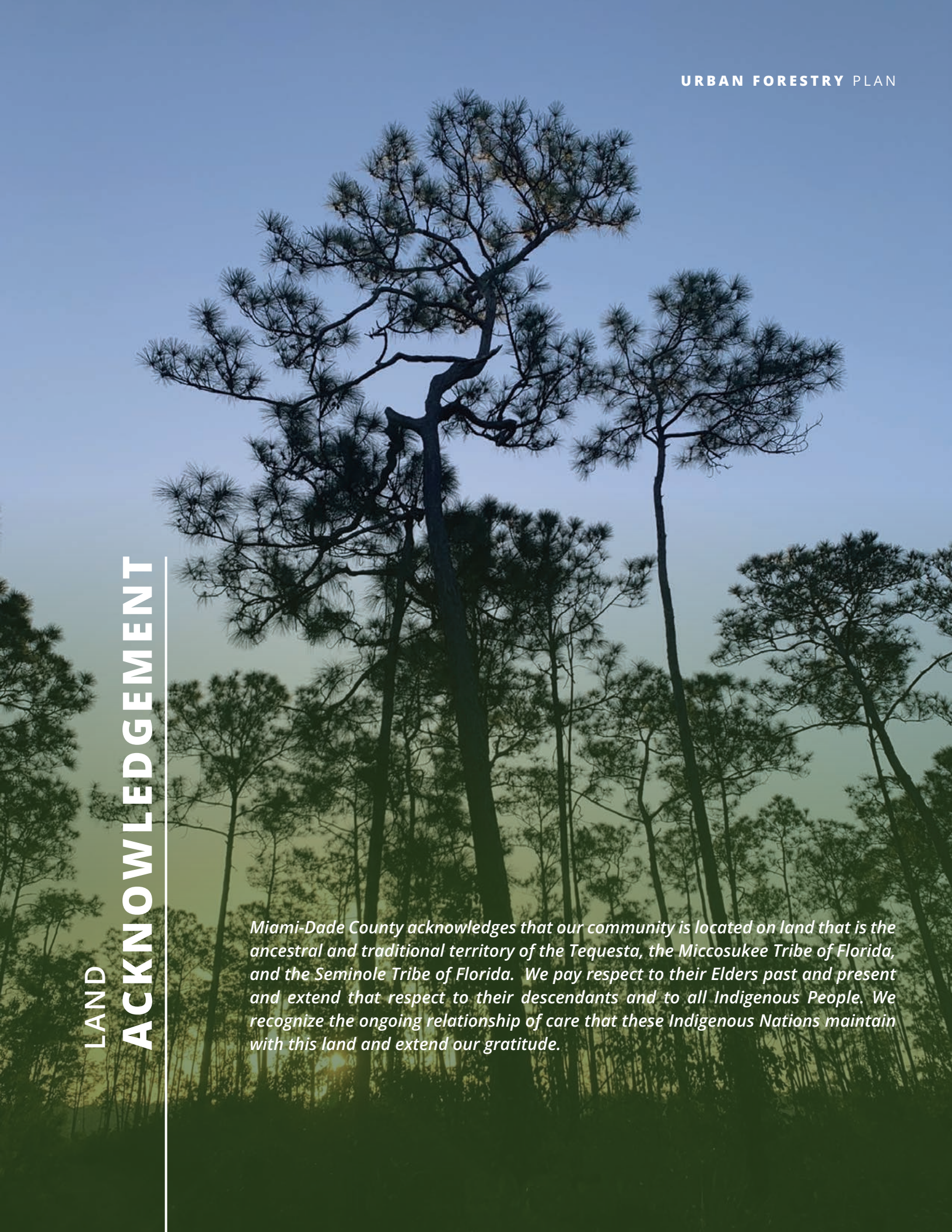
MIAMI-DADE URBAN FORESTRY

DRAFT PLAN

MIAMI-DADE COUNTY

OFFICE OF **RESILIENCE**



LAND ACKNOWLEDGEMENT

Miami-Dade County acknowledges that our community is located on land that is the ancestral and traditional territory of the Tequesta, the Miccosukee Tribe of Florida, and the Seminole Tribe of Florida. We pay respect to their Elders past and present and extend that respect to their descendants and to all Indigenous People. We recognize the ongoing relationship of care that these Indigenous Nations maintain with this land and extend our gratitude.

LETTER FROM MAYOR DANIELLA LEVINE CAVA

Our urban forest system, meaning all trees, parks, and nature spaces, are essential to our health and our future. They are critical for cooling neighborhoods, cleaning stormwater and air pollution, reducing floods, and storing carbon. Our community's tree canopy is a vital part of our resilience, ensuring all residents of our county can live, work, and thrive.

My administration is dedicated to improving the health of our urban forests. In the last two years, with the support of the Board of County Commissioners, we have doubled tree planting efforts from approximately 8,000 in Fiscal Year 2021 to 16,000 in Fiscal Year 2023. We also secured a $10 million 5-year grant from the U.S. Department of Agriculture's Forest Service for tree planting. We developed partnerships with the Miami-Dade County School Board and faith-based communities through Miami People Acting for Community Together (PACT) to plant and preserve trees on their properties. Through all of these efforts, and our municipal matching grant program, we prioritized planting in low canopy areas.

While Miami-Dade County has had a longtime commitment to preserving, growing and restoring our trees and urban forests, we continue to face challenges in achieving our ambitious goal of 30% urban coverage. Included with this letter is our draft plan to change this outcome and continue making forward progress. We look forward to your feedback and input on our vision and goals, individual actions, and roadmap for implementation. We cannot build a robust and resilient urban forest system without you. Together, we can protect and grow a healthy urban tree canopy, especially in the areas where it is needed most.

Thank you,

Daniella Levine Cava

OFFICE OF THE MAYOR
DANIELLA LEVINE CAVA

EXECUTIVE SUMMARY

BACKGROUND

Trees and urban forests are critical infrastructure, providing essential services to our communities including shade and neighborhood cooling, stormwater management, improving air quality, beautification, and habitat. Miami-Dade County has long valued and promoted policies and programs to support the preservation and planting of trees and restoration of forests through tree giveaways, tree planting, policies, and design guidelines, and protecting and restoring environmentally endangered lands.

The County has held a goal of getting to a minimum of 30% tree canopy since 2006. Many challenges make this an ambitious target – including storms that drive loss of tree cover, and the fact that the County only has direct jurisdiction over a portion of the land where we need to grow our tree canopy. It appears that collective efforts contributed towards growing our tree canopy between 2006 to 2016 from 12% to 20%, while the urban tree canopy remained at a flat 20% from 2016 to 2021.[1] Mayor Daniella Levine Cava is committed to working across County departments and with our community stakeholders to make all possible progress on these goals. Under her leadership, the County has doubled the number of trees it plants annually and built partnerships with the Miami-Dade County School Board and faith-based organizations to prioritize tree planting in areas with current low canopy.

In June 2022, the Board of County Commissioners directed the Mayor to develop a comprehensive plan relating to urban tree canopy, to identify funding for the plan and to compile data (Resolution No. R-588-2). This draft plan was developed by a working group co-chaired by Chief Operating Officer Jimmy Morales and Chief Heat Officer Jane Gilbert. The next step is to seek community and stakeholder input on the plan through workshops and a survey to submit comments. Miami-Dade County will lead on preserving and enhancing a healthy tree canopy and urban forests on its own land and right of ways. And since the vast majority of the land is not owned by the County, we must build more and strengthen existing public engagement and partnerships and recommend and implement policies that preserve and enhance our tree canopy and urban forests county wide.

OUR GOALS

1. **Invest in the lowest canopy areas.**
2. **Increase the quality of tree canopy and forests.**
3. **Proactively protect, maintain and plant trees.**
4. **Engage communitywide stakeholders.**
5. **Expand reforestation services and capacity.**

[1] *Miami-Dade County Urban Tree Canopy Assessment,* October 2021

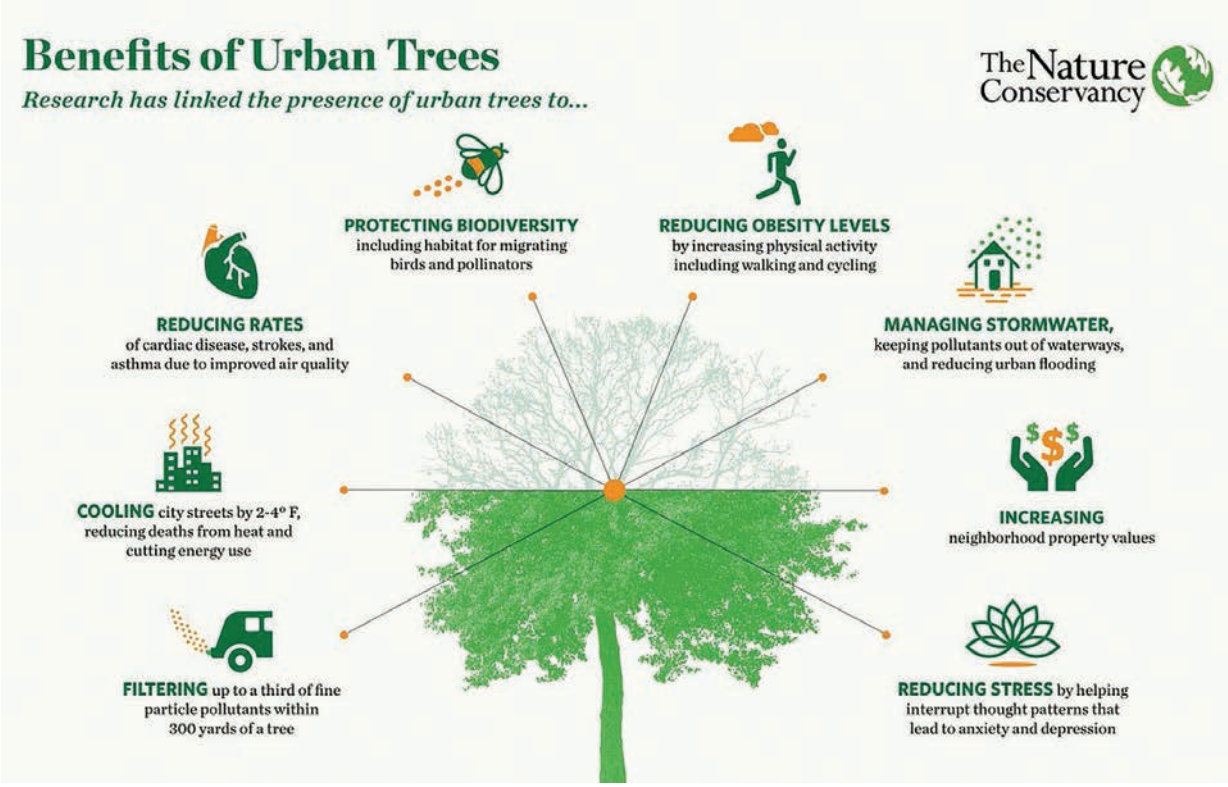
The following strategies are necessary to achieve the 30% tree canopy goal

