: Identify important habitats and determine which ecosystem types are most threatened by climate change. Habitats will be identified and ranked by 2028.
- Action 5.2: Create a formal review process for the Natural Resources Department to assess the impact of trails and development on natural areas with multi-departmental review, to be implemented on new developments, repair work, etc., by 2028.
- Action 5.3: Identify specific tree species that are vulnerable to a changing climate and select suitable replacements (for all new plantings) that will preserve ecosystem integrity under changing conditions. These trees should be used in all landscaping, project design, and restoration efforts by 2028.

Metrics for Success

- A ranked list of important habitats, vulnerable to climate threat by 2028.
- Formal review process for trail development established by 2028.
- All landscaping, project design, and restoration efforts are utilizing suitable tree species by 2028.

Long-term Actions

- Action 5.4: Create an "eyes-in-the-field" type app or program, to document presence of endangered species, by crowdsourcing data collection and helping educate staff and the public. This would include a portal for invasive species identification and reporting, similar to the Midwest Invasive Species Information Network. Target pilot app or program for internal use and testing by 2028, and release for public use by 2033.
- Action 5.5: Develop habitat or species management plan for critical threatened and endangered species identified within the Metroparks, with a section devoted to climate

change pressures and strategies to mitigate them by 2028. We will begin to address species of special concern by 2033. Each plan will be reviewed and approved by the Board of Commissioners. Actions will be identified and integrated into relevant park master plans, and budgeted on a prioritized annual basis.

**Objective 6: integrate our land management best practices to align with the changing climate and adapt habitat management strategies and plans for on-the-ground work consistent with best management practices.**

Importance/Relevance

As the climate changes, practices for the maintenance of Metroparks natural resources must change also. These practices must be evaluated and updated, to ensure that our resource management is sustainable in the long term. Habitat management in parks aims to preserve and enhance the natural habitats that support biodiversity, wildlife populations, and ecosystem functions. Parks provide refuge for nature, but still require active management practices (e.g., controlled burns, removal of invasive species, replanting of native species) to maintain healthy habitats and resist threats, ensuring that future generations can experience and value natural areas. Through sound habitat management, parks can fulfill their mission of conserving ecosystems and the wildlife that depend on them.

Near-term Actions

- Action 6.1: Identify staff training needs associated with this objective.
- Action 6.2: Create and enact an Early Detection and Rapid Response (EDRR) survey protocol, to detect and respond to emerging invasive species threats, specific to each Metropark by 2028.
- Action 6.3: Develop and implement a framework for assessing and reviewing fieldwork, monitoring ecosystems, and identifying the need to adjust practices based on climate changes by 2028.
- Action 6.4: Seek training opportunities for Metroparks staff to learn about climate change and how it affects their fieldwork. Training will include suitable native species selection for landscaped areas.
- Action 6.5: Use community partnerships and volunteer workdays to educate the public on changing best management practices and share lessons learned.
- Action 6.6: Develop a policy of mowing reduction on Ozone Action Days, to include as an update to the established mowing plan. This policy should identify and suggest the mowing of select critical areas, as needed, on Ozone Action Days, forgo regular mowing during these days, and communicate to the public why mowing may be reduced in certain areas.

*Early Detection and Rapid Response (EDRR): A coordinated set of actions to find and eradicate potential invasive species in a specific location before they spread and cause harm.*

Metrics of Success

- EDRR survey protocol specific to each Metropark created.
- Framework for assessing fieldwork and adjusting practices based on climate threats developed.
- Identified staff will attend three climate-related training sessions by 2028.
- Host volunteer days specific to educating the public on the reasons for changing best management practices for ecosystem management in a changing climate.
- Policy regarding mowing on Ozone Action Days created and implemented.
- Development of a communication strategy with the Marketing Department to communicate park actions (or non-actions) to the public.

Long-term Actions

- Action 6.7: Evaluate potential changes in equipment, reduction of 2-cycle engines, and guidance on more restrictive emission standards (e.g., California's).
- Action 6.8: Identify ways to address these changes in purchasing policy and vendor offers.
- Action 6.9: Seek grant funding to assist in this conversion.

## Objective 7: Enhance, expand, and restore natural areas and strengthen the ability of ecosystems to combat pressures of climate change.

Importance/Relevance

In a changing climate, certain ecosystems may face greater pressures and require additional support to thrive. The Metroparks must review important habitats and identify habitats that have the highest priority for protection, or can be enhanced to improve climate resiliency. Enhancing, expanding, and restoring natural areas within the Metroparks provides a wide range of benefits that improve the environment, health, and quality of life for residents. As urban areas continue to grow, it is important for communities to prioritize protecting and improving natural areas within local parks, to ensure future generations can enjoy and benefit from access to nature. With careful planning, design, and stewardship, natural areas can thrive within the Metroparks and offer lasting value for the community for years to come.

Near-term Actions

- Action 7.1: Improve forest health and increase tree canopy cover to create healthy habitat, improve air filtration, and increase carbon storage in the Metroparks.
- Action 7.2: Review known sensitive habitats, and identify the habitats with the most potential for improvement. Update ranking system and prioritize three management units per district for targeted restoration by 2028.
- Action 7.3: Enhance selected no-mow zones with pollinator-friendly grassland and savanna species.

Metrics of Success

- Expanded softened shoreline along inland lakes by 5% by 2028, up to 90% total natural shoreline makeup.
- Met a 10% increase in natural shoreline cover through restoration of great lakes shoreline by 2028, and 20% by 2033.
- Converted 100 acres of no-mow area to pollinator-friendly grassland and savanna habitats by 2028, and 200 acres by 2033.

- Updated habitat ranking system, with three management units per district prioritized for targeted restoration by 2028.

Long-term Actions
- Action 7.4: Restoration efforts ongoing to target 2033.

**Objective 8: protect existing and acquire additional undeveloped lands as a resource to buffer ecosystems and infrastructure from the pressures of surrounding land use and effects of climate change. Consider divestment of undesired parcels and reinvestment in acquisition of critical parcels.**

Importance/Relevance
The Metroparks has an existing property acquisition and divestment policy. This policy should be updated to review acquisition and divestment of properties through a lens of climate resilience. The Metroparks are in the position to acquire properties for the purpose of buffering ecosystems and infrastructure and mitigating pressures of surrounding land use in a changing climate. The acquisition of property through purchase, donation, or other means is critical for establishing and maintaining parks that meet communities' needs. By securing the land and space that we require, the Metroparks can then develop recreational and conservation amenities that improve quality of life for residents long-term.

Near-term Actions
- Action 8.1: Review the current land acquisition/divestment policy (conducted by the Natural Resources Department leadership), and update if needed.
- Action 8.2: Identify adjacent land managers and coordinate conservation of buffer ecosystems across boundaries, to be included in all ecosystem management plans by 2028.
- Action 8.3: Acquire an additional 1000 acres, preferring in contiguous parcels, by 2028, for the specific purpose of maintaining as undeveloped land.
- Action 8.4: Identify areas totaling 200 acres within currently developed lands that can be converted back to undeveloped areas by 2028.
- Action 8.5: Identify properties within Metroparks' ownership that are underutilized and good candidates for divestment, according to established acquisition and divestment strategy plan.
- Action 8.6: Prioritize climate resiliency of parcel acquisition.

Metrics of Success
- Review current land acquisition/divestment policy, with policy recommendation for Board of Commissioners consideration (if needed).
- List developed of adjacent land managers and conservation of buffer ecosystems.
- 1000 acres of land acquired for preservation by 2028.
- 200 acres of land converted from developed to undeveloped by 2028.
- Acres of mowed turf decreased.

Long-term Actions
- Action 8.7: Decrease regularly mowed areas within the Metroparks by 5% by 2033.
- Action 8.8: Implement a cover crop planting policy, field rotation, and no till farming; seek equipment needed and training for staff; and identify best management practices for staff and conditions for leased land.

- Action 8.9: Identify potential locations for solar, wind, and other green energy generation installations.
- Action 8.10: Implement conversion of developed land back to undeveloped.

