South Bay, Florida

TREE CANOPY REPORT

An Analysis of Urban Forest Cover and Tree Equity Strategies

APRIL 2023

Prepared by the
Green Infrastructure Center Inc.

community GREENING

Green Infrastructure Center

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Project Overview and Executive Summary

Trees are the city's 'green infrastructure.' Just as we manage our grey infrastructure (roads, sidewalks, bridges and pipes), we also need to manage our 'green infrastructure' (trees and other vegetation). The city's green infrastructure provides many values that support a vibrant, safe and healthful community. Trees add to a city's historic character and enhance livability by filtering storm water and reducing runoff, cleaning the air, providing oxygen, shade, natural beauty and enhanced property values. Planting a tree to shade a home can save 50% of annual air conditioning costs and can soak up thousands of gallons of stormwater each year to reduce street flooding.

This report describes the tree canopy and associated benefits for the community of South Bay, Florida in Palm Beach County. The tree canopy assessment was created by the Green Infrastructure Center Inc. (GIC) and funded by Community Greening, a nonprofit grassroots tree planting and tree advocacy organization. GIC analyzed the city's tree canopy extent and plantable open spaces along with a ranking scheme to prioritize the most equitable planting areas first. Next, the environmental benefits including air quality improvements and shade benefits provided by the city's trees were analyzed.

There are plenty of planting areas in the community where trees can be grown to mitigate environmental harms such as increased heat or air pollution.

South Bay Fast Facts

County: Palm Beach

Population: 4,479 people*

Median Household Income (MHHI): $56,041*

Total City Area: 2.16 sq. miles

Land Area: 2.01 sq. miles

Lakes/ponds: 94.3 acres

Wetlands: 0 acres

Tree canopy: 32 acres

*(U.S. Census 2021 estimate)

South Bay's Tree Canopy

South Bay has a tree canopy of 6%. Fortunately, South Bay has room to add significantly more tree cover that would provide many benefits to the city for shade, air quality, urban cooling, habitat and natural beauty. These benefits trees provide for South Bay's residents are called 'ecosystem services' or benefits nature provides relatively for free. In fact, the city could achieve a far greater canopy coverage with a maximum of 23% tree cover, thereby providing even more benefits to the community.

6%
Current tree canopy of the city's living area

58
Acres of potential plantable areas

3,506
more small trees *(20 ft diameter crowns)* can be planted

3,128
more large trees *(40 ft diameter crowns)* can be planted

23%
Potential tree canopy of the city's living area

South Bay's Tree Canopy Benefits

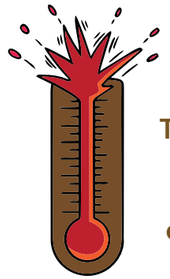
Air Quality

Trees play a critical role in providing oxygen, and cleaning the air of particulate matter and ground level ozone (O_3), which can harm human health. Trees also sequester greenhouse gases such as sulfur dioxide and carbon dioxide, and as these gases are trapped by trees, the severity of climate change is reduced. Trees also store carbon and prevent its release, further helping to ameliorate possible climate change impacts. Each year, the tree canopy of South Bay removes 21 lbs. of CO, 409 lbs. of ground-level ozone (O_3) and 171 lbs. of airborne particulate matter that can cause respiratory distress.

Heat Island

Similar to most southern communities, South Bay suffers from urban heating and stormwater runoff impacts caused by too much impervious surface coupled with a lack of vegetative cover. Excessive pavement and lack of shade lead to increased temperatures known as *urban heat islands*. The lower the tree canopy cover, the higher the surface temperatures and the hotter the city.

The South Bay tree canopy helps reduce respiratory distress by removing 171 lbs. of airborne particulates each year.



80F°
The average surface temperature in South Bay, Fl on October 7, 2022

The data created for this plan were used as part of an analysis to locate the highest priority areas for tree plantings. This method used two key metrics, surface temperature and median household income, to identify priority planting areas. Neighborhoods with available space for tree plantings in the city that had higher than average surface temperatures and lower than average median household income were prioritized (see priority planting map). These data will aid the city and community tree planting groups such as Community Greening in identifying at-risk and greatest need neighborhoods in which to plant trees. There are 6.7 acres of the highest priority planting areas in South Bay which could be planted with over 856 trees to result in cleaner air, cooler streets and natural beauty for neighborhoods.