1. **Accelerate tree and forest preservation, growing and maintenance** on county land, and on all public lands through leases and agreements;
2. **Expand and strengthen private, municipal and institutional partnerships** to accelerate canopy metrics and public education and engagement;
3. **Advance planning, policy and regulatory opportunities** to require and incentivize urban reforestation countywide;
4. **Support growth of forestry jobs and business opportunities** particularly arborist and landscape businesses in the urban core and nursery businesses in South Dade; and
5. **Integrate systems for tracking** tree canopy, inventorying, and identifying current and future vulnerabilities and that can account for tree canopy progress.

These five strategies will advance the growth and preservation of a robust, resilient and equitable urban forest. Progress on these strategies will be reported on annually as outlined in the **Roadmap for Implementation**.

TABLE OF CONTENTS

Trees and forests within urban areas provide multiple benefits to people and our environment including stormwater management, reduced heat island effects, reduced soil erosion, improved air and water quality, reduction in cooling costs, captured carbon dioxide and improved mental and physical well-being. Together, all the trees and shrubs in Miami-Dade County form its urban forest. The urban forest provides a greater range of benefits than any one tree alone. According to **Cities4Forests**, "an urban forest encompasses the trees and shrubs in an urban area,[1] including trees in yards, along streets and utility corridors, in protected areas including forests and forest fragments, and in watersheds.[5] This includes individual trees, street trees, green spaces with trees and associated vegetation [2] and the soil beneath the trees." [1]



In many regions, urban forests are the most extensive, functional, and visible form of green infrastructure in cities. **Green infrastructure** refers to natural systems including plants, habitats, forests, floodplains, wetlands, coastal and marine areas, and soils and sediments that provide infrastructure-type benefits for human well-being and safety, such as flood protection, shade, and climate regulation. Trees are a primary component of green infrastructure. While ecosystem services and habitat restoration are complex, one impactful and easily understandable way to improve natural areas is supporting and maintaining a connected and resilient tree canopy.

Urban trees and forests also provide food, cover, nesting sites, and other essential wildlife habitat components that help balance the negative impacts to wildlife resulting from human development and habitat destruction. Despite fragmentation, Miami-Dade County urban forests are home to numerous endangered animals and plants found nowhere else in the world. In Miami-Dade County, the ground is very porous, and rainfall causes pollutants including

nutrients to easily percolate through the limestone into the aquifer which degrades the quality of our ground water and can deprive the soil of valuable nutrients. Mature trees (i.e., larger trees) provide significant stormwater quantity and rate control benefits through soil storage, interception, and evapotranspiration while also improving water quality by slowing run-off and trapping pollutants. By slowing down the conveyance of stormwater, trees assist in returning nutrients to the system thereby improving groundwater quality and reducing the need for artificial fertilizers.

Trees and other vegetation lower surface and air temperatures by shading concrete, asphalt and other surfaces in urban areas that would otherwise absorb sunlight and contribute to heat islands. Areas that have a higher tree canopy can be up to 11 degrees Fahrenheit cooler than neighborhoods with lower tree canopy (McDonald, Robert, et al PLOS ONE 2023) making them more enjoyable and safe places to walk, bike and recreate outside and reduce the cooling costs for surrounding buildings. While trees break up wind and protect homes during storms or extreme weather by serving as the "front line," downed trees can cause hazards. Therefore, trees as a necessary green component provide benefits and risks that aren't always easily understood.

Current state of and risks to Miami-Dade County's Urban Forests

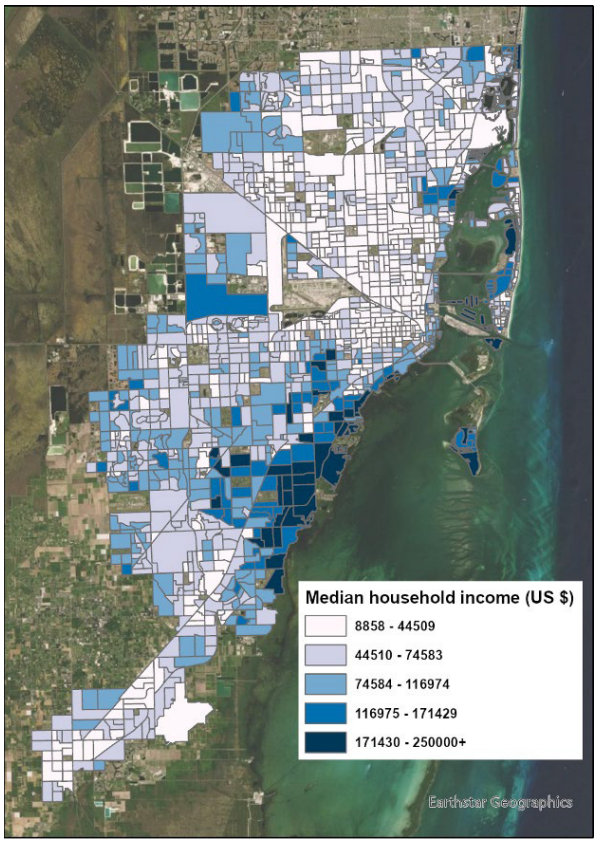
With rapid growth and development, Miami-Dade's urban forests have become increasingly fragmented contributing to increased temperatures, imperiled land and marine ecosystems and worsening air quality. The early 2000's was one of many low points in the county's tree canopy history largely due to Hurricane Andrew and the loss of nearly all citrus trees to devastating diseases.

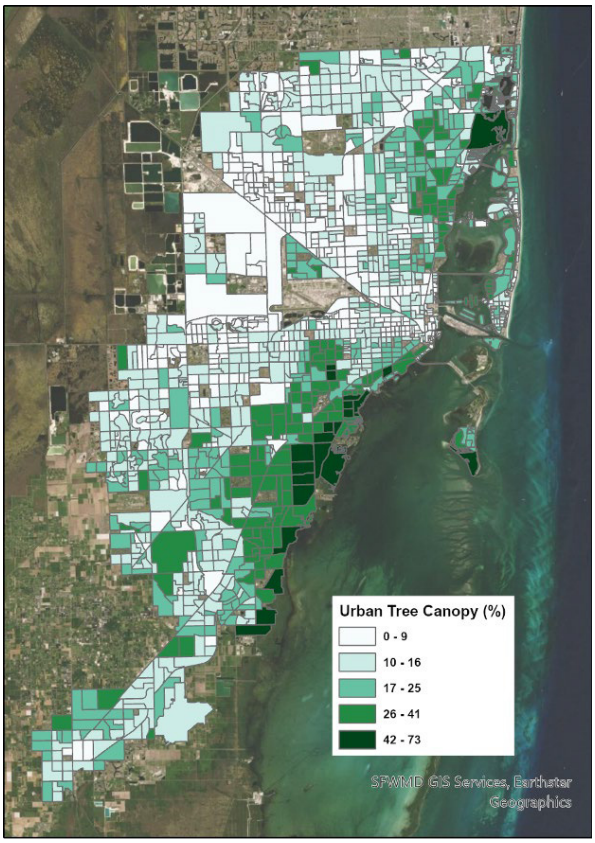
A 2006 tree canopy assessment indicated that urban tree cover was only 12%. This assessment was different than those conducted in 2016 and 2020 in that it accounted for difficult to measure considerations such as canopy cover from non-trees due to their trunk size and excluding tall grasses. This analysis led the county to adopt a 30% tree canopy goal in the Comprehensive Development Master Plan (CDMP).

The apparent growth in tree canopy from 12% in 2006 to 20% in 2016, while not like to like measurements, can be largely attributed to aggressive County action since the early 2000s, including nearly a quarter million trees being distributed to property owners through Adopt-a-Tree at nation-leading survival rates, the adoption of the Street Tree Master Plan, the launch of Million Trees Miami-Dade County and GREEN Miami-Dade County Matching Grant leading to public and private partnerships advancing tree planting and protections in parks and a matching grant program for municipalities, and aggressive action by the Environmentally Endangered Lands (EEL) program which acquired over 7,000 acres of environmental areas since 2006. The County has also sought to preserve and enhance its tree canopy through regulatory measures such as the tree protection ordinance and landscape code.