## Objective 9: Build strategies into all "existing and future" plans to incorporate climate adaptation resilience.

Importance/Relevance

The Metroparks has a variety of standing plans and strategies that will include climate adaptation and resilience as they are updated. Climate adaptation is crucial for the Metroparks to ensure we remain resilient and continue providing benefits to our region. As climate change brings higher temperatures, sea level rise, and more extreme weather events, parks face threats like habitat loss, invasive species, and infrastructure damage. The strategies may vary by park and threat, but the overarching goal is the same: to ensure the Metroparks can continue fulfilling their vital roles for people and nature in a warming world.

Near-term Actions

- Action 9.1: Develop a policy with standards for selecting vegetation or trees for planting, selecting native species that are hardy or resilient to climate pressures by 2024.
- Action 9.2: Advocate for local climate monitoring efforts, to incorporate future climate models and projections into climate resilience planning beginning in 2023. Examples of climate monitoring data sources to be used include FEMA's Hazard Mitigation Plan, the EPA, USGS, and the State Senate.
- Action 9.3: Create regional partnerships to define mutual goals for integrating climate resilience plans and identifying funding sources by 2025.

Metrics of Success

- Development of policy with standards for selecting vegetation or trees for planting and presented to the Board of Commissioners for consideration.
- If adopted by the Board of Commissioners, policy implemented on all internal and contracted projects by 2028.
- All lands leased by the Metroparks will hold lessee to internal standards according to the CAP by 2028.
- Development of a database of regional partners and mutual goals for integrating climate resiliency plans and funding strategies.

Long-term Actions

- Action 9.4: Incorporate climate resilience and impact analysis into infrastructure development and maintenance planning.
- Action 9.5: Review all current natural resources plans and incorporate specific strategies to combat climate change.

## Objective 10: Increase capacity for carbon storage in natural areas and pursue projects for the intentional storage of carbon.

Importance/Relevance

Natural areas generally provide capacity for carbon storage, but some ecosystems provide a higher capacity to store carbon. The Metroparks should identify low potential storage or fallow

lands and enhance capacity for carbon storage through intentional projects, or by increasing passive capacity. Vegetation (trees, shrubs, and grasses) in parks and green spaces serves as a low-cost, natural solution to help mitigate the impacts of excess carbon dioxide in urban environments. With proper care and management, the Metroparks can continue to provide important carbon benefits for cities for many years.

Near-term Actions

- Action 10.1: Identify a consultant and/or partner to assess the level of carbon currently stored in the Metroparks.
- Action 10.2: Develop policy governing composting practices in internal operations by 2028.
- Action 10.3: Identify the education necessary to support innovative carbon storage solutions.
- Action 10.4: Partner to plant 10,000 native trees across the Metroparks' five-county area by 2028 (2,000 bare root saplings per year).
- Action 10.5: Incorporate fuel assessment and carbon release into planning related to prescribed fire and burning of tree debris. Provide education and rationale internally and broadly to Metropark visitors on these practices.

Metrics of Success

- Create and finalize a report on current carbon levels stored in the Metroparks.
- Completed employee training(s) on carbon storage issues and strategies within the Metroparks.
- Composting policy created by 2028.
- 10,000 trees planted.
- Prescribed fire and burning plans updated by 2028.

Long-term Actions

- Action 10.6: Engage in carbon offsetting, provide sink for vehicles or other emissions.
- Action 10.7: Protect, expand, and improve tree canopy coverage.
- Action 10.8: Evaluate forestry management practices to selectively develop and harvest stands of timber for carbon storage initiative funding.
- Action 10.9: Address procurement policies, local sources, food operations, and materials, in an effort to reduce transportation carbon costs and footprints.
- Action 10.10: Evaluate opportunity to purchase, or provide, Regional Carbon Banking or Credits.

*Carbon footprint[2]: The total amount of greenhouse gasses that are emitted into the atmosphere each year by a person, family, building, organization, or company.*

# GOAL 3. WATER QUALITY

**Enhance built and natural stormwater infrastructure in preparation for increasingly intense storms, and promote the protection of water quality.**

Themes Integrated
Stormwater Management, Natural Resources, Education, Partnerships, Water Conservation, Facilities/Amenities/Infrastructure, Internal Governance

DEI Considerations

- **Accessibility**: Requires that access to clean water in parks is equitable, meaning it should be available to all individuals, regardless of their race, ethnicity, socioeconomic status, or ability. This includes drinking water and water features such as beaches, splash pads, and pools.
- **Awareness and Education**: Efforts should include educational initiatives that raise awareness about the importance of water quality and its impact on public health. These programs should be designed in ways that are inclusive and culturally sensitive, taking into account the diverse backgrounds and languages spoken within our service region.
- **Community Engagement:** Actively engaging with the community to understand their specific water quality concerns and needs. By learning from the communities most impacted, we can better understand the specific challenges and support efforts to develop solutions that meet the needs in our service region.
- **Environmental Justice and Advocacy:** Advocating against environmental injustices that disproportionately affect under-resourced communities. This includes disparities in water quality, such as contaminated water sources or inadequate infrastructure, that may exist in historically marginalized neighborhoods.
- **Partnerships and Collaboration:** Advocacy efforts are strengthened through partnerships with community organizations, local government agencies, and environmental advocacy groups. Collaborative approaches can help address water quality issues in the Metroparks and in communities through collective advocacy from multiple perspectives and expertise for more effective decision-making.

## ABOUT GOAL 3. WATER QUALITY

Stormwater management refers to efforts to capture, filter, and store rainwater through a combination of natural and constructed elements. This management ensures protection of water quality by mitigating pollution runoff, absorbing storm events, and facilitating the local water cycle.

There are many approaches to stormwater management, which include both gray (built) and green (natural) infrastructure used in cities and/or parks. **Gray stormwater infrastructure** refers to human-constructed systems that help to collect and channel stormwater to prevent flooding and erosion[24]. Examples include storm drains, retention ponds, and underground storage tanks. **Green stormwater infrastructure** mimics or uses natural landscape features to absorb rainfall and slow the rate and amount of stormwater runoff[6]. Examples include wetlands, bioswales, and rain gardens. These techniques also act as natural filtration

systems to lakes and streams, absorbing chemicals or unwanted materials out of the water before it reaches our waterways.

Together, these built and natural stormwater infrastructure components provide a comprehensive approach to managing stormwater. By capturing and controlling stormwater, they help mitigate the impacts of intensifying storms and protect the park and surrounding areas from effects such as flooding, erosion, and other damage. This also helps to protect the health of neighboring water resources. Michigan benefits from an abundance of healthy water resources for drinking, irrigation, recreation, etc. The Metroparks are situated along the Huron and Clinton Rivers and are responsible for 14 miles of Great Lakes shoreline and 3,634 acres of inland lakes. Protecting the water resources of southeast Michigan is one of our essential responsibilities, and with a changing climate this is becoming increasingly dire. By enhancing our stormwater infrastructure systems and water quality, we are ensuring the overall sustainability and resilience of the park ecosystem.

During the data collections supporting the creation of this CAP, water quality was a priority for visitors, regional residents, partnering organizations, and Metroparks staff alike. For example, many have observed “more intense rain when it happens” and its impacts in southeast Michigan. Issues with stormwater/flooding and water quality (and associated recreation) were prominent too. These were repeatedly discussed in relationship to issues with stormwater management and related infrastructure. They also centered the negative impacts poor water quality has on the environment and recreation opportunities (e.g., algal blooms, beach closures, flooded and inaccessible trails). Water quality and stormwater management issues were listed as a top climate concern – regionally and in the Metroparks. In the focus groups, 29.1% of the top concerns regionally and 24.0% of the top concerns in the Metroparks were related to water quality and stormwater management. Survey respondents answered similarly, with 25.6% noting water quality or stormwater management issues as a top concern regionally and 24.2% noting either as a top concern of theirs in the Metroparks.

