

COMMISSION WORKSHOP MEMO

TO: Mayor Dan Gelber and Members of the City Commission

FROM: Raul J. Aguila, Interim City Manager

DATE: March 2, 2021

SUBJECT: **URBAN FORESTRY MASTER PLAN WORKSHOP**

At the January, 27 Commission Meeting the Mayor and City Commission requested a special workshop to discuss the Urban Forestry Master Plan. In February 2017, the city received a grant from the Florida Forest Service to have the Green Infrastructure Center (GIC) conduct an analysis of our City's urban forest and its ability to manage stormwater. During this process there were two public workshops held. This document was used to inform the development of the Urban Forestry Master Plan (UFMP). In February 2019, Davey Resource Group was retained to complete the UFMP. The development of the UFMP included extensive community input, including four community meetings and three presentations at the Sustainability Committee.

Trees provide environmental, economic, and social benefits to the community. Trees improve air quality, save energy by reducing electricity usage, ameliorate high urban temperatures, reduce stormwater run-off, increase property values, improve productivity, reduce stress and crime, and beautify residential and commercial neighborhoods. In addition, trees decrease urban noise, encourage economic growth, preserve community character and identity, provide habitat for wildlife, and shade pedestrian walkways.

According to the 2019 Community Satisfaction Survey, less than half of residents (49.4%) reported being satisfied with the City's tree canopy coverage in their neighborhood. To increase community satisfaction, and to ensure the City has a healthy and well-managed urban forest the City has a multitiered approach to tree canopy expansion.

1. **Reforestation.** In 2018, the community approved \$439 million General Obligation Bonds that included \$5 million to plant over 5,000 canopy trees throughout the City. To date, 873 trees have been planted as part of the G.O. Bond reforestation project and an addition 300 trees will be planted within the upcoming months.
2. **Tree Preservation Program.** Chapter 46, Division 2 of the City Code establishes the tree preservation and permitting program.
3. **Land Development Regulations.** Chapter 126 of the City Code establishes minimum landscape requirements, including diversification and expansion of canopy trees.
4. **Urban Forestry Master Plan.** The UFMP is a guiding document that establishes best management practices for developing and maintaining a healthy and sustainable urban tree canopy.

Chapter 46, Division 2 – Tree Preservation and Protection

The City's Urban Forestry Division administers the tree preservation program which, pursuant to Chapter 46, Division 2 of the City Code, establishes the City's tree permitting program for the removal or relocation of any palm or tree on public or private property. This section requires mitigation for any palm or tree removed during redevelopment. Mitigation for palm and tree canopy loss is required in the form of replacement canopy trees. A minimum of 50% of all replacement trees shall be native to South Florida. Palms can be added into projects; however, they do not count for mitigation due to the low environmental benefits they provide. When the total number of trees required as replacement trees cannot be reasonably planted on the property or a suitable alternate location cannot be identified, then applicants can contribute to the City's Tree Preservation Trust Fund as an alternative.

Chapter 126 – Landscape Requirements

The Land Development Regulations are included in Chapter 126. The intent of these regulations is to establish minimum landscape standards that enhance, improve and maintain the quality of the City's landscape. This includes preventing the destruction of the City's existing tree canopy and promote its expansion and diversification. This chapter provides minimum street tree requirements:

- Street tree plantings shall be provided along all roadways at a maximum average spacing of 20 feet on center
- Minimum tree height: 12 to 14 ft
- Minimum palm height: 15 ft of clear or grey wood
- Street tree diversification to prevent a monoculture and to circumvent significant tree loss to disease to a specific tree species the code diversification a project tree palette
- Palms may be planted in addition to the required number of street trees, however palms shall not count towards the minimum number of required trees

Urban Forestry Master Plan (UFMP)

The UFMP was adopted by the City Commission on October 14, 2020. The UFMP provides an adaptive management approach that evaluates the existing tree canopy and provides best management practices for growing a healthy urban forest. The UFMP establishes goals, targets, and recommendations. The key targets are as follows:

1. Increase canopy coverage from 17% to 22% tree canopy cover citywide by 2040.
2. Implement a 5-year urban forest maintenance plan by 2021.
3. Palms currently make up 57% of the public tree population. Palms should make up no more than 25% of the public tree population by 2050.
4. Release and annual State of Miami Beach Urban Forest Report beginning in 2021.

The UFMP also includes a design toolkit that outlines an appropriate planting palette, design criteria considerations, and three case studies related to sea level rise adaptation. The planting palette includes native and Florida-friendly palm and tree species that are appropriate for Miami Beach's existing and future conditions.