However, since the 2016 assessment, the tree canopy within our Urban Development Boundary has remained essentially at a flat 20%, according to the **2021 Urban Tree Canopy Assessment**. The 2021 Urban Tree Canopy Assessment had additional findings which were similar to other previous assessments, including:

- The canopy is inequitably distributed with higher canopy areas generally within census block groups with higher median incomes and areas with lower median income generally having much lower canopy.





Source: *Miami-Dade County Urban Tree Canopy Assessment, 2021*

- Areas with higher tree canopy had lower rates of respiratory and heat-related illnesses and overall hospitalization rates.
- A large portion of the county offers potential areas for additional urban tree canopy based on aerial photographs. These areas consist of pervious surfaces (grass, bare ground) and impervious surfaces (asphalt). However, this doesn't take into account conflicts and planning considerations. Many of these areas are already dedicated to a specific purpose, such as utilities, golf courses, or airports, which oftentimes cannot accommodate additional trees.
- Increases in surface temperature could be observed from 2016 to 2020 at locations where a) tree canopy was replaced by impervious surfaces, or b) pervious surfaces were changed to impervious surfaces.

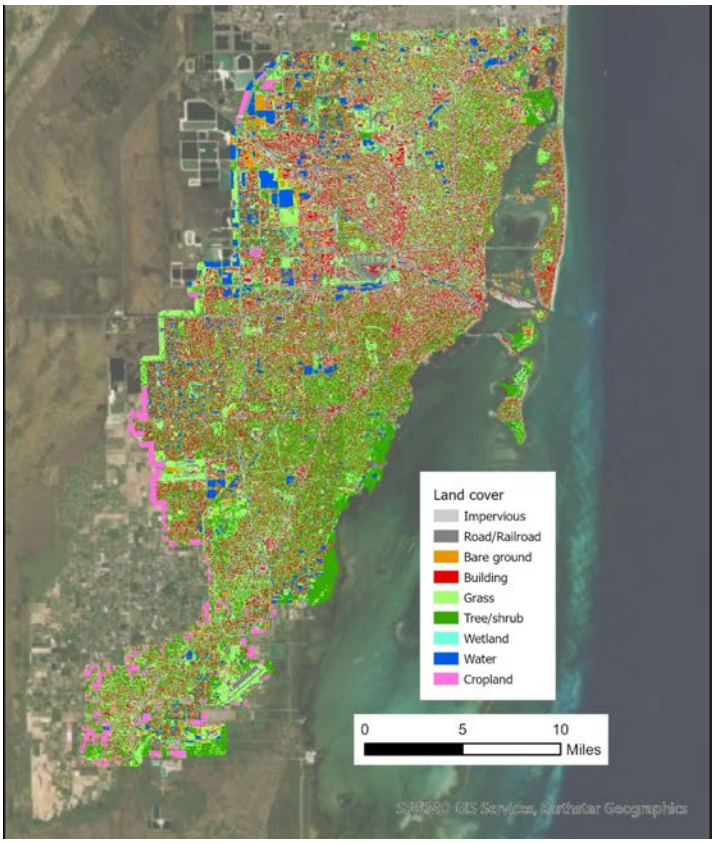
- Utilities, parks and recreational areas, vacant lands, schools, and institutional lands comprise the highest percentage of areas with potential for additional tree canopy. Assessments showed these lands are followed by single family and duplex homes as areas with high potential for additional tree canopy. Complexities of siting trees based upon pervious surface area should be considered, for example, "utility corridors" have high potential planting areas, however trees within these corridors can pose significant risk to infrastructure during storms if the planted tree is not of the proper size or species.

The 2022 Heat Vulnerability Assessment also found that the zip codes with the highest rates of heat related emergency department visits also had the highest land surface temperatures and a low percentage of tree canopy. In response to these findings, public concern, the 2021 Thrive305 plan and 2022 Climate Action Strategy, the County reaffirmed the goal of achieving 30% tree canopy within the Urban Development Boundary and adjusted the timeline from 2020 to 2030, along with some standard setting strategies that would leverage county owned lands especially in areas where tree canopy is most needed. Reaffirming the 30% tree canopy CDMP goal through these plans means adding 50% more tree canopy than currently exists in our urban areas.

Growing the countywide tree canopy by 50% is possible because the county has done it before, albeit under different circumstances and in the face of huge challenges from drastic canopy loss. Another 50% increase in tree canopy will have its own set of challenges that are in some ways harder to overcome, in particular due to development and densification of urban areas which results in an ever-decreasing amount of area in which to plant trees, particularly in our most underserved communities.

Miami-Dade County's forests are a combination of native habitats, native tree canopy, landscaped tree canopy and exotic species. Urban forests in Miami-Dade County are either protected, fragmented, and/or endangered due to vulnerability from development. Some tree canopy outside of habitats consists of prohibited species that must be removed in order to prevent a cascade of costly consequences, such as those from forest fires. Other tree canopy composed of native and even exotic, noninvasive trees are a valuable key component of our communities, creating a sense of place for backyards, streets, parks, institutions, and places that make everyday life better.

The distribution of trees throughout Miami-Dade County is the result of a unique combination of geography and development patterns. The urban and agricultural areas of the county are located between two national parks, Everglades National Park to the west and Biscayne National Park to the east. Between the parks is a strip of land historically made up of wetlands dotted with tree islands, a higher and drier limestone ridge of upland forests, and along Biscayne Bay, a mangrove coastline. This strip of land accommodated rapid development during the 20th century while the rest of the county has remained protected under the federal park system. The development of urban areas and agriculture within this area resulted in the loss of historic tree canopy.



Source: *Miami-Dade County Urban Tree Canopy Assessment, 2021*

There are also immutable drivers that have shaped our forests, such as hurricanes, that trigger loss of canopy on a semi-regular basis. As the county learned during the citrus disease outbreaks 20 years ago, disease outbreak can trigger extreme losses of canopy. Prior to disease outbreak, citrus trees were the most common cultivated tree in the county. Today the County is experiencing laurel wilt disease leading to loss of laurel species such as our treasured avocado trees which had replaced citrus trees as the most commonly cultivated tree in our urban areas.

Biologically, the urban canopy of Miami-Dade County is fragmented, modified through regional drainage, and suffering invasions by non-native species. Currently, less than two percent of the native upland forest remains outside of Everglades National Park. Within the urban core, protected areas provide habitat for seventeen plant and fourteen animal species listed under the U.S. Endangered Species Act (ESA) as well as over a hundred more species that are listed under similar state and county regulations. Many of these species are endemic to south Florida. Habitats consist primarily of globally imperiled pine rockland, hardwood hammock, scrub, freshwater glades, and saltwater wetlands (primarily mangrove forest).

Between habitat fragments are tree canopy and landscaped areas with agricultural use, native plantings, invasive plant species and exotic landscape. The distribution of habitat and canopy is uneven. Some communities and particularly low-income areas have canopy well below 10% (e.g., Hialeah and Hialeah Gardens) while other communities have tree canopy over 40% (e.g. Coral Gables and Pinecrest). Due to historic planting/landscaping preferences, canopied areas in the urban landscape are often dominated by low performing palm trees which provide little to no shade.

The future of our existing tree canopy is at risk due to complex drivers caused by a changing climate. Not only is heat stress, increased flooding (due to sea level rise and changing precipitation patterns), coastal erosion damage and increased windstorms mitigated in part by tree canopy and high performing environmental areas, but these climate stresses also put critical canopy resources at risk. Risk reduction from these stresses is addressed by:

- regional restoration improving the watershed the canopy exists on,
- improving the tree species quality that make up the canopy, and
- urban planning strategies that leverage tree benefits and provide adequate space for trees to grow.

After 2006, canopy assessments generally prioritized total coverage of tall plants and have not considered important factors such as prevalence of prohibited species and habitat quality. Open canopy habitats that provide environmental services, such as globally imperiled pine rocklands, should not be identified as areas to plant trees. Management of prohibited species should not be identified as a driver of tree canopy loss when these species sometimes do not qualify as a tree due to their plant tissue structure and the significant risk they pose to human and ecosystem health.

In June 2022, the Board of County Commissioners directed the Mayor to develop a comprehensive plan relating to urban tree canopy, to identify funding for the plan and to compile data (Resolution No. R-588-2). Per the Commission directive, the plan will, at a minimum:

- Address inequities in urban tree canopy coverage currently experienced in low-income communities as identified in the 2021 Report, prioritizing those communities within UMSA and county-controlled land.
- Include strategies to collaborate with non-governmental entities and
- Identify legally available funding to implement the plan and achieve the canopy goals at the earliest timeline possible.
- Include a communications plan to:
    - clarify to public how trees are managed (*what County is doing, property owners responsibilities, and limits to County authority*);
    - include a call to action for community engagement on acceleration efforts;
    - enhance education/outreach on benefits and particulars of tree management.

The Mayor charged Chief Operating Officer Jimmy Morales and Chief Heat Officer (CHO) Jane Gilbert to co-chair an interdepartmental Urban Forestry Plan Working Group.

The Urban Forestry Plan Working Group has proposed the following draft action plan. However, the County cannot realize a healthy, resilient and equitable urban forest without the support and engagement of many stakeholders. Therefore, the county will seek input and guidance on all components of this plan through workshops and a countywide survey.

VISION

Residents, businesses, institutions, community organizations and municipalities recognize the critical importance of a robust, resilient and equitable natural forest system to our collective health and quality of life. As a result, these stakeholders work together to protect and enhance our tree canopy throughout Miami-Dade County. All Miami-Dade County residents can access shaded green space within walking distance from their home.