*Algal blooms[25]: Sudden spurts of algal growth, which can affect water quality adversely and indicate potentially hazardous changes in local water chemistry.*

*Erosion[25]: The wearing away of the land surface by wind or water. Erosion occurs naturally from weather or runoff but is often intensified by humans’ land-clearing practices.*

*Filtering stormwater: The process of passing stormwater through natural or built green infrastructure. Filtering captures, temporarily stores, and treats stormwater through this process before the water moves into a storm drainage system or the environment*

*Green infrastructure[6]: a technique to help control and manage stormwater. These practices filter and absorb stormwater, and assist in mitigating flooding and other damages. Examples of green infrastructure are rain gardens, green roofs, permeable pavement, and bioswales. This is contrary to gray infrastructure, which is the more traditional built environment made of surfaces that increase runoff and do not allow water to be absorbed into the ground, but rather channel it away[24]. Examples of gray infrastructure include storm drains and ditches.*

*Irrigation[25]: Applying water or wastewater to land areas to supply the water and nutrient needs of plants.*

**Objective 11: Beginning in 2024, provide annual education opportunities to staff on issues of stormwater management and water conservation.**

Importance/Relevance

Education on stormwater management and water conservation is crucial for park staff. Understanding stormwater management is essential to prevent flooding and erosion within the parks. By learning about effective drainage systems, Metroparks staff can implement measures to capture and divert stormwater runoff, reducing the risk of damage to park infrastructure and habitats.

Education on water conservation helps Metroparks staff make informed decisions about water usage. By understanding the importance of water conservation, staff can implement strategies such as using efficient irrigation systems, reducing water waste, and promoting water-saving practices among visitors. This helps to protect the environment and also contributes to cost savings and sustainability. Having knowledge about stormwater management and water conservation allows Metroparks staff to act as advocates and educators for visitors. By sharing information and raising awareness about these topics, staff can encourage visitors to adopt responsible water usage practices and contribute to the overall conservation efforts in the parks and beyond.

Near-term Actions

- Action 11.1: Develop methods of communication with and for Metroparks staff related to stormwater management and water conservation.
- Action 11.2: Offer staff in-house training, opportunities to attend webinars or other local conferences, and access to water quality resources for the purpose of expanding knowledge to incorporate into daily work.

Metrics of Success

- Four educational experiences provided by Natural Resources Department for staff across the Metroparks, in coordination with education goals/objectives about climate initiatives, conducted by industry leaders, and aimed to increase the knowledge of Metroparks staff, regardless of job classification.

- Metroparks staff have participated in at least one workshop/webinar/continuing education seminar with a climate initiative focus that pertains to their department. Training will be selected by departmental lead or designated committees.
- Staff can demonstrate learning by incorporating it into their work responsibilities (i.e., transfer of knowledge).
- By 2025, two Learning Management System trainings will be identified and scheduled for staff participation.

Long-term Actions

- Action 11.3: Demonstration projects for long-term living labs.

## Objective 12: Adopt innovative strategies to capture and manage stormwater in preparation for more severe storms and educate the public about these efforts.

Importance/Relevance

Adopting innovative strategies to capture and manage stormwater is crucial in preparation for more severe storms. As our climate continues to change, the frequency and intensity of storms are predicted to increase. By implementing innovative stormwater management techniques, we can minimize the adverse impacts of these storms on our communities and the environment.

One of the primary reasons for adopting these strategies is to prevent flooding and reduce the risk of property damage. Severe storms often result in excessive rainfall, which can overwhelm traditional stormwater systems and lead to flooding. By capturing and managing stormwater effectively, we can reduce the burden on existing infrastructure and mitigate the risk of floods.

In addition to flood prevention, innovative stormwater management strategies can help protect water quality. During storms, rainwater picks up pollutants such as oil, chemicals, and debris as it flows over surfaces and into traditional storm drains. This polluted stormwater is then discharged into local water bodies, causing harm to aquatic ecosystems. By implementing innovative techniques, such as green infrastructure and permeable surfaces, we can filter stormwater before it enters natural waterways, improving water quality and protecting the environment.

Educating the public about these efforts is equally important. By raising awareness about the need for stormwater management and the benefits of innovative strategies, we can foster a sense of responsibility and encourage individuals to take action. Public education can help promote behaviors such as reducing runoff, conserving water, and adopting sustainable landscaping practices. When the public is informed and actively involved, the collective impact of stormwater management efforts is amplified, leading to more resilient communities and ecosystems.

Near-term Actions

- Action 12.1: Identify internal education needs related to stormwater management, including financial considerations.

- Action 12.2: Work with partners and/or consultants to identify options and determine the viability of each.
- Action 12.3: Based on the findings, develop a pilot project utilizing innovative strategies (e.g., green roof, permeable pavement, bioswales, increase culverts).
- Action 12.4: Create a list of 5-10 projects where innovative strategies might be employed, including financial analysis.
- Action 12.5: Present pilot project to the Board of Commissioners.

Metrics of Success

- Provision of stormwater management education to all Metropark staff.
- Connected with partners and/or consultants to assist in the identification of suitable options.
- Development of a list of innovative stormwater management strategies.
- Strategy list presented to and approved by the Board of Commissioners.
- Development of stormwater management pilot project and assessment of efficacy.

Long-term Actions

- Action 12.6: Plan an additional five projects with potential to innovate and provide information to the public.
- Action 12.7: Result of pilot projects communicated to public and partner agencies.

## Objective 13: Become a prominent stormwater management partner in the region.

Importance/Relevance

The Metroparks must become a prominent partner in stormwater management in the region; as we are a large land steward and manager of green and blue space in southeast Michigan, and with much of it located along the corridor of two major rivers and Great Lake shoreline. By partnering with similar organizations, the Metroparks can advance the adoption of innovative strategies to manage stormwater in a changing climate across the region.

Near-term Actions

- Action 13.1: Identify important stormwater corridors, documenting and providing staff with locations, jurisdictions, and responsibilities by 2028. This documentation includes description of the opportunities, challenges, and possible solutions.
- Action 13.2: Actively research and identify innovative global and regional strategies for stormwater treatment methods, and adapt to the Metroparks system. These strategies should be incorporated into all stormwater partnerships.
- Action 13.3: Share at least 20 articles or blog posts with the public related to stormwater climate action by 2028.

Metrics of Success

- An internal document created that identifies stormwater corridors and related responsibilities.
- Regional standard policy created for engineering standards.
- Stormwater management partnerships created, joined, or facilitated.

Long-term Actions

- Action 13.4: Identify existing local and regional stormwater partnerships and how the Metroparks can collaborate. Identify stormwater management gaps in the region and partnerships that need to be created to address these gaps in stormwater leadership.
- Action 13.5: Create an internal policy establishing a regional Metroparks standard for stormwater management, adhering to or exceeding individual county engineering standards.
- Action 13.6: Develop plans or recommendations for maintenance of stormwater corridors by 2033, implementing them (e.g., resolving conflicts and reroutes) after 2033.

## Objective 14: Adopt a practice of strategic water usage that minimizes stress on and protects regional water resources.

Importance/Relevance

Southeast Michigan and the Metroparks benefit from an abundance of healthy water resources, which will be under increased pressure as the climate changes. Many communities in southeast Michigan rely on underground aquifers for drinking water, but a shift to reliance on surface water (e.g., lakes, rivers, streams) may occur as the climate changes. The protection of these resources from overuse and pollution will ensure that these services remain available for communities.

Near-term Actions

- Action 14.1: Determine the current level of water use in the Metroparks, including golf courses, water features, buildings, etc.
- Action 14.2: Identify innovative strategies and the financial viability to reduce water usage.
- Action 14.3: Create an inventory of water usage (the draw of water on natural or municipal water resources) within facilities, buildings, bathrooms, splash pads, pools, etc., and install sub-meters to monitor and actively manage water usage rates by 2028.
- Action 14.4: Collect rainwater runoff from buildings and store rainwater to irrigate landscaped areas.
- Action 14.5: Establish targets for water use reduction.
- Action 14.6: Reduce irrigation of landscapes, implementing resilient plantings and identifying areas to reduce turf.
- Action 14.7: Evaluate potential for irrigation with gray water using cisterns, rain barrels, and other local stormwater storage elements.
- Action 14.8: Install timer and motion sensor faucets, waterless or low volume urinals and toilets, dual flush valves (low versus full volume flush), and other water use reduction equipment on all new facilities by 2028.