Next Steps

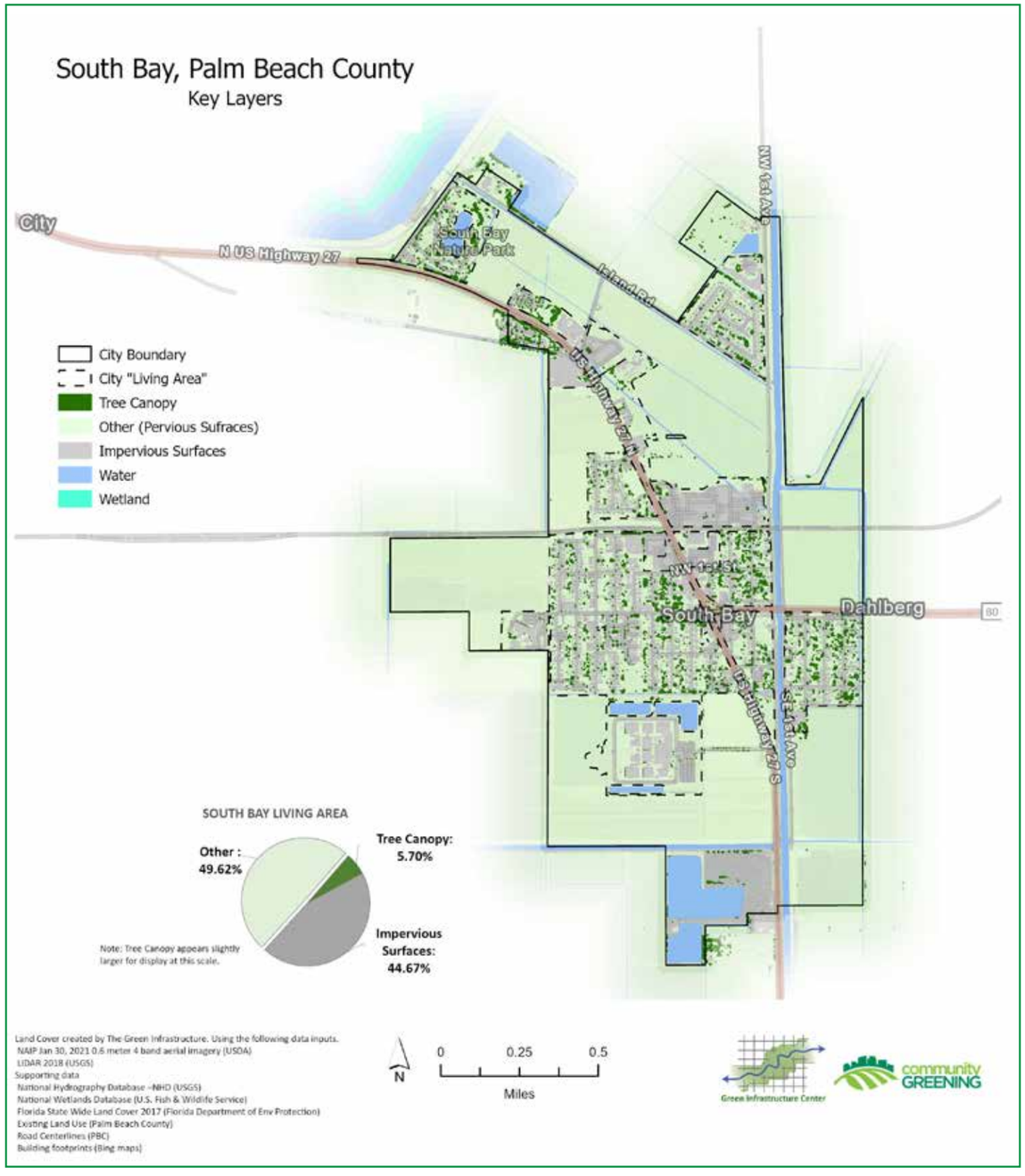
The data created for this plan can help a community set a tree canopy goal, plant trees to mitigate future environmental harms such as urban heat island or air pollution, set a budget and secure funds to accomplish their objectives, while simultaneously increasing residents' quality of life.