FORESTRY GOALS

This plan sets forth guiding goals to achieve 30% urban tree canopy through an ecologically sound, community driven and planning consistent approach:

1. **Invest in the lowest canopy areas** – Prioritize tree and forest investments in low-canopied neighborhoods, particularly in vulnerable communities where there is a strong correlation between poverty rate and low tree canopy. To rapidly increase tree canopy in these areas, the drivers of low canopy must be identified and mitigated for within each impacted neighborhood to prevent an uneven distribution of trees within the urban core.

2. **Increase the quality of tree canopy** – Implement prohibited species eradication requirements on county properties and determine vulnerabilities to existing trees from disease, incompatible invasive plants such as vines that can topple trees and develop strategies around conflicts with the built environment. Develop informed strategies from vulnerabilities such as sea level rise, diseases/pests and storms.

3. **Proactively protect, maintain and plant trees** – Preserve existing trees and urban forests and ensure the long-term success of newly planted trees by selecting the right tree and right place, increasing the management capacity, preparing/selecting sites adequately and providing the care needed for low risk, healthy trees. The goal is to foster a "growing" mindset rather than a "planting" mindset.

4. **Engage communitywide stakeholders** – Accelerate awareness raising through multiple channels, ensuring that all stakeholders prioritize, and value protecting existing urban forests and properly planted new trees. Engage residents and other stakeholders in local decision-making about tree protection and planting.

5. **Expand reforestation services and capacity** – Strengthen in-house capacity and partnerships to improve systems for tracking canopy countywide, provide technical support, develop policy, provide tree/forest planning, and implement tree planting and reforestation projects as needed. The goal is to accelerate county canopy quantity/quality through a risk reduction, environmental services approach that recognizes the capacity of trees and forests to beautify the community and improve quality of life. Expanded forests must be a county priority.

STRATEGIES FOR
REALIZING TREE CANOPY GOALS

The following strategies are necessary to accelerate and coalesce the approach to tree canopy to achieve 30% tree canopy:

1. **Accelerate tree and forest preservation, growing and maintenance** on county land and on all public lands via leases, and agreements;
2. **Expand and strengthen private, municipal and institutional partnerships** to accelerate canopy metrics and public education and engagement;
3. **Advance planning, policy and regulatory opportunities** to require and incentivize urban reforestation countywide;
4. **Support growth of forestry jobs and business opportunities** particularly arborist and landscape businesses in the urban core and nursery businesses in South Dade; and
5. **Integrate systems for tracking** tree canopy, inventorying, and identifying current and future vulnerabilities and that can account for tree canopy progress.

These five strategies will advance the growth and preservation of a robust, resilient and equitable urban forest and are detailed further below.

STRATEGY 1:

Accelerate tree and forest preservation, growing and maintenance on county land and on all public lands via leases and agreements.

Miami-Dade County's trees and forests are a key component of the County's infrastructure providing essential environmental and economic benefits that directly improve the health, resilience and quality of life for county residents now and in the future. Often trees are treated as after thoughts due to prioritization of other uses and tried to fit in where they can rather than be part of integral parts of the design. More so than other county infrastructure like roads, bridges and buildings, trees as living, growing things need proactive planning and routine maintenance. A wonderful thing about trees is they increase in value over time, providing more benefits 5-10 years after planting. However, the first 5 years of growth are often where trees fail with maintenance "accidents" such as weed whacking or failure to remove stakes as the primary drivers. Additionally, space must be identified and reserved for high environmental services footprints for tree canopy that are assigned preservation rather than the status quo which competes for incompatible (development driven) uses.

1.1 Invest in urban forest maintenance and education on common issues

Existing mature trees are more valuable than newly planted trees because of all the benefits they provide. Trees in years 2-5 are most vulnerable to impacts such as weed whacking. As the young trees grow into their new home, conflicts can arise that were not considered at that time of planting. Tracking of impacts is needed on county-owned lands, county leases, and tree plantings funded by the county to other institutions, particularly those that are required by regulatory action. Moreover, the county will need to continue to increase funds for maintenance as it has in the last two years.

Metrics: # of trainings; # of trees pruned; # of trees weed whacked or effectively destroyed (self reported or observed); # of replacements identified due to maintenance or tree selection failures.

1.2 Finalize and implement an Administrative Order to improve preservation of existing tree resources

Issue an Administrative Order that specifies protocols to preserve as many trees as possible on county-owned or leased property in their current locations with a particular emphasis on the protection/preservation of specimen trees as per the Code and CDMP. At the planning stage of proposed County projects or projects on County-owned or leased land, tree resources must be identified, and their preservation coordinated with the requirements of the project. While the initial review of County projects by biologists and certified arborists would consider the preservation of tree resources in place, the reality is that some trees may not be healthy enough to preserve on-site. This initial review must include an on-site evaluation of tree resources to determine the species, size, and condition of the tree (both health and structural integrity), to determine appropriate actions including identification/prioritization of all specimen trees to be preserved.

Metrics: Issuance of Administrative Order; trainings provided on the Administrative Order to capital project managers, #project complying with AO, #trees preserved.

1.3 Lead by example regarding tree canopy goal

Within the UDB all county facilities should attain an average of at least 30% canopy and outside the UDB this number should average at least 50%. County facilities that have 20% or greater potential tree planting potential (i.e., open space) should identify the portions of open space that are critical to facility function and identify other locations, preferably on site or on nearby user department managed sites, that can be used to plant trees. This could be enforced through the Administrative Order described in Action 1.2 and/or the update to the Sustainable Buildings Program described in Action 3.3.

Metrics: # of properties canopied, or mitigation opportunities identified.

1.4 Enhance preservation programs

Miami-Dade County properties that qualify as environmentally endangered or as a natural forest community pursuant to the County qualification form, and that are not already protected within a similar conservation area, such as within a park, should be transferred to and be managed by the Environmentally Endangered Lands (EEL) Program if on the acquisition list, or into a similar land conservation program if not on the EEL Acquisition List. An exception is made for those properties that are needed for critical infrastructure provided canopy loss is mitigated at a ratio of not less than 2:1 (mitigated: impacted). Properties owned by non-county entities that qualify shall be swapped for other county parcels wherever possible.

Metrics: Area transferred to EEL program for preservation; quantity of canopy mitigated for at a higher rate.

1.5 Invest in restoration of critical habitats, especially in low canopy areas

Miami-Dade County's Division of Environmental Resource Management (DERM) implements monitoring, education, restoration, regulatory and land management programs to protect water quality, drinking water supply, air quality and natural resources that are vital to the health and well-being of all Miami-Dade County residents and visitors and the ecosystem. A lot of these initiatives are accomplished through the acquisition, preservation, enhancement, restoration, and conservation of environmentally sensitive lands for the benefit of present and future generations. Many public facilities in underserved communities still contain neglected or overlooked remnants of natural habitats (e.g., pine rockland, scrub, tree islands, hardwood hammock) that are not included in NFC inventory but should be inventoried and prioritized for maintenance instead of being lost to invasive vegetation.

Metrics: # of EEL managed acres maintained, # of EEL acquisition list acres purchased; # of EEL acquisition lands eligible for purchase, # trees planted.

1.6 Continue to increase investments for planting and establishing trees

An ambitious yet achievable target for increasing planting and improving tree maintenance and preservation would be to plant a total of over 300,000 trees on County lands by 2032 (commenced 2023) particularly where trees will be protected and maintained. This would be a more than doubling of the annual planting (prior to 2023) and with continued prioritization of planting within lower income neighborhoods with currently less than 20% tree canopy. It would also include significant expansion of planting in our County parks and on the rights-of-way within unincorporated Miami-Dade County in priority areas, leveraging the 5 year $10 million grant received from the USDA US Forest Service.

Metrics: # and sizes of trees planted, # of trees plated in parks, # of trees planted on streets, # of trees planted within low canopy census places.

STRATEGY 2:

Expand and strengthen private, municipal and institutional partnerships to accelerate canopy metrics and public education and engagement.

Trees require property to grow on and while the county is a significant property owner, much of the county's property consists of roadways with limited opportunities for tree planting or is already forested or contains sensitive habitat. The strategies implemented on county land can serve as a leading example of urban canopy/forest care, living laboratories for inspiration and role models of urban planning. However, because the County owns only 12% of the property within the Urban Development Boundary, the vast majority of our urban canopy additions must be on stakeholder properties. Similarly, the use of land creates constraints on tree canopy and drives an uneven distribution of tree density, this leads to extremely low canopy associated with some uses like industrial while other types of land such as forests/natural areas contain 50% of the trees within any urban area nationwide.

2.1 Develop a countywide engagement campaign

Build a coordinated outreach and engagement campaign that leverages the county's well-known and successful tree and plant giveaway and educational programs.

Messaging will highlight success stories of residents protecting mature trees and enhancing their properties with native trees and landscaping. A coordinated kit of messages will be provided to departments, municipalities, institutional, community and HOA partners communicating that this is an all "hands-on-

deck" moment. Messaging will emphasize importance of and provide easy to follow guidance for species and site selection, proper care, and maintenance.

Metrics: # reached through multimedia; # of outreach events; # of resident interactions.

2.2 Create a volunteer community forest ambassador training program

The community forest ambassador program will partner with community-based organizations in preparing engaged residents to educate neighbors about the benefits of trees, how to access county tree giveaways, identify priority locations for tree planting in their neighborhoods and provide maintenance and care support for the long-term success of those trees. Prioritize establishing this program in the 15 priority census places identified as under canopied and socioeconomically vulnerable. Create a citizen campaign to document and record heritage and champion trees.

Metrics: # of people reached through multimedia and in person engagement activities; # of volunteers; # of heritage trees recorded.