*Gray water[24]: Untreated wastewater that has not come into contact with toilet waste. Graywater includes wastewater from bathtubs, showers, bathroom wash basins, clothes washing machines, laundry tubs, or an equivalent discharge.*

Metrics of Success

- Create and measure inventory of metered water usage.
- Development of water use reduction strategies, each including a financial analysis.
- Implementation of pilot projects to collect rainwater runoff from buildings to be reused onsite;
- Installation of water saving equipment in new facilities.
- Policies created to address water usage.

Long-term Actions

- Action 14.9. Dedicate staff and resources to maintain water utility installations and hardware. Evaluate potential for retrofit on existing facilities by 2033.
- Action 14.10: Evaluate splash pads and other aquatic facilities' ability to capture, filter, and reuse water in operation. In new facilities or infrastructure, show preference on design of systems with reuse of water.
- Action 14.11: Develop 1) a policy to use compressed air to blow grass clippings off mowing equipment and golf carts and 2) best management practices of washing equipment off into turf areas, where water can infiltrate rather than being conveyed into storm or municipal sewer.

*Retrofit[26]: To furnish something (e.g., computer, airplane, building) with new or modified parts or equipment not available or considered necessary at the time of manufacture.*

**Objective 15: Monitor and protect quality of water resources adjacent to and in close proximity of the Metroparks from pollution, erosion, contamination, and other detrimental effects exacerbated (i.e., accelerated or increased) by climate change.**

Importance/Relevance

A changing climate is expected to exert additional stress on local water resources as temperatures climb, seasons become more variable, and weather events become more extreme. It will be essential for the Metroparks to monitor these resources to identify emerging concerns and provide climate resilient solutions.

Near-term Actions

- Action 15.1: Actively monitor and treat algal blooms, identify trends, and establish survey protocol and areas at Kent and Stony Lakes by 2028.
- Action 15.2: Identify and evaluate potential training for staff to have certification for soil erosion and sedimentation control authority over Metroparks projects to ease administration of stormwater improvement projects.
- Action 15.3: Identify and design stormwater green infrastructure that will capture or filter an additional 10 million gallons annually by 2028.
- Action 15.4: Create public education pieces surrounding nutrient pollution (e.g., *Escherichia coli* or *E. coli*), related closures and reasons for closures, and methods the Metroparks are pursuing to reduce nutrient loads and keep lakes open.

*Nutrient pollution[25]: Contamination of water resources by excessive inputs of nutrients. In surface waters, excess algal production is a major concern.*

Metrics of Success

- Community monitoring plan for algal blooms created.
- Benchmark current stormwater capture using the EPA National Stormwater Calculator.
- Increase the gallons of stormwater treated or captured annually, including increased storage based on pre and post-construction capacity on stormwater projects.
- Published blog and/or social media posts educating about nutrient pollution and the Metroparks' efforts to reduce it.
- Based on analysis, installed and/or retrofitted stormwater infrastructure to best manage stormwater within the Metroparks.

Long-term Actions

- Action 15.5: Address critically eroded shoreline areas identified in the Stormwater Management Plan, restoring 30% of these areas by 2028, and 60% of these areas by 2033.
- Action 15.6: Create a stormwater plan element that identifies and prioritizes facilities and proposes to capture 100% of rainfall of a two-year, 24-hour storm event in all developed areas of the parks. Target 10 projects within this element to be installed by 2033.

## Objective 16: Partner with regional organizations, including government agencies, watershed councils, non-profits, and corporate and philanthropic organizations to identify alignment and advance mutual goals of water quality protection in a changing climate.

Importance/Relevance

As a regional organization invested in protection of water quality, the Metroparks must identify or create pathways to partner with outside groups to further mutual goals, advocate and provide input on issues of water quality and climate change where possible.

Near-term Actions

- Action 16.1: Identify regional organizations who share mutual goals of water quality protection and establish meaningful partnerships centered on water quality in each of our service counties.
- Action 16.2: Participate in professional groups, to meet potential partners and collaborate on water quality issues.
- Action 16.3: Identify funding opportunities that support partnerships around water quality.
- Action 16.4: Seek to be included or represented on boards pertaining to matters of water quality.

Metrics of Success

- Form a minimum of one partnership per county in the Metroparks service region focused of water quality.
- Identified and pursued funding opportunities to enhance partnerships.

Long-term Actions

- Action 16.5: Create a Strategic Partnership Matrix that identifies high, medium, and low priority partners in this work. Then create the plan to engage and nurture those partnerships.
- Action 16.6: Engage with the Metroparks' lobbying firm to connect with existing and potential partnerships.

## Objective 17: Advocate for the protection of water resources.

Importance/Relevance

As a large land manger and important stakeholder in regional water quality, the Metroparks should thoughtfully advocate for changes in legislation, funding resources, and other concerns.

Near-term Actions

- Action 17.1: Work with our Lobbying firm to engage and inform the Metroparks Caucus on pursuing action on Metropark priorities concerning water quality.

Metrics of Success

- Annual Metroparks Caucus letter issued.

Long-term Actions

- Action 17.2: Seek Board of Commissioners resolutions that support goals pertaining to water quality protection, formalizing Metroparks support for internal and external water quality initiatives.

# GOAL 4. TRANSPORTATION

**Reduce carbon emissions associated with transportation vehicle miles traveled and provide equitable transportation options to and within the Metroparks to help mitigate the impacts of climate change.**

Themes Integrated
Transportation, Recreation, Economic Development, Facilities/Amenities/Infrastructure, Partnerships, Public Health and Safety

DEI Considerations

- **Accessibility**: Parks are often located outside urban areas, and transportation provides a means for people to reach them easily. By having reliable transportation options, such as roads, public transit, or bike paths, parks become more accessible to all individuals, regardless of their location or physical abilities. Additionally, parks should provide transportation options that are accessible to individuals with differing levels of ability. This includes wheelchair accessible vehicles, ramps, and lifts and ensuring that pathways and routes are designed to accommodate a variety of mobility needs whenever and wherever possible.
- **Affordability**: Transportation options within the Metroparks should be affordable for visitors.
- **Inclusivity**: Transportation services within the Metroparks should be designed considering the diverse needs of visitors. Providing multilingual information and signage and training staff to be culturally sensitive and inclusive can help create a welcoming environment.
- **Safety**: Safety is a fundamental consideration in transportation within parks. This includes well-maintained vehicles, clear signage, and proper training for staff.
- **Partnerships and Collaboration**: Efforts can be strengthened through partnerships with community organizations, local government agencies, and environmental advocacy groups. Collaborative approaches can help address transportation issues in parks, ensuring that multiple perspectives and expertise are considered.

## ABOUT GOAL 4. TRANSPORTATION

Transportation is the movement of goods and persons from place to place and the various means by which such movement is accomplished. By eliminating reliance on fuel consuming vehicles and providing alternative transportation options, the Metroparks can reduce carbon emissions. By forging collaborative partnerships with regional transportation providers, the Metroparks can help to provide equitable access for all.

In the data collections and discussions supporting the creation of this CAP, transportation emerged as an important focus. Two-thirds (67.1%) of the community survey respondents use a personal vehicle to access the Metroparks. Considerable attention was given to developing capacity for electric vehicle (EV) charging stations, given this primary mode of access with a personal vehicle, as well as developing strategies for more public forms of access to the parks and considering incentives for more climate-friendly modes of transportation by visitors and staff. Related sentiments by community members expressed the desire for EV charging stations, such as “We should be able to drive there, hike, play,

swim while our cars charge, and thus impact the climate less and hopefully prevent furthering some of the major issues." Staff in particular highlighted issues with work travel within the organization and their commutes. Two main areas of staff suggestions emerged in the focus groups and on the survey: converting the Metroparks' fleet to EV and extending possibilities for remote work and/or virtual meeting attendance across park offices.