Population diversity is measured using the 10-20-30 street tree diversity rule, where public tree and palm populations are comprised of no more than:

- 30% of any family (e.g. *Fagaceae* – Beech family (Oak belongs to this family))

- 20% of any genus (e.g. *Quercus* – Oak)
- 10% of any species (e.g. *Quercus virginiana* – Live Oak)

Palms are an iconic part of Miami Beach's landscape; however, they have moved from being an accent plant to a major component to the City's urban forest. *Arecaceae*, the family of landscape palms, makes up over 55% of the public tree population, far exceeding the 30% guidelines. The large number of palms not only impacts the diversity of species in the City's public tree population, making it vulnerable to diseases and pests; but it also effects the environmental (heat reduction, water retention, air purification, carbon uptake) and social (walkability) benefits the urban forest can provide. Shifting to have a higher percentage of canopy trees does not mean removing palms, rather it is strategically using palm trees as accents to retain tropical character of streets and neighborhoods without sacrificing the environmental and social benefits of canopy trees.

Table 1 demonstrates a comparison between a maturing live oak tree and a maturing cabbage/sabal palm, where the live oak provides nearly seven times the annual benefits compared to the palm.

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
Enevery 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		

Table 1: Comparison of the environmental benefits comparison between live oak and sabal palm

Existing City Capital Projects

All City Capital Projects are required to adhere to the City's Code. Currently, there are 22 projects that have or will impact palms and canopy trees. Table 2 provides a summary of the number of palms and canopy trees slated for removal, relocation, and to be planted. For these 22 projects, the City is losing 1,032 palms and 491 trees. However, with these projects the City is gaining almost double the palms and trees lost: 921 palms and 2,549 trees. Attachment A provides a detailed breakdown for each of the 22 projects. These numbers are based on current plans; however, revisions may need to be made to palm and tree disposition and mitigation plans based on unforeseen conditions or project revisions.

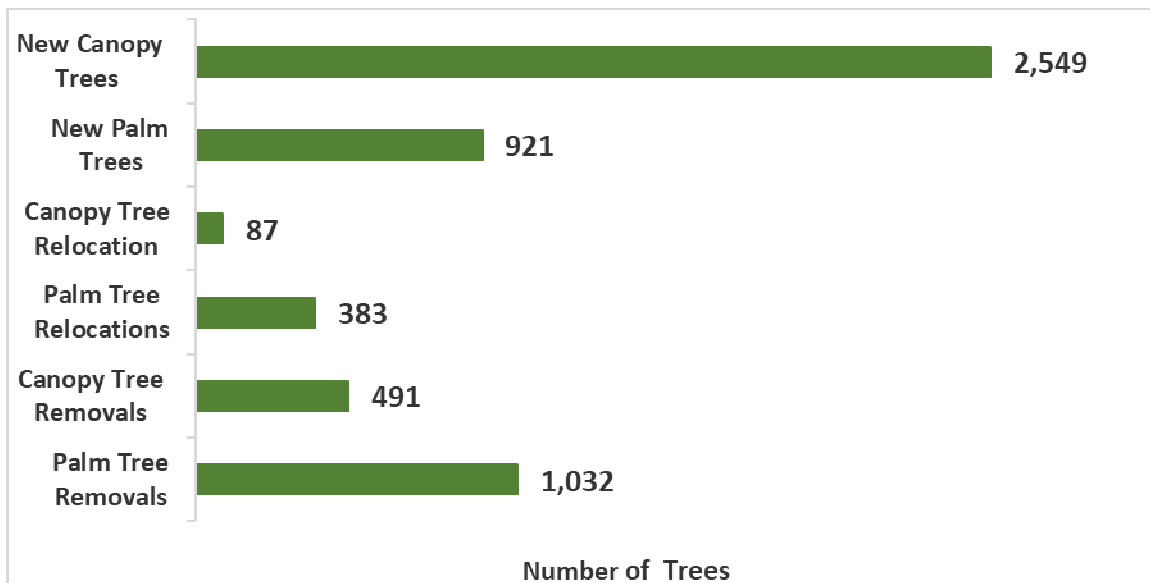


Table 2: Summary of number of palm and canopy trees slated for removal, relocation, and to be planted

During the planning and design phase, a tree assessment by a certified arborist is conducted to determine the health and condition of existing trees and to identify trees that can feasibly be relocated taking into consideration health, relocation success rate for the species, and cost. This information is used to develop a management and disposition plan. This disposition plan identifies palms and trees that will be preserved and protected, those that will be relocated, and those that will be removed during construction. Palms and trees are removed when there are conflicts with the proposed design or because they have identified as being in poor health. When palms or trees must be removed, mitigation is required in the form of canopy trees. While in the construction phase, trees that were slated to remain or relocated may need to be removed due to construction considerations. When these incidents occur, the Urban Forester works closely with the owner City department and construction team to help reduce palm and tree impacts and ensure that proper mitigation is included due to these revisions.