2.3 Build on priority institutional partnerships

Miami-Dade County Public Schools (MDCPS) is the second largest landholder in the County and has a high percentage of land that has tree planting potential. The county and MDCPS shall leverage an existing MOU and partnerships with educational nonprofits to implement tree canopy on these high potential properties and integrate learning about the benefits of trees and forests. Similarly, faith-based organizations collectively own the most land with tree planting potential in the low canopy areas. Recent pilots indicate how beneficial faith-based properties can be to achieving canopy goals. Both programs could be expanded with private philanthropy and nonprofit partnerships.

Metrics: # of school, faith-based and other community sites; # of trees planted.

2.4 Reinvigorate the role of the Neat Streets Miami-Dade County (NSM) board

As the community advisory board aimed at helping to achieve our canopy goals. The County cannot realize the goal of a 30% urban tree canopy without a shared commitment with its residents, businesses, municipal and institutional stakeholders. In 2011, the NSM board launched the Million Trees Miami-Dade County initiative with the goal of reaching a 30% tree canopy for our community. In 2016, the NSM board created the GREEN Miami-Dade County Matching Grant. In 2022, the board updated its mission and vision to reflect this broader focus on enhancing and preserving a robust canopy for all.

The board name could be changed to be better aligned with the overall branding name for the urban forestry goal. In addition, members from key agencies, municipalities, organizations, and institutions can be strategically recruited to participate in meetings in order to progress the plan.

Metrics: # of municipalities/agencies/organizations represented, outreach support, name change.

2.5 Build upon GREEN Miami-Dade County Grant program for greater partnership and exchange with municipalities

In 2016, the Neat Streets Miami-Dade County board created the Growing Roots for Environmentally Equitable Neighborhoods (GREEN) Miami-Dade County Matching Grant, formerly known as the Street Tree Matching Grant. Funded by Miami-Dade County's Tree Trust Fund, this annual grant engages municipalities, agencies, non-profits, foundations, and community groups in planting native or Florida-friendly trees on public land, including corridors, gateways, bus stops, libraries, schools, and parks. Through this program, $3,062,802 have been awarded to 32 different entities, which were leveraged with an additional $2,991,839 in matching funds. As a result, over 10,000 new trees have been planted. In 2023, the United States EPA's Heat Island Program recognized the GREEN Miami-Dade County Matching Grant program as an example of a creative way to increase tree canopy and highlighted the program on their Community Actions Database.

While the program has been an effective tool to leverage funds into much needed municipal spaces, there has been reduced fund availability, which requires that the funds be further prioritized to meet canopy goals. The County will additionally explore ways to provide added capacity building for applicants, such as workshops on tree canopy strategies and best practices.

Metrics: # of workshops; # of submittals; # and $ amounts of grants awarded/ $ leveraged.

2.6 Build on community involvement in tree and forest care.

County Parks and Open Spaces Department (PROS) with the Neat Streets Miami-Dade County board, engages over 3,000 volunteers in tree and landscape plantings in Parks a year, providing an opportunity to teach residents about the benefits of trees and best practices related to sizing, species selection, and proper planting techniques. DERM's habitat restoration and clean-up activities engage over 5,000 volunteers a year. The conservation and restoration activities are critical for habitat, fire mitigation and developing a healthy resilient tree canopy and urban forests. However, our environmentally endangered lands and natural areas are under-resourced to properly restore and maintain these areas.

When not managed, these areas make forest management more challenging for the Environmentally Endangered Lands and Natural Areas Management programs by providing safe harbor for invasive species to breed and to seed out. As most plant communities in Miami-Dade County are fire dependent, lack of management also creates significant risk to life and property by the accumulation of fuel and dangerous wildfires in the urban core. Managing forests by restoring them, removing invasives species, improving hydrologic conditions, and planting native trees on these properties also supports survival of the urban forests during wind events by expanding the stands of healthy trees and lowering the degree of invasive vines that bring down urban canopy.

Metrics: # of volunteers engaged, # of educational engagements.

2.7 Expand the footprint of high performing forests.

MDC forests outside Everglades National Park today are approximately 2% of their historic range. One strategy of implementing high performing environmental areas is to expand the number and area of existing forests in parks, protected areas and other institutional lands. Miami-Dade County should adopt a strategy to expand local forests in their former range and into appropriate altered conditions for the purposes of carbon capture, habitat improvement for endangered species and numerous resiliency co-benefits with the goal being expansion from 2% to 3% by 2040. Such plans are strategized through a number of inter-agency/partner initiatives.

Metrics: # of new forests; area of new forest created.

2.8 **Improve the quality of tree canopy for increased resilience of power lines to hurricanes through partnerships with local governments and Florida Power and Light Company (FPL).**

This proposed policy would engage FPL, Miami-Dade County, and any local government Public Works Departments in a coordinated effort to systematically remove prohibited tree species (as defined by County code) located in rights of way and corridors. The goal of this strategy is to target especially problematic exotic species that have repeatedly been shown to be damaging to power lines during storms such as *Ficus benjamina*. This exotic species of Ficus was identified in a Miami Herald article as one of the main culprits that went down or damaged power lines and other property and infrastructure during Hurricane Irma. Where possible, these trees would be replaced with more wind resilient species that are of an appropriate size at maturity for the location.

Metrics: # of invasive trees removed; # of trees replaced.

2.9 **Prioritize replacement of invasive, hazardous trees with native "right tree, rightplace" trees.**

Identifying stakeholder properties dominated by prohibited or invasive species and underfunded for natural habitat or landscape management should be a priority for invasive eradication and reforestation with the landscape and environmentally sensitive native plant communities. Prohibited trees also occupy spaces where new trees could be planted creating new spaces that naturally can accommodate trees. All trees replacing prohibited species must be planted with right tree, right place principles. This strategy must also comply with canopy replacement requirements of **CON-8I of the CDMP** (p IV-13-14).

Metrics: Number of trees planted, % of those trees planted within low canopy areas, acreage of natural habitat restored, # square footage/acreage of invasive species removed.

2.10 **Identify funding opportunities through grants, private partnerships, and individual donations.**

The County will build on existing successful public-private partnerships leveraging public funding.

Since 2016, PROS' Community Forestry and Beautification division has secured an average of $481,000 per year (a total of $13,846,090) in corporate sponsorships and other private funding, leveraging public dollars (a total of $8,242,365) in support of their activities to plant trees and plants on County-owned properties, as well as to host tree and plant giveaways. These funding opportunities have developed largely through partnerships it has cultivated with national organizations such as Arbor Day Foundation, American Forests, One Tree Planted, and Keep America Beautiful. The County has also actively supported non-profit and institutional partners in their fundraising and volunteer activities.

The County will continue to pursue additional private and public funding sources and partnerships, prioritizing grants and partnership opportunities that will advance our goals to engage and involve the residents, invest in low canopy areas, and advance our capacity to design sustainable and resilient green infrastructure into capital improvement projects.

Metrics: Funding raised from non-county sources; Additional # of trees planted?

STRATEGY 3:

Advance planning, policy and regulatory opportunities to require and incentivize urban reforestation countywide. Because of cumulative action since the 1970s on the issue of reforestation and tree canopy, the county has many existing policies and regulations that are state leading for tree and forest preservation and incentivized management. There are some regulatory and policy opportunities that could have real impact on tree canopy particularly since much of the land needed for the initiative is not owned by the county. Improvements to landscape code and responding to regulatory gaps should be coupled with private industry creativity and land use strategies to help achieve the 30% tree canopy goal while making Miami-Dade a more beautiful, healthy, and livable place.

3.1 **Identify opportunities and recommend regulatory updates**

The County will explore and develop recommended updates to Chapter 24-49 Tree Protection Ordinance, Chapter 18 Landscape Code, landscape enforcement, land use amendment requirements, stormwater design standards and permitting and urban design center regulations so that they adequately account for tree benefits and losses and do not conflict

with tree preservation requirements. These policy updates include adjusting size and species of qualifying trees, updates to mitigation/replacement tables, and remove a loophole that allows trees to be removed in Natural Forest Communities (NFCs) without any mitigation requirement. Fee schedule updates should be recalculated to not incentivize the removal of trees and ensure to include mitigation requirements that enable full replacement starting with public lands. Later changes should include private NFCs as well. Mitigation for the destruction of globally imperiled habitat shall not facilitate a net reduction in this habitat. Regulatory approvals for any landscaping requirement that is moved offsite, (e.g. incorporated into urban forest, an existing park or other open space and preserved in perpetuity) must also include landscaping improvements on nearby lands.

Metrics: Policy and regulatory practice updates. Fees collected and tree planted for mitigation purposes.

3.2 Engage with municipalities to further identify regulatory and policy opportunities.

There are 34 municipalities within Miami Dade County, many with their own unique zoning and landscape codes, tree protection policies and regulatory protocols. Miami-Dade County Department of Regulatory and Environmental Resources will leverage existing coordination meetings and/or schedule special workshops to provide the opportunity for sharing best practices, resources, tools, and opportunities to strengthen our collective approach to incentivizing and protecting green infrastructure, including trees.

Metrics: # of engagements; # of municipal staff attending.

3.3 Consider an update to the Implementing Order 8-8 of the Sustainable Buildings Program.

Miami-Dade County's **Sustainable Buildings Program (SBP)** was created by the Sustainable Buildings Program Ordinance (07-65) on May 8, 2007. This ordinance, together with Implementing Order 8-8, established a County policy to incorporate, wherever practical, Green Building Practices into the planning, budgeting, design, construction, operations, management, renovation, maintenance and decommissioning of Public Projects.