Pounds of air pollution and greenhouse gases removed annually by city trees in South Bay

CO (carbon monoxide)	NO_2 (nitrogen dioxide)	O_3 (ozone)	PM_{10}* (particulate matter 10 microns)	$PM_{2.5}$ (particulate matter 2.5 microns)	SO_2 (sulphur dioxide)	CO_2seq (carbon dioxide sequestered) in tons	CO_2stored ** (carbon dioxide stored in tons)
21	35	409	146	25	18	18	1,724,179

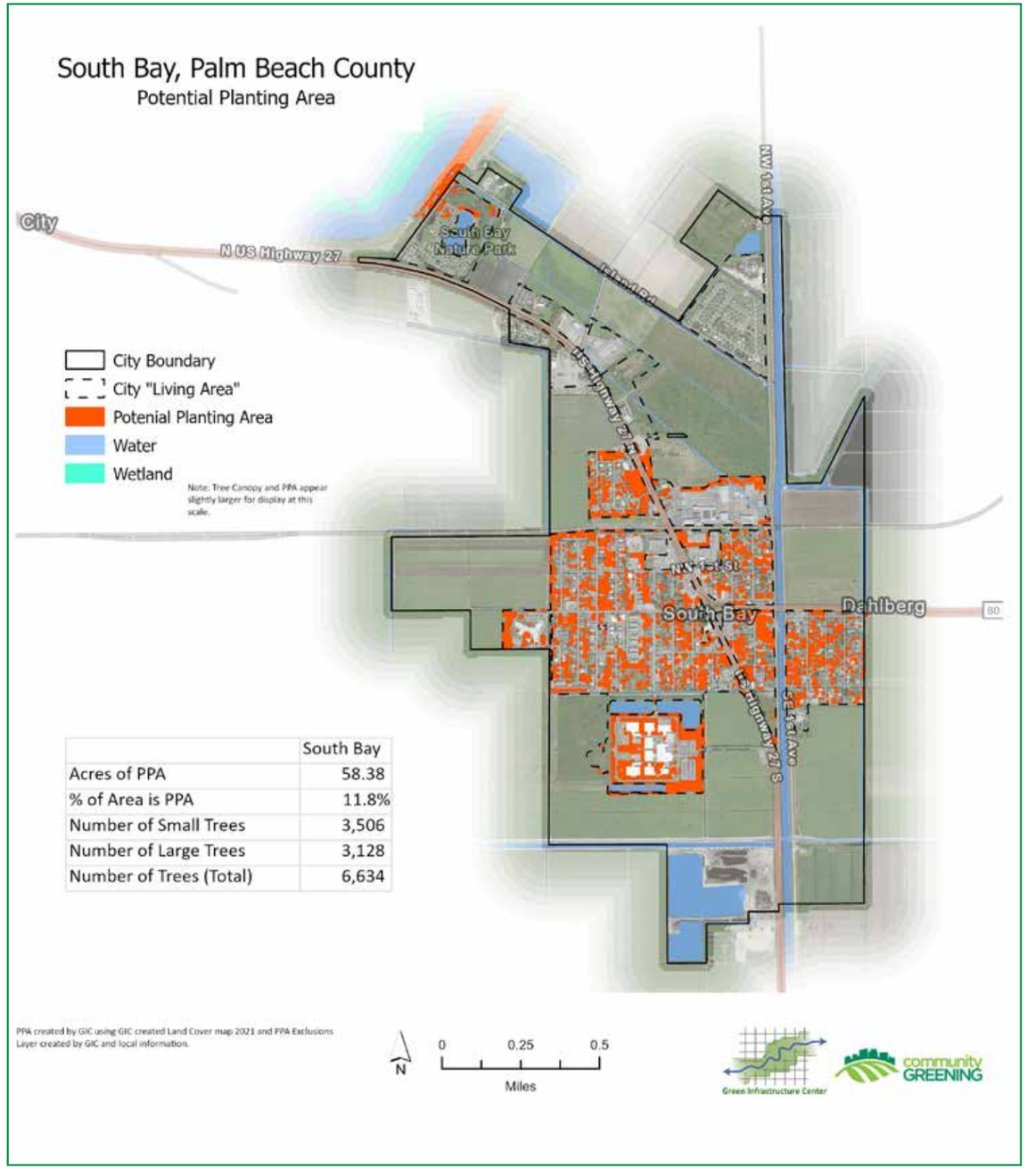
*PM = Particulate matter
**CO_2 stored is not an annual rate but a total amount of carbon stored.