Partnering organizations discussed related areas as desirable for Metroparks collaboration. In particular, partners expressed that their goals and the Metroparks' could be co-promoted with Metroparks climate actions broadening trail network access, encouraging non-motorized transportation connectivity, and establishing an EV charging station network. These desired places for action were represented in quotes such as:

- "Outside of a few main locations, you really must drive to get into the parks. I think there's opportunity in some areas for local trails that are more connected into those communities."
- "When you look at the statistics, around 60% of the population is interested but concerned about riding bikes and non-motorized vehicles on our streets. If the infrastructure is there and maintained, I think there's an opportunity to promote and facilitate not having to drive to the park."

## Objective 18: Identify and evaluate efforts to reduce the vehicle miles traveled by Metroparks staff and reduce current levels of carbon emissions emitted.

Importance/Relevance

The Metroparks should use the nexus between transportation and park planning to mitigate its share of carbon emissions. The influence of transportation actions can be mitigated with tools and strategies for travel to and within the Metroparks with vehicle miles traveled effect by internal combustion engine vehicles and mowers.

Near-term Actions

- Action 18.1: Establish the current carbon emissions baseline and provide recommendations on ways to reduce it.
- Action 18.2: Advocate, promote, and incentivize alternatives to autocentric development patterns through close coordination between state, county, and local governments.
- Action 18.3: Calculate emissions reductions made by creating new no-mow areas.

Metrics of Success

- Complete carbon emissions assessment and share results with staff and public.
- Set carbon emissions reduction metrics based on assessment data.
- Decrease carbon emissions based on the established benchmarks.

Long-term Actions

- Action 18.4: Revise parking requirements, including reduction of parking and consideration of options for reducing reliance on single-occupancy vehicles and switching to climate-friendly travel options.
- Action 18.5: Support and participate in state, regional, and local infrastructure planning with a unified approach to planning for transportation investments.

## Objective 19: Explore the viability of using an EV fleet and developing EV charging infrastructure by 2033.

Importance/Relevance
Reducing dependency on internal combustion engines and building a system of energy efficient modes of transportation and the infrastructure to support it will reduce carbon emissions at the Metroparks.

Near-term Actions
- Action 19.1: Pilot program with two EVs with EV infrastructure and collect usage data.
- Action 19.2: Conduct an analysis to understand barriers to moving to electric, unexpected costs or savings, and expected carbon emission reductions.
- Action 19.3: Replace internal combustion engine equipment such as mowers and golf carts with electric options as equipment ages out.
- Action 19.4: Provide EV charging infrastructure for public use.

Metrics of Success
- Initial EV usage data collected.
- Completed EV infrastructure analysis.
- All internal combustion engine equipment have been replaced with electric options as equipment ages out.
- EV charging infrastructure in place for public use in at least one location per district by 2028.

Long-term Actions
- Action 19.5: Act on the findings of the pilot program, such as installing EV infrastructure for the public in all parks by 2033.
- Action 19.6: After evaluation of pilot program, transition Metroparks fleet (police, maintenance, operations, and administrative vehicles) to EV.

## Objective 20: Increase connectivity within our parks.

Importance/Relevance
Providing supportive infrastructure, such as trails, for visitors and staff to move between and within the Metroparks, which will reduce the carbon emission footprint within the park.

Near-term Actions
- Action 20.1: Based on a trail gap study, identify connectivity options between disconnected Metroparks by 2024.
- Action 20.2: Identify partners to address trail gaps by 2024.

Metrics for Success
- Development of a non-motorized infrastructure funding strategy by 2025.
- Development of a trail connectivity plan that includes partners' input by 2024.

Long-term Actions
- Action 20.3: Complete at least one trail gap identified by 2033.

- Action 20.4: Continue to expand the length of trail networks (hike-bike, nature, and rustic trails) to increase ability for non-motorized movement within Metroparks.
- Action 20.5: Complete all trail gaps identified by 2050, and all Metroparks are connected via non-motorized trails.

## Objective 21: Increase access to the Metroparks by centering environmental justice through every transit investment.

Importance/Relevance

Access to parks and green spaces should be a right available to everyone, regardless of income, ability, or neighborhood. Parks improve the mental, physical, and social health of community members when access is increased. Additionally, increasing access is an investment in the future of the Metroparks, as it helps to increase the number of potential stewards who will care for these natural spaces.

Near-term Actions

- Action 21.1: Partner with existing public transit agencies to develop efficient and equitable transportation to the Metroparks by 2026.
- Action 21.2: Identify locations to support public transit, including strategically placed destination/origin points by 2028.
- Action 21.3: Explore viability for public transit discounts to and from the Metroparks, including a financial impact analysis by 2028.

Metrics of Success

- Establishment of Public Transportation Service partnerships or Circulator or Commuter service in all three park districts by 2030.
- 100% of equity population zip codes within the Metroparks' five counties have access to transit service within a 10-minute walk to visiting Metroparks by 2030.
- Transit incentive programs increase visitation from community members living in equity zones by 25% by 2030.

*Equity Population[27]: High concentrations of various vulnerable groups in the region based on socioeconomic indicators of residences representing older adults, minority, transit dependent households, youth, and persons in poverty.*

## Objective 22: Create an internal EV transit system within the Metroparks that have the highest vehicle counts.

Importance/Relevance

Providing the opportunity for visitors to move throughout the Metroparks with zero emissions is important to promote climate-positive travel options, including emerging technologies as part of transit system design. Examples include autonomous vehicles and micro-mobility options.

Near-term Actions

- Action 22.1: Partner with existing public transit agencies to develop alternative vehicle transit opportunities for visitors to travel within the Metroparks by 2028.
- Action 22.2: Pilot circulator services at Kensington and Stony Creek Metroparks by 2028.

Metrics of Success

- Establishment of Public Transportation Service partnerships with EV transit.
- Pilot project implemented and completed.
- Infrastructure (bus stops, charging stations, and staff) available to support an internal EV transit system.

## Objective 23: Explore the viability of micro-mobility modes of transportation within Metroparks.

Importance/Relevance

Micro-mobility modes like bikes and e-scooters can be helpful additions to park transportation systems, including first/last mile travel options that do not require automobiles, such as walking, bicycles, scooters, and other micro-mobility options. They provide convenient, low-impact options for visitors to travel to and within the Metroparks.

> *Micro-mobility[28]: Transportation using small, low-speed vehicles such as bicycles or scooters, especially electric ones.*

Near-term Actions

- Action 23.1: Conduct an assessment on the viability of micro-mobility options, including a financial analysis, including our own bike-rental facilities by 2025.
- Action 23.2: Identify other areas in the Metroparks where it could be feasible to expand our bike-rentals by 2025.
- Action 23.3: Where the Metroparks do not have bike-rental facilities, if viable, partner with e-scooters, e-bikes, and other micro-mobility vendors to provide access for a more affordable mode of transportation within the Metroparks.

Metrics for Success

- Expanded bike-rental facilities (Metroparks owned or through vendors) throughout the Metroparks by 2028.
- 10% increase in micro-mobility rentals by 2028.

# GOAL 5. WASTE MANAGEMENT, RECYCLING, AND COMPOSTING

**Decrease the amount of waste going to landfills by increasing efforts internally and with the public to refuse, reduce, reuse, repurpose, and recycle materials.**

Themes Integrated
Waste Management & Recycling, Education, Internal Governance (purchasing policy), Partnerships

DEI Consideration

- **Awareness and Education**: Raising awareness and providing education about proper waste disposal and recycling practices. This includes providing information in multiple languages, using culturally appropriate communication methods, and considering the specific needs and preferences of diverse communities.

## ABOUT GOAL 5. WASTE MANAGEMENT, RECYCIING, AND COMPOSTING

Waste management is the strategy an organization uses to dispose, reduce, reuse, and prevent waste. Recycling is the action or process of converting waste into reusable material. Waste management and recycling are crucial for maintaining clean and sustainable parks for visitor enjoyment. Parks generate large amounts of waste from visitors and daily operations. Improper waste management can negatively impact the environment, wildlife, and visitor experiences. Waste also contributes to global greenhouse gas emissions. Landfills release methane, the greenhouse gas that traps the most heat in the atmosphere[29]. Recycling properly, or composting food and yard waste, can help to limit the amount of trash that is sent to a landfill. This ultimately lowers our carbon footprint and total greenhouse gas emissions.