A policy is needed to apply to projects on County-owned or leased properties and county funded projects that is stronger than the requirements of Chapter 18 Landscape and 24 Tree Protection of the Code to: 1) avoid all impacts to natural forest communities, pine rocklands, specimen-sized trees, endangered species and assemblages of tree resources greater than 100 square feet, 2) offset unavoidable impacts to tree resources by planting trees on-site where tree resources can be co-located for maximum preservation, and 3) as a last resort, offset unavoidable impacts to tree resources by planting trees on an off-site, public or privately-owned property. To not disrupt the development approval process and to reduce the time for tree permit approvals, Miami-Dade County should, with the assistance

of specific departments and municipalities, identify recipient sites for tree planting and relocation to facilitate and expedite the mitigation including creation of "up-front" mitigation. This would also include exploring opportunities to have agreements with private property owners who would appreciate an enhanced tree canopy with the tree permit preservation requirements that meet regulatory tree mitigation requirements.

Metrics: Update the Implementing Order 8-8 of the Sustainable Buildings Program to reflect these recommendations.

3.4 **Integrate green infrastructure as part of any capital improvement project.**

To best meet the requirements of the Sustainable Buildings Program, it is recommended that Departments first engage an arborist/biologist/environmental planner to inventory and assess the condition and ecosystem services of the trees on the property. Secondly, a landscape architect or equivalent expertise be part of the design team from the outset with the goal to ensure both preservation of existing trees and maximizing use of trees and other plants for the purposes of stormwater management, safety buffers, heat mitigation, carbon sequestration and aesthetics.

Metrics: # of qualified green infrastructure projects assessed; # of green infrastructure projects planned; # of green infrastructure projects implemented.

STRATEGY 4:

Support growth of urban forestry jobs and business opportunities particularly arborist and landscaping businesses in the urban core and nursery businesses in South Dade.

A key driver for the call to action regarding tree canopy is the sheer number of co-benefits that trees and forests provide. As an enhancement to the urban landscape, few resources provide as many benefits as trees. As such it is necessary to create an economy around tree/forest creation, management, and maintenance. This need is a cross section of our county's economy because it involves agricultural economy growing trees in the southern portions of the county, commercial and residential property owners beautifying space, developers cutting down, preserving, and planting trees, landscaping industry in the urban centers providing planting and maintenance services, and critical infrastructure workers ensuring that services are attained. This strategy seeks to highlight and identify resource/ investment opportunities in the economy centered around urban forestry.

4.1 **Explore and advance professional education and licensing requirements.**

Develop a license for arborists, tree trimmers, landscapers, construction professionals involved in tree maintenance, planting, and removal similar to what nearby urban areas have. Licensing professionals will assist in lowering the occurrence of tree maintenance "accidents" such as weed whacking and effective destruction of trees countywide.

Metrics: Development of licensing program; number of trainings.

4.2 **Develop a wood recovery ecosystem.**

In order to provide woodworking clubs with the opportunity to salvage wood from trees that are not preserved or relocated on the County-owned lands, a fifteen-day notice for the salvaging of woody debris should be issued. Any person desirous of salvaging woody debris must first have authorization from the County and authorization shall not be unreasonably withheld. A list of entities interested in salvaging woody debris and willingness will be maintained to achieve this strategy. Woody material removed from natural areas on county lands, Miami-Dade County property maintenance, or private properties affected by Environmentally Endangered Lands covenants or Natural Forest Community covenants should also be reused. This material may be made available for pick up and re-used in a program similar to, or as an extension of, the Christmas tree mulch program. Material that contains prohibited species shall be stored as mulch for a minimum of 180 days or sent for incineration. Woody material from the covenant holders should be picked up free of charge to the covenant holders.

Metrics: Quantity of woody debris reused.

4.3 **Work with growers to provide long term contracts.**

Much of the county's tropical and subtropical trees are grown in South Dade because of the robust agricultural community that founded what has now become an urban county. One way to support county contractors is to provide long growing periods that assure delivery of contracts and make available under-represented and/or slower growing but higher value tree species in the nursery trade.

Metrics: # of 2 year contracts; # of 1 year contracts; # of trees locally grown.

4.4 **Avoid plant families that cause risk to agricultural crops.**

Strong evidence suggests that the largest changes in tree canopy are not associated with hurricanes and development (despite intuition) and instead can be attributed to landscape level tree diseases. These diseases (a number of them are active in the laurel and citrus plant families) not only put our urban canopy at risk but also put our agricultural economy at risk.

The county should strive not to plant or give away any tree species capable of spreading these diseases and be wary of the progression of beech (and oak) family diseases that are spreading throughout the nation.

Metrics: # of disease carrying citrus and laurel family trees installed or given away.

4.5 Maximize services on county contracts to enhance local economy.

An unprecedented investment from the County, state and federal government has led to significant economic activity in this sector. This investment should be directed to local contractors and maximize economic activity for urban landscapers and local growers. Strategies must be put in place to ensure the private sector attains the maximum benefit and has a strong platform for advancing local business knowledge and expertise to ensure canopy goals are attained and sustained and contribute to quality of life and economy.

Metrics: Compare local employment and income levels to national averages in the industry. Monitor changes over time.

4.6 Identify County lands that can serve as a tree bank and/or mitigation sites.

Tree management requires capability to stage trees, store larger relocations and act upon opportunities. County owned and maintained tree banks and nurseries in the north, south and central parts of the county will be identified on public land adjacent to transit routes least likely to conflict with moving large trees. Distribution of sites must be countywide to serve the needs of County tree planting initiatives. A recommendation is that management of these banks should be by private contractors to invest in our local economy.

Metrics: # of north sites for trees, # central sites, and # of south sites.

STRATEGY 5:

Integrate systems for tracking canopy, protecting trees and identifying current and future vulnerabilities.

A holistic approach of accounting for tree and forest resources countywide requires integrating asset management with information provided through regulatory and contractual services. This dataset will not only allow us to keep track of our goals for tree canopy but also account for forest quality. An integrated approach will better position the county to recover from natural disasters, decimating disease/pests and stressors from climate change.

5.1 Complete and maintain a tree inventory.

Critical to proactively preserving trees is having an inventory of tree species, diversity, needs, context, benefits/conflicts and disposition. The inventory will help the County develop "tree plans" such as for maintenance requirements, diversity management, prioritization, and identification of planting/replacement opportunities and to help inform best practices from failures. The inventory must be capable of reacting to losses after a storm and provide a tool for tracking all new trees planted by any department every year. This strategy can be accomplished by

inventorying 50,000-60,000 trees on County property annually and incorporating existing and new tree disposition in the areas that the County retains regulatory authority as development plans are submitted.

Metrics: # of trees inventoried/year; # of tree plans identified per year; # of tree plans implemented per year.

5.2 Develop an in-house high resolution urban tree canopy assessment.

Assessment to be updated with every LIDAR flight (currently flown approximately 5 years). The County benchmarks for vegetation signature will be correlated to land use, zip code, census place, census block, municipality, and commission district. In support of this, update 2006 urban forestry tree plots and integrate into tree canopy model, refine Geo AI processing of tree polygons. Update the aerial signature of the assessment every five years or whenever full aerial data is collected by the county. The first in-house assessment since 2006/08 and the 1990s to include tree species spread and planning tools relevant to the county's decision making while also providing a robust "like for like" framework so that increases or decreases in tree canopy can be measured and explained in a repeatable fashion. Updates will be provided in a report and included in a web viewer. This will also serve to inform the County's efforts to develop a reliable methodology for measuring CO2 sequestration from trees and vegetation.

Metrics: Annual updates on status including how it has been improved; Provide a benchmark assessment by processing 2020 LiDAR data by end of 2024.

5.3 Update canopy vulnerability analysis taking climate change into account.

This analysis is to be completed by the County in partnership with Florida universities. The findings of this analysis will be publicly available and inform updates to the Tree Species Selection Guide, which will assist in selecting suitable tree species for health and climate outcomes. This will include looking at current and projected increases in temperature, changes in precipitation and storm patterns, sea and groundwater levels.

Each of these changing conditions involve unique analyses. For example, changes in temperature and humidity result in some currently native tree species to no longer be as successful in our climate while some Caribbean species becoming more suitable.

Current and projected water and soil conditions increasingly threaten the longevity of tree species who are not adapted to wetter and potentially saltier environments caused by climate change. Ensuring that trees' relationship to water promotes rather than hinders maturity is critical to the success and health of the urban forest. Sea level rise is associated with groundwater rise, saturating soils with water and deprive trees of the oxygen they typically absorb through air pockets in the soil. A high groundwater table may injure trees in this way without any visible surface flooding leading to tree death and falling. The County will develop tree planting guidelines for public and private landowners that consider present and projected groundwater, and stormwater flooding risks including recommended actions for maintenance both long-term and following inundation events.

In the case of sea level rise and storm surge, salt can accumulate in the soil and kill tree species with low salt tolerance. This is especially evident along the coasts particularly in those coastal neighborhoods that experience intrusion of king tides into their neighborhoods many times during the year. The high amount of ornamental, non-native species as well as non-flood adapted native species in high-risk areas poses a systemic threat of forest collapse following severe weather events and prolonged stresses from rising waters. The County will develop tree planting guide for coastal neighborhoods and king tide areas including recommended actions for maintenance both long-term and following tidal inundation events.

Protocols will be developed for site analysis within different geographic areas within the County to account for the diversity of landscapes, as there is no one-size fits all measure.

Metrics: Updates on status of analysis and, once completed, updates to Tree Species Selection Guide and tree planting and maintenance guides, sharing findings with key internal and external stakeholders, and evidence of findings informing development and landscape plans.