South Bay: Tree Canopy Map



This map displays the existing tree canopy within the residential areas of South Bay, Florida.

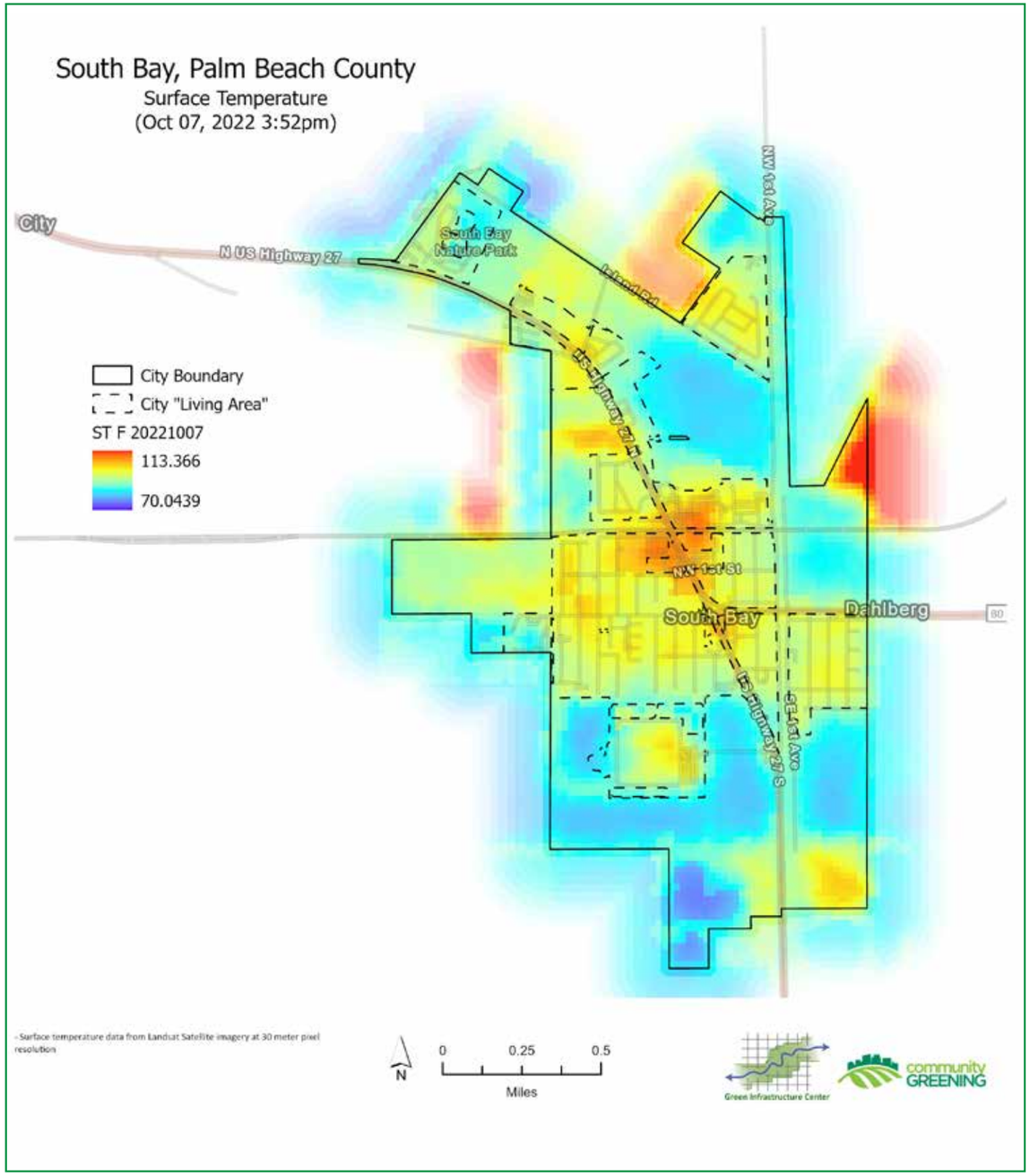
South Bay: Potential Planting Areas Map



	South Bay
Acres of PPA	58.38
% of Area is PPA	11.8%
Number of Small Trees	3,506
Number of Large Trees	3,128
Number of Trees (Total)	6,634

