

INFORMATIONAL FACT SHEET



Miami Beach Tree Preservation Code and Urban Forestry Master Plan

What is the purpose of the City's Tree Preservation Ordinance? Why do governments have rules about trees?

- The City has a healthy Tree Preservation Ordinance that protects our tree canopy now and for future generations. The ordinance protects and preserves canopy trees and palms of mature size which may be impacted by construction, both on public and private property.
- When trees are removed, there's a loss of canopy, so trees must be replanted to grow the canopy over time. Cities also lose trees from storms, disease, end of useful life, etc. The City ordinance requires "mitigation" in the form of replacement trees lost from development and this is how cities can make sure the canopy can be protected and grow over time.
- Regulations are important for long term community health, safety, sustainability, and economic success.
 - **Fun Facts:**
 - It takes about ten years for most of the species we plant to become established and provide decent shade.
 - Due to our Tree Preservation Permitting Program, we have seen a net increase of 1,750 palms and 5,700 canopy trees planted based on an analysis conducted from October 2018 to 2021.
 - In a recent Miami-Dade County tree inventory, Miami Beach was identified as one of the cities with canopy growth from 2016 to 2020. (Miami-Dade County and American Forests)
 - Extreme heat is an increasingly important resilience priority. Our summers are getting hotter and longer due to climate change and urban development. On average, the Miami area has 51 more days per year with temperatures over 90 degrees Fahrenheit than it did 50 years ago and we're expected to have the highest increase of dangerously high heat days with a heat index over 100 degrees Fahrenheit of any county in the United States by mid-century.

Why is it important to have trees on both public and private property?

- Making the tree canopy solely the responsibility of the government is difficult due to the lack of space—the City needs a partnership with residents since 75% of property is privately owned.
 - **Fun Facts:**
 - 79% of current canopy is on private land, and 14% is on government property.
 - The right of way (ROW) makes up a small percentage of the property on Miami Beach.
 - In addition, City parks need to retain area for recreational use, and have limited space available for new plantings.
 - Some areas, such as North Beach, are both heavily private property and densely urbanized with impervious surfaces. Canopy in these areas requires special placement, help from private property owners, and innovative techniques to allow the tree roots to grow. New development in

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the North Beach Town Center is required to plant larger canopy with appropriate techniques to allow the trees to grow.

What are the benefits of trees? Why is tree canopy important?

- Canopy trees absorb heat, provide shade, manage and filter stormwater, sequester CO₂ and help conserve electricity. Trees provide biodiversity and habitat for birds, bees, butterflies, and other wildlife.
 - **Fun Facts:**
 - It has been found that when sitting under a tree, the temperature can be up to 22 degrees cooler and feel up to 35 degrees cooler.
 - Trees are important flood mitigation structures with approximately 20% of annual rainfall retained in the crown. They also increase the infiltration capacity of soils, reducing flooding and erosion of soils.
 - Trees reduce the urban heat island effect, absorb air pollutants such as ozone, CO₂ and other climate gasses.
 - Urban trees are good for physical AND mental health – people are encouraged to walk in urban forests which boosts serotonin levels and heart health.
 - Trees also provide financial benefits. Shade helps people save on utility bills and trees increase property values by about 8%.

What is the role of the Urban Forestry Division?

- The Urban Forestry Division oversees both operational services and strategic projects. The Division has a highly certified Urban Forester that provides regulatory supervision through responding to tree abuse complaints, providing guidance, and issuing permits.
- Strategic projects to grow the urban forest include conducting the citywide Geographic Information System Tree Inventory, managing the GO Bond tree reforestation initiative, and advising on the right tree in the right place - the optimal planting species to result in mature trees for corridors and roadways for the City of Miami Beach.

What is the Urban Forestry Master Plan (UFMP)?

- The UMFP is a guiding document to help evolve our urban canopy to be more tolerant to climate change, but does not have any regulatory power over the Tree Preservation Ordinance. As a plan, it established a goal to increase the tree canopy from 17% to 22%.
 - Our UFMP has become the benchmark for other plans being developed in South Florida and other parts of the world. The City presented at the first ever international conference of Tree Cities of the World because we created a plan that looks at the approach of sustainably managing an urban forest under the stresses of climate change, and how to create innovative adaptive efforts that will allow for this. As the only US city selected to present at the conference, members from around the world are looking at our plan to help guide them when dealing with similar climate change conditions.
 - The adoption of the UFMP did not result in any regulatory changes regarding how we manage existing trees and palms.

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Why is a distinction made between canopy trees and palm trees, regarding benefits and disadvantages?