5.4 Provide support to Departments through comprehensive planning.

Each department manages their own assets and implements work at the minimum standards of the Code of Miami-Dade County. There is room to do better by providing a concurrent technical review for projects and by offering department consulting services by RER and/or PROS to fill in gaps and empower other departments to achieve meet their specific needs while also advancing our tree canopy goals. The most important part of managing a tree is the property on which the tree exists and each department has its own needs to enhance tree canopy but can also benefit from planning/environmental services from RER/DERM and/or PROS. Services may include a review of design options that maximize efficacy of construction projects for tree canopy/quality projects and encourage the use of green infrastructure in the management of stormwater and heat mitigation through design and execution of planting and tree establishment on institutional lands.

Metrics: # of projects with tree review and support meeting a tree prioritization threshold; # of institutional lands plantings.

5.5 Analyze areas for natural forest restoration within low canopy areas.

Create EEL applications and evaluations for pine rockland business plan proposed footprints and degraded habitats within the 15 priority census places. A planning effort should be made in year one to recommend degraded habitats within priority areas for land conservation and funding for their purchases so that the few remaining patches of green space in low canopy neighborhoods are not solely being acquired for commercial/residential purposes and their conservation is at least an option.

Metrics: # of EEL evaluations and applications.

5.6 Target hurricane vulnerabilities in tracking and identify private/public strategies for a more storm adapted tree canopy.

Measure groupings of trees where possible due to their ability to survive storms better than standalone trees. Assess and strategize around non-native vines (particularly aroids) that can trigger canopy collapse and tree failure. Identify space for groupings of trees. Incorporate hurricane resistance in tree tracking and future plantings.

Metrics: # of trees with vines removes, tree clumps identified, storm resistant oriented plantings.

Successful implementation of this plan will involve a community-wide effort. It will require residents, businesses and elected leaders to value and prioritize the economic, social and environmental benefits that a robust, equitable and resilient urban forest system can provide. The effort will build on existing support the county provides to municipalities, the School Board, community-based organizations and private property owners. However, while some actions can be undertaken with reorganization within the county and grants with limited terms, long-term funding is needed for staffing enhancements and capital for execution. The following strategies are recommended for consideration:

General fund prioritization – Over the last two years, the County was able to dedicate $1.5 million to street tree planting and maintenance and an additional $2.5 million towards tree canopy preservation and enhancement initiatives. This has allowed for critically needed, street tree planting and maintenance, prioritized plantings in parks and other public lands in low canopy areas, support for municipal matching grant funds, launching partnerships with MDCPS and faith-based organizations, and tree inventory services. Over this time, the County has doubled the number of trees planted annually and inventoried over 53,000 trees.

Capital improvement project fees – Tree canopy projects are most impactful when they are planned for and a project fee should be assessed prior to scoping for professional guidance on tree-centric design of capital improvement projects as described in action 3.4. This fee will be used to fund technical staff and to provide financial assistance to projects that can rapidly enhance tree canopy within the built environment and on county projects. The structuring of the fee should be such that it incentivizes planning for tree canopy and green infrastructure as a first step rather than an afterthought and bridge the gap between expensive projects that are intensely developed and cannot accommodate trees, while providing resources to lower cost projects that can include (but perhaps not fund) larger amounts of canopy enhancements.

Environmental impact and/or regulatory fees – The state has pre-emptions and requirements on how impact fees can be used and assessed. However, the county should, at a minimum assess, an impact review for its own capital improvement projects to fund environmental planning, update existing impacts so funding is adequate to mitigate the impact, and determine whether existing impact fees can be used for implementation of the urban forestry plan. Such a fee should assist project developers to create innovative solutions to tree canopy conflicts, achieve compliance with regulatory tree preservation requirements, and assure compliance with existing planning goals that are difficult to reach.

Voter approved funding for urban forests – Concerned about the continuing loss of forests and other natural areas, Miami-Dade County voters approved a temporary property tax that was collected between 1990 and 1992 to fund the acquisition, restoration, and maintenance of environmentally endangered lands (EEL). The EEL Program has attained massive return on investment since then by using these funds as matching funds to seek state and other grants – the program has purchased and/or is managing more than 28,000 acres of land. However, after almost 35 years, the EEL trust funds are now functionally depleted. A new long-term funding source is needed such as a bond or a new referendum similar to the 1990 EEL referendum that includes green infrastructure footprints so long as those footprints serve habitat functions and are able to be preserved in perpetuity. Additional direction to prioritize buffer lands which are those lands adjacent to environmental areas that have the potential to threaten the environmental land if developed should be included.

Buffer lands are important opportunities for tree planting resulting in heat mitigation and recreational support and should be prioritized in the funding effort. Replenishing the management and acquisition funds of the EEL program is key to preserving the county's urban forests. This effort could partially be funded through a bond program and maintenance of the purchased lands would likely need a voter referendum or short-term funding efforts until a long-term management fund mechanism can be established because funding through a bond issue only provides for acquisition, not maintenance after purchase. Statewide, county and local referendums to acquire and manage environmentally important land have had a high success rate in recent years and the once in a generation call to action to protect the county's forests is needed again.

Finally, ensuring the long-term success and sustainability of the plan will require additional staffing support. Our teams have already reassigned staff and secured outside funding to the extent possible to meet this County priority. Through funding from the USDA Forest Service 2023 Urban and Community Forestry Grant, PROS established nine full-time overage positions to implement a variety of urban forestry tasks, which will be fully funded for a 5-year period. We will continue to explore all possible opportunities to enhance staffing levels.

OOR, with review from RER-DERM and PROS, will be responsible for reporting on progress a minimum of twice a year to the Mayor and annually to the BCC. DERM will be responsible for monitoring the progress on our tree canopy goal and reporting on the health of our urban forests. Once this plan is adopted, a work implementation table identifying lead departments and supporting entities and a timeline for major milestones and completion as appropriate. A progress report shall include four sections A) Direct Tree Canopy Actions; B) Action Towards Future Canopy; C) Education and Outreach; and D) Policy, County Spotlights and Partnerships. All the metrics listed in the strategy section will be organized into the annual report with the following milestones:

Direct canopy actions

# of trees planted and details associated with tree priorities including:

- # of trees planted countywide by the county: Trees on or immediately adjacent to streets; Trees planted on public land (non-streets); Trees planted in priority areas.
- Trees planted with partners on public land.

# of trees given away and one year survival if applicable;

Square footage of canopy removed via tree permitting on county properties;

Number of trees planted via regulatory mechanisms on county properties;

# of plants and seed planted within habitats and/or environmentally sensitive lands;

# of plants planted on other county lands;

Habitat management metrics.

Maintenance metrics: # of trainings; # of trees pruned; # updates to tree inventory # of trees weed whacked or effectively destroyed; # of replacements identified due to maintenance/tree selection failures.

Actions towards future canopy

# of trees inventoried;

# of acres added to the Environmentally Endangered Lands acquisition list in and outside priority areas;

# of sites and acreage retained in Natural Forest Communities;

# of new Endangered Lands Covenants;

# of acres of county land acquired for trees/habitat;

- Total acreage.
- Acreage within priority census places.

# of acres of landscape area on public or priority land set aside for trees through policy or planning mechanisms.

Education and outreach

Total # of volunteer engaged;

- # of volunteers engaged in habitats.
- # of volunteers engaged in tree activities.

# of educational interactions regarding trees or environmental lands;

# of public "tree" events and number of attendees.

Policy, county spotlights and partnerships

Project spotlights from different departments.

Policy and procedures updates.

Citizen/expert recommendations on county policy and projects (board reports).

Partner summary and reports as available.

Status report on canopy projections as generated.

Case studies from departments highlighting accomplishments.

WHAT ABOUT **MANGROVES?**

While the management of mangroves is largely considered outside the purview of this plan, mangroves are a significant component of the county's forest system and therefore worthy of note. The latest assessment by Miami-Dade's Division of Environmental Resources Management (DERM) documented more than 100,000 acres of mangrove wetlands within the County. The majority of these mangrove wetlands are located from Coral Gables southward with the largest mangrove forests within Biscayne and Everglades National Parks. Significant mangrove forests also remain in the northern portions of the County, most notably in and around the Oleta River State Recreation Area.

Mangroves stabilize bottom sediments and protect shorelines from erosion and storm surge and can potentially reduce damage to developed upland areas from hurricanes. Mangrove trees provide nesting and roosting habitat for many resident and migrating birds in addition to providing habitat to many species of marine life. Mangrove leaves are also a large component of the near shore food web and mangroves are also important because of their carbon sequestration services. The total amount of carbon stored in south Florida mangrove forests has recently been estimated at 150 tons of carbon per acre.

Development pressures on mangrove wetlands have reduced their size over the last 60 years. With this loss of mangrove wetlands, a subsequent decline in the animal and plant life supported by these ecosystems – including a number of commercial fish species- has been observed. In order to better protect this vital ecosystem, Miami-Dade County has designated most of the remaining mangroves as Mangrove Protection Areas pursuant to its Comprehensive Development Master Plan in order to afford these areas with the highest degree of protection from development. With rising sea levels, additional mangrove wetlands will be lost to erosion in areas where development prevents their natural migration landward. In these areas, sea level rise will result in water depths that are too great for mangroves at present wetland elevations. Due to this concern, an important strategy in undeveloped areas of south Miami-Dade to increase resilience countywide is to protect the remaining undeveloped areas landward of these mangrove forests so that these forests can naturally migrate inland as sea levels increase.

- Miami-Dade County shall prioritize the acquisition of mangrove forests that remain in private ownership through its Environmentally Endangered Lands program (EEL) and DERM shall continue to coordinate and implement conservation, enhancement and restoration of mangrove forests through EEL and in conjunction with DERM's longstanding Restoration and Enhancement Section's coastal habitat restoration program.