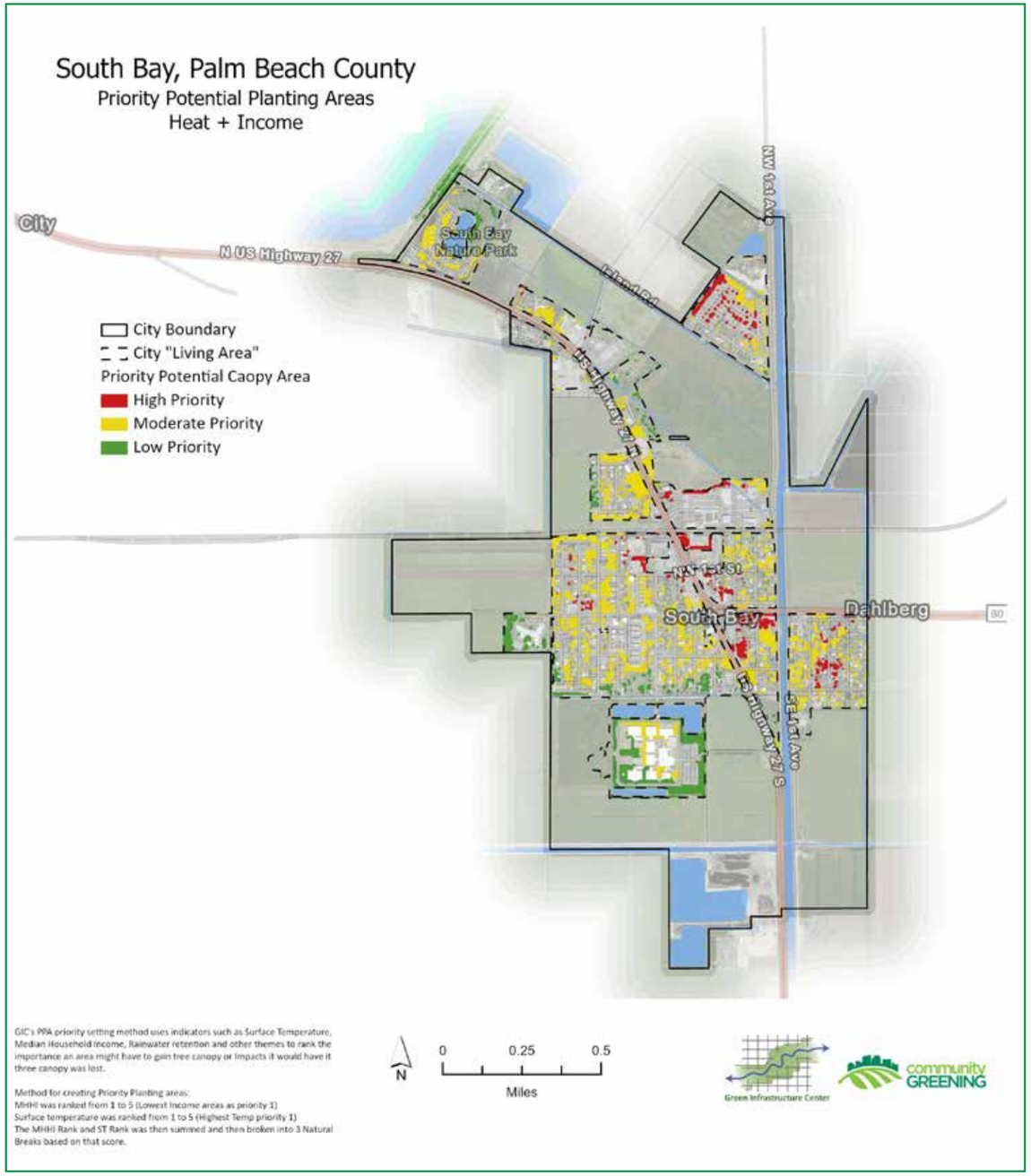
This map shows potential planting areas within the community.

South Bay: Urban Heat Island Map



This map shows the hottest parts (in red) to the coolest (in blue) in the city.

South Bay: Priority Potential Planting Areas Map



This map depicts potential planting areas to prioritize first in South Bay, Florida based on lower median household income (MHHI) and higher than average surface temperatures.