The efforts of the CAP Team identified waste management as a critical goal to the Metroparks. This internal goal to the Metroparks' organization was not a theme within visitor or community responses, given their focus on regional and experiential elements of climate change and the parks. However, it was a repeated mention within the Metroparks staff focus groups, and on the staff survey where respondents were asked to list climate-related actions that they would like to see implemented and be enthused to support. Major themes of these responses were about recycling program improvements and easier-to-understand instructions, greater knowledge about waste streams and areas of action within these (e.g., paper use, single use plastics), and implementation of a composting program. These proposed actions were considered for the CAP.

*Composting[30]: A natural process to recycle organic matter, such as food scraps, leaves, or yard waste, into fertilizer that can be used in soils and gardens.*

## Objective 24: Increase waste diversion rates internally, including vendors, through reducing, reusing, and recycling.

Importance/Relevance

Reducing and reusing are the most important steps to scale back our carbon footprint as it relates to waste management. The Metroparks must create a baseline of waste rates to show progress. Actions start from understanding the baseline, reducing, reusing, and lastly, recycling.

Near-term Actions

- Action 24.1: Determine current levels of waste as a baseline by year-end 2024, and provide options for reduction with potential financial impacts.
- Action 24.2: Educate and/or share resources with staff on waste management strategies and solicit suggestions to get input across levels and departments by 2025.
- Action 24.3: Reduce dependency on single use products:
    a. Increase the number of water bottle filling stations in the Metroparks by 20% by 2028. Ensure that staff have reasonable access to filling stations to avoid plastic water bottle usage (e.g., filling station needed at Kensington boat rental) by 2028.
    b. Reduce the purchasing of paper by 10% annually through 2028.
    c. Adopt a plan for recycling of batteries for the Metroparks fleet of EVs, equipment, etc., by 2028.
- Action 24.4: Encourage staff to identify areas where material can be reused and work with the Metroparks' farm centers to identify best management practices and opportunities to better manage waste by 2025.
- Action 24.5: Create new recycling opportunities to reduce waste by adding recycling for aluminum by 2028.
- Action 24.6: Update purchasing policies to improve the sustainability of purchased products:
    a. When purchasing giveaway items, consider our options. Look for items that are low waste, recycled, recyclable, or reusable such as reusable straws, made from recycled plastic, carbon neutral deliveries, etc.
    b. By 2025, 90% of paper products purchased should be recycled paper, and/or carbon-friendly paper products.
    c. Aligned with the purchasing policy, encourage the use of sustainable construction materials and divert 100% of demolition waste from landfills.
    d. Revisit the Metroparks' green food packaging efforts through the Purchasing Department and update for compostable food packaging and bulk purchasing.

Metrics of Success

- Completed assessment and benchmarking of current waste and recycling.
- Vendors encouraged to use more sustainable products by sharing purchasing power, with the goal of reducing waste going to a landfill by 20% by 2028.
- Increased recycling rates. Use baselines from the 2020-2023 recycling program, with a goal of increasing recycling rates 10% every year from 2024-2028.
- Have attend or provided recycling resources/bins to at least five outreach events with our community partners by 2028 (e.g., events at Detroit Riverfront Conservancy, Detroit Zoological Society, and Detroit Parks & Recreation).
- Staff from at least two departments have attended recycling or sustainability-related conferences annually.

- Staff from at least two departments have contributed to at least five blog posts related to waste management and recycling by 2028.
- Contamination rates in recycling have been reduced by at least 10% annually.
- Landfill waste has been reduced by 20% by 2028. This is the ultimate metric of success to show the above actions are working.

Long-term Actions

- Action 24.7: Create at least one regulated composting facility in each district, to ensure composting opportunities are an asset for park operations.
- Action 24.8: Add compost bins for capturing food waste by concession areas by 2030.

# MONITORING AND REVISING

This CAP is a “living document,” meaning that adjustments are expected and encouraged as the work progresses and we learn how to refine our efforts in future versions of this plan. For example, actions seen now as easily accomplishable may require more concentrated efforts than anticipated. Others seen now as large challenges may prove otherwise and thus free up capacity for a new metric of success or further work on other actions. Because this plan is wide-reaching across the breadth of the Metroparks and the benefits they provide, we may also learn along the way that actions and goals have more connections and impacts to each other than originally thought. This may mean that priorities are adjusted to account for these synergies, or ripple effects, among efforts. Finally, within the five-year timeline of this plan, changes may occur that impact the Metroparks, the region and residents they serve. We write this plan in the spirit of flexibility to our dynamic world and our current knowledge about climate change.

This has been a departments-wide, parks-wide effort, and responsibility for accomplishing goals is integrated throughout our organization. Department Heads will lead the implementation of many of these actions, while capacity-building early in the timeline will encourage all staff members to understand how this plan impacts them, and how they can assist in the implementation of appropriate actions. We will report annually and at the end of this CAP’s timeline about our achievements on each of the actions. Financial metrics and considerations will be tracked annually and considered in action updates.

The CAP will be updated every five years (e.g., 2028, 2033, 2038), aligning with planning standards set by the National Recreation and Park Association’s Commission for Accreditation of Park and Recreation Agencies (CAPRA). Similarly, to other Metroparks plans, this CAP will be continually tracked, re-evaluated, and updated in the coming years.

This is the first version of these actions, objectives, and goals and will be re-evaluated in five years. From 2023-2028, we, as an organization and park system, will work toward accomplishing our goals through a set metrics of success. This implementation strategy is important in staying accountable and confident in the success and impact of our climate goals. In 2027, a progress report and evaluation will be compiled to inform the direction of the 2028 Climate Action Plan, and to identify any changes in major areas of focus.

## HOW YOU CAN BE ENGAGED

If you would like to be further engaged in the work and progress of this CAP, here are a few ideas:

- Join our email list and follow us on social media to stay updated with our progress;
- Volunteer on activities announced in relation to climate goals; and/or
- Attend Metroparks programming to learn about specific efforts in the parks, and how you can adapt/bring them into your daily life.

# CLOSING

This plan serves as a “living” document to guide us as we move into an uncertain future. This set of goals, objectives, and actions will allow us to take meaningful action to combat the effects of climate change that 4.8 million Michiganders are experiencing across southeast Michigan. Collectively, we are experiencing flooding, heat waves, wind events, changes in snowfall, and other climatic shifts throughout our state that we have not seen before. This document sets forth how we will assist and strengthen existing climate action throughout the region with Metroparks-specific work.

The Metroparks protect and conserve over 25,000 acres of green space that act as essential buffers to mitigate many of the climate effects being experienced. This plan helps ensure that we continue to offer these refuges and work toward more expansive protections of our valuable resources. Currently, residents are able to visit any Metropark to escape the heat, breathe clean air, or experience wellbeing and solitude. With this plan, we hope to expand and maintain opportunities, access, and experiences for our visitors - present and future. We are committed to Michiganders and our state. The Metroparks are not alone in taking this action, as we add our efforts to those by the City of Detroit, City of Ann Arbor, University of Michigan, and the State of Michigan, among others, in setting crucial goals to alleviate and mitigate the effects of climate change. Collectively, we aim to protect and enhance our livelihoods in the face of climate uncertainties and associated effects.

As the effects of climate change evolve, so too will this plan and our responses within it. This CAP acts as a first step to ensure the Metroparks stay responsive and attentive to southeast Michigan and our visitors’ needs. The Metroparks have been beloved for generations, and this plan aims to ensure that we continue to be a safe, healthy space for our community and the resources we steward.