- Miami-Dade County shall continue to partner with the state and federal governments in the planning and implementation of the Comprehensive Everglades Restoration Plan and the Back Bay Study to protect, restore and enhance mangrove forests. DERM will lead interagency efforts for the County to implement innovative technologies to enhance mangrove forests and mitigate mangrove die-offs triggered by climate stressors.

- Miami-Dade County shall explore partnerships with other levels of government to implement and accelerate mangrove restoration projects outside of current state and federal efforts in order to advance regional restoration efforts.

DEFINITIONS

Below is a list of our working definitions to better understand the content of this document.

Affected tree – Any tree which shall be, or already has been, removed, relocated, or effectively destroyed, thereby requiring a permit.

Aquifer – An underground layer of water-bearing rock or materials (such as gravel, sand, silt, or clay) from which groundwater can be extracted using wells. In Miami-Dade County the Biscayne Aquifer is a crucial source of fresh water for drinking, irrigation, and industrial use. The other aquifer in the county is the Floridan aquifer.

Arborist – An arborist, by definition, is an individual trained in the art and science of planting, caring for, and maintaining individual trees. Arborists are knowledgeable about the needs of trees and are trained and equipped to provide proper care.

Canopy coverage – The areal extent of ground within the drip line of a tree.

Carbon Capture or Carbon Sequestration – The process of capturing and storing atmospheric carbon dioxide. This is a key strategy for reducing greenhouse gases in the atmosphere to mitigate climate change.

Certified Arborist – Are individuals who have achieved a level of knowledge in the art and science of tree care through experience and by passing a comprehensive examination developed by some of the nation's leading experts on tree care. Certification is generally obtained through the International Society for Arboriculture.

Coastal band community – A mangrove community which borders Biscayne Bay or one (1) of the tributaries of Biscayne Bay and which receives frequent tidal inundation and whose dominant floral constituent is mature Rhizophora mangle. The boundary of a coastal band community shall not be limited or affected by artificial boundaries such as, but not limited to, property lines.

Comprehensive Development Master Plan (CDMP) – Expresses Miami-Dade County's general objectives and policies addressing where and how it intends development or conservation of land and natural resources will occur during the next 10-20 years, and the delivery of County services to accomplish the Plan's objectives. The CDMP establishes the broad parameters for government to do detailed land use planning and zoning activities, functional planning and programming of infrastructure and services. As such, it is a framework for use by other programs to be developed to support its long-range planning goals.

Drainage area – A geographically defined land surface having topographical features such that stormwater runoff will be directed towards a drainage structure or natural waterway.

Endemic species – Species that are native to a specific geographic area and found nowhere else. Protecting endemic species is crucial for biodiversity conservation in Miami-Dade County.

Environmentally-sensitive tree resources – A specimen tree, natural forest community, or any other tree or trees that substantially contribute(s) to the aesthetics of an area.

Environment – The complex of climatic, edaphic, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival and which will be affected by the proposed work.

Evapotranspiration – The sum of evaporation from land and water surfaces and transpiration from plants. It is a critical component of the water cycle and helps to regulate climate and maintain soil moisture.

Flooding – The accumulation of stormwater on the ground surface which occurs as a result of excessive rainfall precipitation which has saturated the soil and filled the canals, lakes, ditches and drainage structures beyond their storage and transmission capacities.

Forest management plan – A document which specifies the techniques that will be implemented to maintain and preserve an individual natural forest community.

Green infrastructure – Natural systems including plants, habitats, forests, floodplains, wetlands, coral reefs, and soils that provide infrastructure-type benefits for human well-being and safety, such as flood protection, shade and air and water pollution abatement. Trees and urban forests are a primary component of green infrastructure.

Heat vulnerability assessment – A study that identifies areas and populations most at risk from extreme heat. The assessment helps prioritize areas for tree canopy expansion to mitigate heat impacts.

Impervious area – A division of the horizontal ground surface which is incapable of being penetrated by rainwater. This shall include, but not be limited to, all structures, roof extensions, slabs, patios, porches, driveways, sidewalks, parking areas, swimming pools, athletic courts, and decks.

LIDAR – Light Detection and Ranging, a remote sensing method that uses laser light to measure distances and create high-resolution maps. Used in urban planning and forestry to accurately map tree canopy, terrain, and other features.

Mangrove tree – Any of the following species, regardless of size, including mangrove trees as small as rooted seedlings: *Avicennia germinans* (black mangrove), *Rhizophora mangle* (red mangrove), *Laguncularia racemosa* (white mangrove). Notwithstanding the foregoing, mangrove tree shall not include seedlings smaller than 3–5 leaf stage rooted seedlings.

Native plant species – A plant species with a geographic distribution indigenous to all or part of Miami-Dade County. Plants which are described as being native to Miami-Dade County in botanical manuals are native plant species within the meaning of this definition. Plant species which have been introduced into Miami-Dade County by man are not native plant species.

Natural Forest Communities (NFC) – Natural forest community shall mean all stands of trees (including their associated understory) which were designated as Natural Forest Communities on the Miami-Dade County Natural Forest Community Maps and approved by

the Board of County Commissioners. These maps may be revised from time to time by resolution in order to reflect current conditions and to ensure that, at a minimum, the canopy and understory of designated natural forest communities are dominated by native plant species.

Preservation area – A site that are to be protected from any tree or understory removal (except as required for maintenance of the preserve) and maintained without any development.

Rare, threatened and endangered species – Includes all species classified as endangered, threatened or rare.

Relocated tree – A tree which has been transplanted and which continues to be viable at least one (1) year after transplanting.

Replacement tree – A shade tree, small tree, or palm tree required to be planted.

Shrub – A self-supporting woody perennial plant of low to medium height characterized by multiple stems and branches continuous from the base.

Soil erosion – The removal of the top layer of soil due to wind, water, or other natural forces. Trees help prevent soil erosion by stabilizing the ground with their root systems.

Specimen tree – Shall mean a tree with any individual trunk which has a DBH of eighteen (18) inches or greater, provided, however, that the following trees are not specimen trees: Non-native fruit trees that are cultivated or grown for the specific purpose of producing edible fruit, including, but not limited to, mangos, avocados, or species of citrus; Non-native species of the genus Ficus; All multitrunk trees in the palm family, except *Acoelorrhaphe wrightii* and *Phoenix reclinata* which have a minimum overall height of fifteen (15) feet.

Stormwater – The water which results from rainfall.

Thrive305 Plan – A community-driven plan focused on improving quality of life in Miami-Dade County through various initiatives, including environmental sustainability. The plan supports the goal of increasing tree canopy.

Tree canopy – The layer of leaves, branches, and stems of trees that cover the ground when viewed from above. It plays a crucial role in providing shade, reducing heat, and supporting wildlife.

Tree island – A vegetative community located within freshwater wetlands whose dominant vegetative components consist of native hardwood trees and shrubs.

Tree survey – A drawing overlaid directly upon a site plan sufficient to provide the following information: The location, plotted by accurate techniques, in relation to all development, of all existing trees with disposition: destroyed, relocated or preserved; The common and scientific name of each tree; The Diameter at Breast Height (DBH) of each tree, or if a multiple trunk tree, the sum DBH for all trunks; and an estimate of the height of the canopy.

Tree well – A soil retaining structure designed to maintain the existing natural ground elevation beneath a tree to preserve the tree when the surrounding area is filled to raise the ground elevation. Tree wells shall have a minimum radius of three (3) feet from the trunk of the tree and a maximum radius of ten (10) feet from the trunk of the tree.

Tree – Shall mean a woody or fibrous perennial plant with a trunk having a minimum DBH of three (3) inches or with an overall height of twelve (12) or more feet. Tree shall not include any mangrove tree.

Understory – The complex of woody, fibrous, herbaceous, and graminoid plant species that are typically associated with a natural forest community.

Urban Development Boundary (UDB) – A line delineated by local governments to separate areas designated for urban growth from those to be preserved for agriculture, open space, or natural resources. The line is established by the Miami-Dade County Board of County Commissioners delineating the approved urban development boundary for Miami-Dade County, as amended by ordinance from time to time. The goal is to achieve 30% tree canopy within the UDB.

Urban forest – Together, all the trees in Miami-Dade County form its urban forest. The urban forest provides a greater range of benefits that any one tree alone. According to Cities4Forests, "an urban forest encompasses the trees and shrubs in an urban area, including trees in yards, along streets and utility corridors, in protected areas including forests and forest fragments, and in watersheds. This includes individual trees, street trees, green spaces with trees and associated vegetation and the soil beneath the trees."

Urban heat island – An urban area that is significantly warmer than its rural surroundings due to human activities and the prevalence of impervious surfaces. Trees and green spaces help mitigate the urban heat island effect by providing shade and cooling through evapotranspiration.

Urban reforestation – Planting and maintaining trees in urban areas to increase green spaces and canopy cover. Aims to enhance environmental quality, reduce urban heat islands, and improve community well-being. Urban reforestation should incorporate appropriate native plant communities and establish reforestation goals consistent with an ecological reference as its goal.

Utility corridors – Designated pathways for the installation and maintenance of utilities like water, electricity, and communication lines. Utility corridors have high potential for tree planting but require careful planning to avoid conflicts with infrastructure.

Vulnerabilities – Weaknesses or susceptibilities to harm. In urban forestry, refers to the risks and potential damages that can affect tree health and canopy cover, such as diseases or environmental stressors like wind and heat.

DEDICATION AND

ACKNOWLEDGMENTS

The late **Sean McCrackine** had a wealth of knowledge, experience, and commitment to preserving and enhancing our urban forests. This plan and, more importantly, its implementation are dedicated to Sean.

This DRAFT Urban Forestry Plan could not have been achieved without the contributions of Sean and many others, including the following members of our Urban Forestry Plan Working Group:

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NOTES

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