- **Resilience and Sustainability**

A sustainable park system adapts to environmental, economic and social changes. Human-caused climate change has led to increased global temperatures, extreme weather events, decreased plant and animal life biodiversity, forest destruction, flooding, and reduced wildlife habitat. These negative effects are often more deeply experienced by marginalized and disadvantaged populations, living in areas are often prone to flooding and lacking tree canopy shade. These areas often contain a higher ratio of hard surfaces such as pavement and rooftops and a lower rate of plant diversity. Using a systematic and focused approach, Madison Parks adapts to existing and anticipated effects of climate change by restoring and maintaining natural areas with native species that thrive in the Midwest. This includes selecting plants that match ranges and growth requirements expected in the future climate of southern Wisconsin. It also includes strategic management of turf and pavement surfaces and increasing native plantings to allow natural oak growth, increased tree canopy, and greatly increased storm water infiltration. These natural areas and native plantings also sequester carbon, provide food and shelter for local fauna, and contribute to the physical and mental well-being of the community.

Updated in 2023 with an intentional focus on climate change and sustainability, the Parks Land Management Plan directs the care and maintenance of parkland to provide a more adaptable and socially and fiscally sustainable landscape. The Plan broadly outlines Parks' vegetation management practices and is supported by site-specific habitat management plans for certain parks and vegetation-cover types throughout the system. The Land Management Plan guides the annual and daily work of Parks staff, who cooperate across work groups to implement this management. For example, general Parks staff remove invasive species from woodlands and borders, and transition specific turf areas to natural areas supporting oak regeneration and native plant establishment. Conservation staff provide leadership and expertise in conducting prescribed burns, and ecology team staff provide expertise in establishing and expanding native plantings.

One key strategy to achieve climate resilience is to improve and expand the urban forest. As identified in the Land Management Plan, priority is being placed on reducing stressors to canopy dominant trees, particularly oaks, which are considered a keystone species. Oaks support more species than any other type of tree in North America. Ensuring survival and reproduction of oaks is crucial to sustaining biodiversity. Throughout the next decade, Parks will continue to work toward promoting root and canopy health in individual trees, allowing reproduction and expansion of groves, and increasing the total tree canopy cover where appropriate within the park system. Some trees selected for planting will have a southern range, allowing them to thrive in our expected future climate.

Another key component of climate resilience and biodiversity is better management of prairie and savanna habitats, both on larger tracts and smaller areas that, together with strategic landscaping, provide habitat networks for native species. Increasing the variety of native plants and conducting prescribed burns allows rain and snow to reach the soil, reducing carbon in deep-rooted prairie species. In landscaping, planting only species of trees, shrubs and perennials native to North America, ranging from trees to pollinator gardens to park signature sign beds across the city will ensure the success and sustainability of these plantings. In addition, such plantings require less maintenance, supporting financial sustainability.

Beyond improved and increased habitat, the benefits of using native plants creates an opportunity for people to become reacquainted with the land and the species as part of our natural surroundings in Madison. Volunteer engagement and educational opportunities actively connect people to nature. This fosters a culture shift toward environmental stewardship and provide an example of native landscaping that people can adopt for their own spaces, whether their own property, a community garden, or a windowsill flowerpot. Together, this team is moving our vision of resiliency forward by creating and restoring ecosystems upon which we all depend.

Madison Parks is dedicated to transitioning to electric vehicles and tools as technology advances and the equipment becomes both fiscally attainable and operationally sufficient. A portion of Parks fleet has already been replaced by electric vehicles, including a number of pick-up trucks and a fully electric garbage truck. Much of the smaller, handheld, gas-powered equipment used in operations has also been replaced with electric versions, including leaf blowers, chainsaws and string trimmers. Larger equipment like riding mowers have been evaluated and found to not yet fulfill the requirements needed to replace their gas-powered alternatives. This technology continues to advance, and it is anticipated that electric equipment will be able to meet the demands of Parks' workload within the next decade.

The City of Madison Parks Division is committed to climate resilience. We understand in order to achieve this resiliency, we need to make significant changes in our operations in the next decade. Those changes will include lowering our carbon emissions by continuing to transition to electric equipment and reducing the amount of acreage being mowed; by restoring prairie, woodland, oak savanna and wetland ecosystems; and by adopting more sustainable management practices such as incorporating drought resistant turf varieties.

Success will be measured by benchmarks of incremental reduction of invasive plant dominance and incremental increases in biodiversity, particularly native plant species diversity. The continued improvement and increased health and sustainability of non-turf and non-built portions of parks will provide increased opportunity for the community to re-connect and engage with nature. People will come to understand and appreciate more of the interrelationship between humans and other species, and humans and their environment. Success will also be measured by reduced reliance on fossil fuels. One benchmark could be 70% of vehicles are electric and 80% of hand-held equipment is electric.

Conversion to electric vehicles and equipment will reduce Parks' carbon footprint, and this future state will provide mitigation of some extreme effects of climate change such as heat and drought, as well as intense rain events.