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# APPENDIX A:

# PARK BENEFITS – THE ECOSYSTEMS SERVICES FRAMEWORK

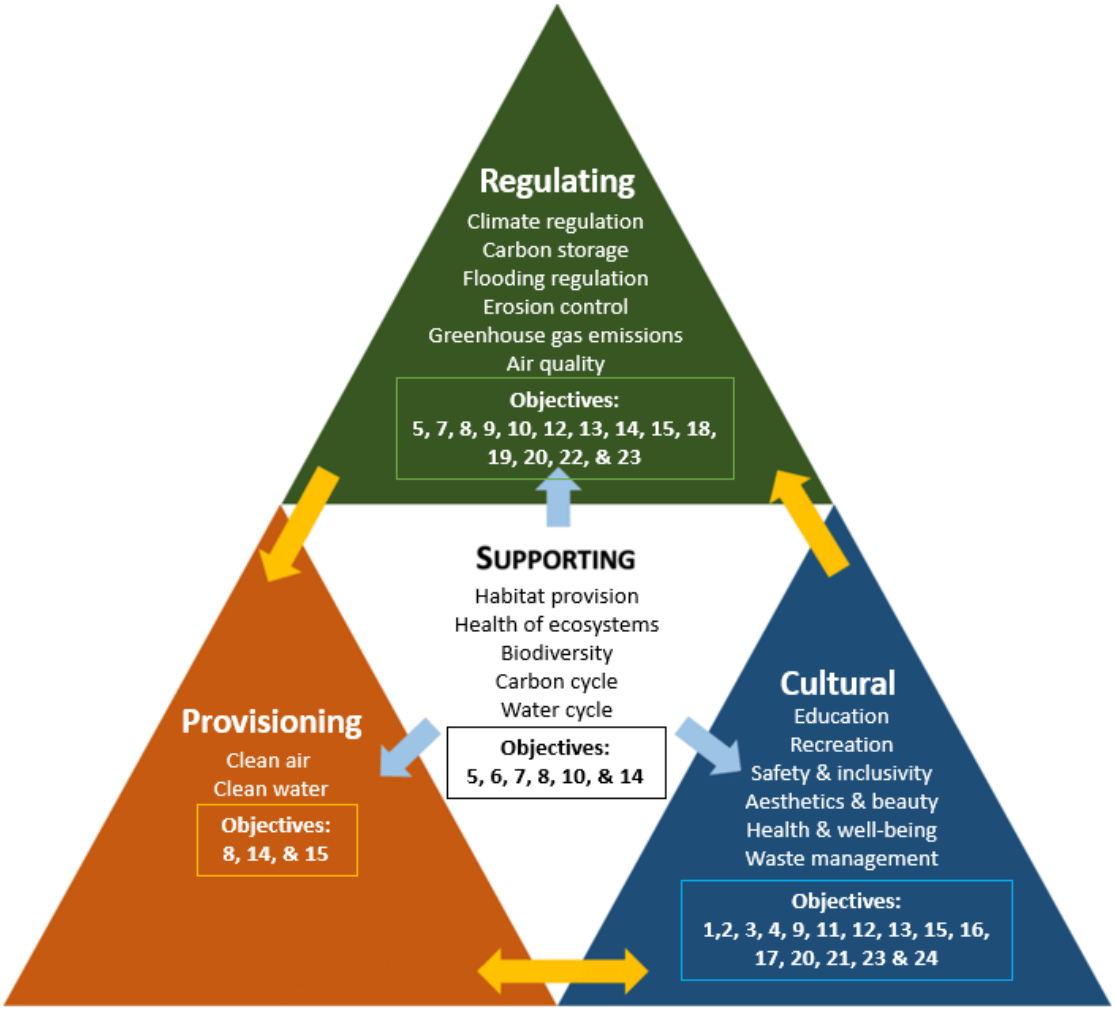
HURON-CLINTON METROPARKS

The Ecosystem Services framework is an established way of thinking about how an ecosystem, or the community of living things and their environment, benefits people[18]. We used this framework for checkpoints about what types of benefits are highlighted in this CAP and how the Metroparks might specifically highlight the role and continuity of parks' benefits through its climate actions. Throughout this effort, the Ecosystem Services framework provided a structure to the engagements and analyses. There are four main types of these benefits:

- **Provisioning services** are products provided to people (e.g., food, water, timber).
- **Regulating services** are benefits provided by adjusting and balancing different parts of the environment (e.g., flood control, climate regulation, pollination).
- **Cultural services** are the intangible and non-material benefits provided to people (e.g., recreation, spiritual enrichment, aesthetics/beauty, learning).
- **Supporting services** are the benefits provided that allow all the other environmental interactions and services to function (e.g., nutrient cycling, soil formation).

These services are interrelated, and interdependent. Climate change alters ecosystem services, and ultimately impacts the benefits people receive from their local and regional environments. The Ecosystem Services framework assists climate action adaptation and mitigation planning by providing guidance for planning teams to think about action across multiple areas of the environment, rather than concentrating action solely in a few parts. Using the Ecosystem Services framework throughout the Metroparks' CAP creation process resulted in a well-rounded approach to climate action in Michigan.

While all ecosystem services were represented across the five goals and 24 objectives, some were more impactful to certain ecosystem services, while others captured a wider range of the four services. The following figure illustrates the relationships between the 24 objectives and the ecosystem services to which they are related. In total, 15 objectives are working toward maintaining / enhancing cultural services, 14 objectives toward regulating services, six toward supporting services, and three toward provisioning services. The attention to all four ecosystem services shows a thoughtful and intentional approach toward the Metroparks' CAP that will continue on into future versions and adaptations.




*The four ecosystem services (triangles) and their relationships (arrows) as defined by the Millennium Ecosystem Assessment. Metroparks CAP objectives and examples are detailed for each. In parks, provisioning is generally less represented and supporting examples are fewer but broader in scope. Figure adapted from Tittonell et al. (2021)*[33].

# APPENDIX B:

# FULL LIST OF THE 35 CLIMATE ACTION PLANS INCLUDED IN LITERATURE REVIEW

HURON-CLINTON METROPARKS

| Southeast Michigan / Nearby (10 plans) | Park Systems (11 plans) | National Park Service (14 plans) |
|---|---|---|
| Michigan MI Healthy Climate Plan<br>Ann Arbor Living Carbon Neutrality Plan<br>Detroit Climate Action Plan (2017)<br>Detroit Sustainability Agenda (2019)<br>Northville Sustainability Plan<br>Royal Oak Sustainability and Climate Action Plan<br>University of Michigan Planet Blue Campus<br>Ypsilanti Climate Action Plan<br>Toledo Go Green, Sustainability Plan<br>Windsor Corporate Climate Action Plan | Forest Preserves of Cook County Sustainability & Climate Resilience Plan<br>Minneapolis Recreation Board Ecological Systems Plan<br>NYC Parks Sustainable Parks Plan<br>Park District of Oak Park Sustainability Plan<br>Pennsylvania DCNR Climate Change Adaptation and Mitigation Plan<br>Schaumburg Park District Green Light Sustainability Plan<br>Tacoma Metro Parks<br>Three Rivers Park District Sustainability Plan<br>Urbana Park District CARES Plan<br>Washington State Parks Adaptation Plan<br>Westerville Park District Sustainability Plan | Boston Harbor Islands National Recreation Area<br>Channel Islands National Park<br>Chesapeake & Ohio Canal National Historical Park<br>Cuyahoga Valley National Park<br>Delaware Water Gap National Recreation Area<br>Fire Island National Seashore<br>Gateway National Recreation Area<br>George Washington Memorial Parkway<br>Golden Gate National Recreation Area<br>Harpers Ferry National Historical Park<br>Lake Mead National Recreation Area<br>National Capital East<br>Pictured Rocks National Lakeshore<br>Rock Creek Park |

# APPENDIX C:

# THE 16 INITIAL CLIMATE ACTION PLAN THEMES

HURON-CLINTON METROPARKS

These themes were sourced by examining the topics in other climate plans' actions and grouping and defining them in ways meaningful to the Metroparks and the context of this CAP in particular. All 16 themes are in this CAP – five as goals and 11 as supports/connections within those goals.