The Urban Forestry Division works closely with the project managers and design team during the planning, design and construction phases to assure that proposed work adheres to the regulations of Chapter 46, Division 2 and Chapter 126 and utilizes the UFMP as a guiding document to implement best management practices for preserving existing palm and tree resources, while building a sustainable urban canopy for future generations.

Trees are an important component of capital projects. Through design and construction methods there is an opportunity to shift toward a more resilient and environmentally beneficial tree canopy. Investing in planting the right tree in the right place, suspended pavements, and tree protection reduces future maintenance or replacement costs and is an important step in building our future city today.

- A summary of 22 capital projects shows that while a total of 1,511 palm and canopy trees will need to be removed, 3,440 palm and canopy trees will be planted, a 127% increase in palm and canopy trees collectively.
- For canopy trees specifically, while 491 will need to be removed, 2,549 will be planted, a 419% increase in canopy trees.

- For palm trees specifically, 1,060 palm trees will need be removed, the 891 new palm trees will be planted, only an 18% decrease in palms.

Tables 3 & 4 provide a comparison of the rainfall intercepted annually and CO2 sequestered annually of a shade tree and a palm tree after 10 years.

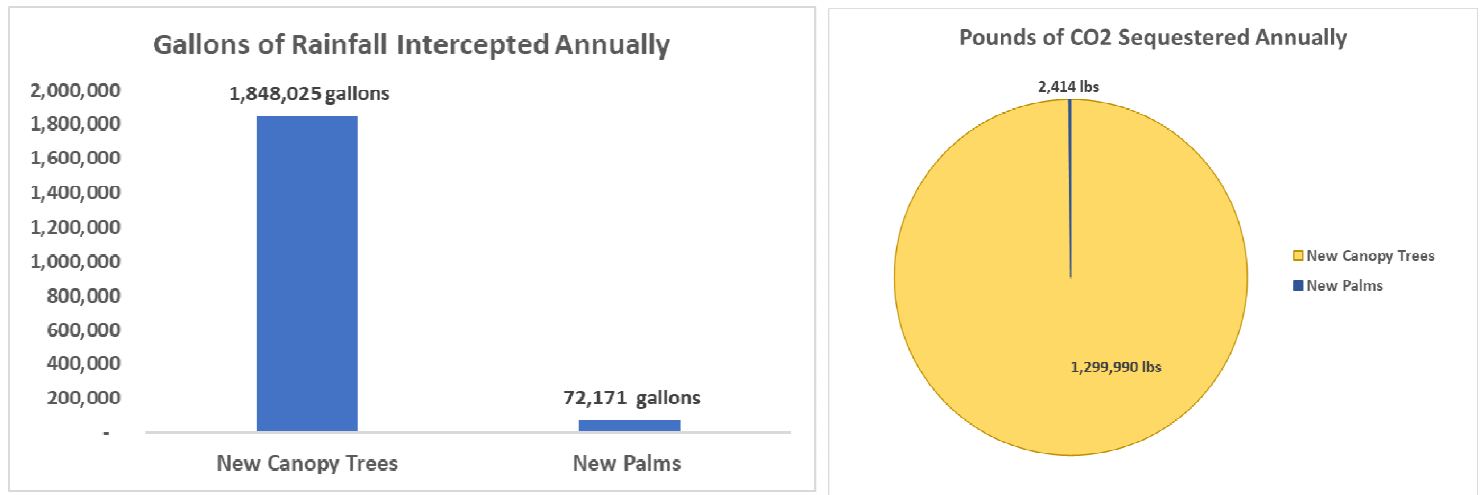


Table 3 & 4: Rainfall Intercepted Annually and Pounds of CO2 Sequestered Annually are calculated using iTree algorithms developed by the U.S. Forest Service.

Conclusion

On February 25, a guided tour will be provided to the Mayor and Commission. Attachment B provides supporting overview for each stop. The following is presented for discussion at the March 2 Workshop.

Attachments

- A: Citywide Project Status 2021
- B: Guided Tour Agenda & Overview