- The Urban Forestry Master Plan recommends a transition of our palm canopy from 57% to 25% by 2050. By planting more canopy trees, we reduce the overall percentage of palms, without needing the removal of existing palms.
- Keeping the existing palm canopy percentage will leave the City's landscape vulnerable to future climatic stressors such as extreme heat, flooding and saltwater intrusion, as well as impacts from pest or disease due to the lack of diversity. An overpopulation of palms also reduces the number of planting spots for more beneficial canopy trees.
- Palms tend to be over-pruned which results in "pencil" of the trunk. As a result, palms tend to be weaker and this practice increases drag on the fronds during high wind events, increasing the chance of failure.
- South Florida soils are a mixture of sand, marl (weathered limestone), and Miami Limestone, which is alkaline with a pH hovering at about 8. The limestone does not hold water or nutrients well, and the high pH makes it difficult for plants to get micro-elements they need. These soils are also not conducive for healthy palm growth, and palms require constant fertilizer to stay green in South Florida.
 - **Fun Facts:**
 - Excessive or incorrect fertilizer use has been found to lead to algal blooms in Biscayne Bay, our aquatic preserve that is in peril. When it rains, fertilizers are carried as run-off into the Bay. Improper fertilizer use not only impacts City waterways but can also lead to long-term degradation of the soil.
 - Palms require more frequent upkeep. Canopy trees are usually pruned on a 3-to-4-year cycle, while palms are trimmed 3 to 4 times per year. Coconut palms need their coconuts removed, royal palms need their boots strapped, date palms need their dates either removed or cleaned up once fallen. If not frequently maintained, palms can be dangerous as street trees since their fronds reach a large size and fall with risk of injury to pedestrians, which is why some municipalities do not allow them at all. Treating palm diseases is also very costly, especially preventative treatment for the multitude of diseases affecting palms.

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Benefits*	Shade Tree	Palm
	Live Oak, <i>Quercus virginiana</i>	Sabal Palm, <i>Sabal palmetto</i>
Diameter (DBH)	16"	16"
Carbon Dioxide (CO2) Sequestered (Absorbed)	510 pounds/year	2.71 pounds/year
Rainfall Intercepted	725 gallons/year	81 gallons/year
Ozone removed from air	20 ounces/year	1.70 ounces/year
Carbon dioxide stored	3,214 pounds over lifetime	26 pounds over lifetime
Energy Savings (A/C)	60 kWh	26 kWh
Energy Savings Value	\$10.00	\$4.60
Annual Value of Benefits	\$31.00	\$6.48
*Based on an analysis utilizing the USDA Forest Service's i-Tree MyTree benefits tool (www.itreetools.org) - v. 2.4.16		

Scenario: 3- Year Pruning Cycle	Year 1		Year 2		Year 3	
	Number Tree/Palm	Cost	Number Tree/Palm	Cost	Number Tree/Palm	Cost
Canopy Tree Pruning (3 Year Cycle)	3,950	\$ 629,775	3891	\$ 633,840.50	4,332	\$ 676,919
Palm Pruning (Depending on species)	16,732	\$2,227,680	16732	\$2,227,680.00	16,732	\$ 2,227,680
Tree & Stump Removal	119	\$ 46,900	126	\$ 50,145.00	131	\$ 49,729
Palm & Stump Removal	157	\$ 39,981	156	\$ 40,994.00	154	\$ 40,591
TOTAL	20,958	\$2,944,336	20905	\$2,952,659.50	21,349	\$ 2,994,919

Scenario: 5-Year Pruning Cycle	Year 1		Year 2		Year 3		Year 4		Year 5	
	Number Tree/Palm	Cost	Number Tree/Palm	Cost	Number Tree/Palm	Cost	Number Tree/Palm	Cost	Number Tree/Palm	Cost
Canopy Tree Pruning (3 Year Cycle)	2,370	\$ 377,865	2299	\$ 373,859.00	2,759	\$ 414,182	3,225	\$ 458,376	3,691	\$ 505,428
Palm Pruning (2x or 4x per year depending on species)	16,732	\$2,227,680	16732	\$2,227,680.00	16,732	\$ 2,227,680	16,732	\$ 2,227,680	16,732	\$ 2,227,680
Tree & Stump Removal	119	\$ 46,900	126	\$ 50,145.00	131	\$ 49,729	137	\$ 49,318	143	\$ 48,900
Palm & Stump Removal	157	\$ 39,981	156	\$ 40,994.00	154	\$ 40,591	153	\$ 40,217	154	\$ 40,094
TOTAL	19,378	\$2,692,426	19313	\$2,692,678.00	19,776	\$ 2,732,182	20,247	\$ 2,775,591	20,720	\$ 2,822,102