- **Biodiversity**: The variety of life including animals, plants, fungi, and microorganisms in our natural world or particular habitat or ecosystem.
- **Economic Development**: Creating the conditions and activities for the improved quality of life in our surrounding communities. This includes individuals and businesses in support of their innovation, skills, and investments.
- **Education**: The process of training and developing the knowledge, skill, mind, character, etc., especially by formal and informal schooling; teaching; training.
- **Equipment**: Tangible items such as tools, machines, clothing, etc. that are needed to complete a particular job or activity.
- **Facilities/Amenities/Infrastructure**: *Facility*: Something that is built, installed, or established to serve a particular purpose. *Amenity*: Something that helps to provide comfort, convenience, or enjoyment. *Infrastructure*: Related to the critical physical structures that support park operations and visitor experiences.
- **Internal Governance**: The Metroparks' formal set of structures, communication lines, procedures, and rules.
- **Natural Resources**: Resources present in nature, including soil, vegetation, wildlife, and natural waters and wetlands.
- **Parks and Green Spaces**: *Parks*: Areas of land, either naturally or semi-naturally established for the enjoyment of visitors rest and recreation. *Green spaces*: Intentional areas of land partly or completely covered with grass, trees, shrubs, or other vegetation with the purpose of improving air quality, reduction of noise, or enhancing biodiversity.
- **Partnerships**: Coordinated and collaborative efforts between Metroparks and external agencies.
- **Public Health and Safety**: *Public health*: Provide, protect, and improve the conditions for safe access in our community. *Safety*: The condition of being protected from or unlikely to cause danger, risk, or injury.
- **Recreation**: Any activity that refreshes, satisfies, and brings enjoyment to people, in which they engage on a voluntary basis during leisure (non-work / non-obligated) time.
- **Stormwater Management**: The effort to reduce water runoff and assistance in precipitation events and water quality.
- **Sustainable Land Use**: Best management practices toward stewardship of land, water, biodiversity, and other environmental resources for current and future use.
- **Transportation**: The movement of goods and persons from place to place and the various means by which such movement is accomplished.
- **Waste Management and Recycling**: *Waste management*: the strategy an organization uses to dispose, reduce, reuse, and prevent waste. *Recycling*: The action or process of converting waste into reusable material.
- **Water Conservation**: The preservation, control, and development of water resources, both surface and groundwater, and prevention of pollution.

# APPENDIX D:

# SUMMARIES OF DATA COLLECTED IN SUPPORT OF THIS PLAN'S DEVELOPMENT

HURON-CLINTON METROPARKS

Summaries of the focus group and survey data gathered in support of this plan are linked on Google Drive, as well as summary notes from the individual listening sessions with Board of Commissioners' members. Descriptions of the five documents are as follows:

- Document 1 – Research overview and description of methods
- Document 2 – Brief overview of key findings, referencing major themes and data tables
- Document 3 – Results from listening sessions with Board of Commissioners' members
- Document 4 – Results from the focus groups, organized into six sections:
    - Section 1 – All attendee characteristics
    - Section 2 – Community responses overall and by Metroparks District
    - Section 3 – Metroparks staff responses
    - Section 4 – Community and staff response comparisons for key questions
    - Section 5 – Partner responses
    - Section 6 – Full data and illustrative quotes
- Document 5 – Results from the surveys, organized into three sections:
    - Section 7 – Community responses overall and by visitor status
    - Section 8 – Community responses by county of residence
    - Section 9 –Metroparks staff responses

Link:
https://drive.google.com/drive/folders/1iDhzuAIVwVffUDfeIP1wMnxERJCC76a4

# APPENDIX E:

# CURRENT METROPARKS ACTIONS SUPPORTING EACH CLIMATE ACTION PLAN GOAL

HURON-CLINTON METROPARKS

## Goal 1. Education and Engagement

- Climate-related school and summer camp programming
- Education on Shoreline Restoration Project
- Educational programming on stormwater topics
- Interpretive Center Master Plans
- Kids' cottage demonstration "green" building
- Monarch wayfinding garden
- Participation in the Environmental Stewardship Program Pollinator gardens
- School and outreach programming
- Sustainability messaging in newsletter/social media
- Teacher workshops
- Wild Wednesdays and Water quality blog
- Virtual programming

## Goal 2. Preservation and Conservation of Natural Resources

- Adhere to regulatory requirements and best practices for construction in floodplains
- Beach restoration, native plantings, *E. coli* study
- Best management practices with Engineering, Planning, and Natural Resources
- Big Bend Restoration
- Biodiversity Enhancement via Plugs and Seeds
- Biological research/deer herd & ecosystem management
- Buffer zones around the wetlands and creeks to help filter contaminants
- Cherry Island trail improvements
- Conversion of annual grass maze to perennial wildflower and switchgrass prairie
- Deer Herd and Ecosystem Management Program/Plan
- Green food packaging and products
- Invasive species removal
- Kids cottage demonstrating "green" building
- Livestock management practices
- Managing everyday waste streams of trash, metal, tires, wood, concrete, etc.
- Managing hazardous waste in the parks and ensure proper disposal
- Memorial tree program
- Michigan Agricultural Environmental Assurances Program reverification
- Monarch wayfinding gardens
- Mowing reduction program
- Native plants in ornamental building plantings
- NOAA Feasibility Dam Removal Study
- Participation in the Environmental Stewardship Program
- Pet waste stations
- Pilot project SEMCOG EV Infrastructure Grant
- Pollinator gardens
- Pond water temperature monitoring
- Prescribed Fire
- Proper chemical and fertilizer selections as well as reduced usage where applicable
- Proper storage of equipment and materials in the parks to avoid contamination
- Rinse/load pads for spray equipment
- Savanna Ecosystem restoration
- Seasonal closures of lower use areas to reduce plowing and salting
- Shoreline softening

- Sustainable sugar bush management plan
- Utilizing Integrated Pest Management for monitoring and action thresholds
- Vegetation surveys
- Wellhead protection

## Goal 3. Water Quality

- Adhere to regulatory requirements and best practices for construction in floodplains
- Adhere to current regulatory requirements and best management practices for stormwater
- Beach restoration, native plantings, *E. coli* study
- Being mindful of salt usage in parks
- Big Bend restoration
- Buffer zones around the wetlands and creeks to help filter contaminants
- Educational programming on stormwater topics
- GLRI Nonpoint source run-off
- Incorporating stormwater best management practices into designs
- Management of irrigation systems and water usage
- NOAA Feasibility Dam Removal Study
- Parking lot bioswales
- Pond water temperature monitoring
- Proper storage of equipment and materials in the parks to avoid contamination
- Proper chemical and fertilizer selections and reduced usage where applicable
- Rain barrels
- Replace hot water heaters with on demand heaters
- Seasonal closures of lower use areas to reduce plowing and salting
- Shoreline softening
- Well designed and well places equipment wash stations
- Wellhead protection

## Goal 4. Transportation

- Bike repair centers (amenities to promote biking)
- Conducting meetings via Teams/Zoom
- Consolidating trips to parks
- MDOT recycled asphalt products standards
- Percentage of recycled pavement material in asphalt mixes for roadway and hike-bike trails
- Pilot transit initiative with SMART
- Pilot project E-Fleet DTE program
- Pilot project SEMCOG EV Infrastructure Grant
- Reduced idling of park equipment and vehicles
- Regional non-motorized connections
- Transit access (LSC/SMART)
- Transitioning from fuel to electric golf carts at Huron Meadows (Indian Springs 2023/2024)
- Working remote when possible

## Goal 5. Waste Management, Recycling, and Composting

- Animal waste composter
- Coordinate efforts with peers and local agencies
- Ecolab for chemical distribution; reducing plastic bottles and large non-recyclable drums
- Green food packaging and products
- Livestock management program
- Managing everyday waste streams of trash, metal, tires, wood, concrete, etc.
- Managing hazardous waste in the parks and ensure proper disposal
- MDOT recycle asphalt products standards
- Percentage of recycled pavement material in asphalt mixes for roadway and hike-bike trails
- Recycling program for waste oil and oil filters
- Recycle toner and used ink cartridges
- Recycle bins for plastic bottles
- Recycling program for lightbulbs, electronics, aerosol cans, paint cans
- Recycling program for all batteries
- Replace hot water heaters with on demand heaters
- Rinse/load pads for spray equipment
- Use trash bags that are made with the highest amount of recycled plastic
- Used tires sent to recycling plant

HURON-CLINTON
METROPARKS